HORTUS SECOND

A CONCISE DICTIONARY OF GARDENING AND GENERAL HORTICULTURE

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HORTUS SECOND

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HORTUS SECOND

A Concise Dictionary of Gardening, General Horticulture and Cultivated Plants in North America

COMPILED BY

L. H. BAILEY and ETHEL ZOE BAILEY

1947
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HORTUS SECOND

THIS Hortus Americanus is designed to account for all the species and botanical varieties of plants in cultivation in the continental United States and Canada in the decade ending midyear 1940, together with brief directions on uses, propagation and cultivation. The inventory is based on the catalogues of seeds, bulbs, roots, shrubs, trees and other nursery stock in the published lists of commercial dealers, on statements in current journals, exchanges between growers, continuing correspondence, contents of herbaria, extensive experience with gardens. It is a source-book and record of the plant materials currently available in North American horticulture, with addition of common names, descriptive terms and definitions, inventories of families of plants, and abundant cross-references.

The book does not attempt to include plants known only at present in institutional botanic gardens or in government test grounds. It does not recommend the plants entered within its covers or endeavor to list native plants not yet known in cultivation even though they may possess evident merit for garden use. Nor do the Editors undertake to inform correspondents where roots or seeds of given plants may be obtained. Great care has been exercised in the preparation of articles and in the assembling of advice, but no guaranty is attached and the consultant pursues his course on his own responsibility.

While the intention of Hortus Second is primarily horticultural, yet the effort to identify botanically the species of plants in cultivation is always a major problem before the Editors. Many of the entries are derived from names in lists and the plants or specimens of them are not available for study; whether a plant actually represents its name can be determined only as the work proceeds year by year. If a nomen has no botanical standing, it appears in these pages as "listed name" or otherwise, indicating that more information is needed; or no definite nativity may be assigned to it.

This volume, as the first Hortus, is intended to be useful as a handbook of ready reference, rapid aid to nomenclature and to spelling of names, help in labeling, medium of suggestions on the main or standard requirements in the cultivation of plants. It is hoped the book will contribute to the understanding and the dignity of plant-growing. The grower should be proud to be in the company of so many kinds of plants.

The first Hortus was published in December, 1930, to cover the inventories of cultivated plants in North America for the period ending with 1929. A reprint was published in 1935, with addition of a large Supplement to account for the novelties of the half decade. The present volume is Hortus Second, to include the plants in cultivation to the close of 1939 and the beginning of 1940. Hortus Second is not a reprint, but a new work set in different type and format, to bring the continuing enterprise down to date and to register the species and botanical varieties now available to the cultivator, together with the essential botanical and horticultural revisions. It includes most of the former book and also much more. The old book now becomes an historic record, and should be kept in the library as a reference.

Since the publication of Hortus the field has been newly studied for three purposes: to assemble records of the hundreds of plants introduced to cultivation in the intermediate years; to present changes in nomenclature resulting from continuous studies by many investigators; to assess the horticultural applications. In general the definitions of species have been expanded only as much as may be practicable in a condensed popular work. The cultural articles have been revised or approved by specialists. Yet, at the same time, the plan of Hortus has been retained inasmuch as the public has approved it.

Effort to record the plants in actual cultivation in North America has extended over a period of more than fifty years. It began in the five volumes of Annals of Horticulture 1889 to 1893, was continued in Cyclopedia of American Horticulture 1900 to 1902, second volume (Crops) of Cyclopedia of American Agriculture 1907, Standard Cyclopedia of Horticulture 1914 to 1917, Hortus 1930, Supplement to Hortus 1935. It is now still continued in Hortus Second 1941. It is expected that new Hortuses will be issued every ten years, and perhaps Supplements in the half-decades when needed, if the public continues to find the publications useful.

From the earliest attempt to prepare authoritative inventories, hope has prevailed that at last a stabilized uninterrupted program might be established. Such program requires a permanent institution provided with literature, ample herbarium of cultivated plants, test grounds even though small, accumulated records and extensive card indices, established staff impelled by the will to keep the enterprise useful and alive.

Many persons have aided in the preparation of Hortus Second, although details in Latin names follow an Editorial policy. Some of the persons should be specially mentioned. Most of the detailed revision has been by George H. M. Lawrence, now regularly on the staff of the Bailey Hortorium of Cornell University; the article Armeria is his particular authorship. The Crassulaceæ, Ferns, Geum, Potentilla, Rheum are by Robert T. Clausen, also at the Hortorium. All the entries on genera and species of orchids have been revised and in many cases rewritten by Charles Schweinfurth of the Botanical Museums of Harvard University. The Cactaceæ have been gone over by Elzada Clover of the University of Michigan, the entries on fruit, grafting and pruning by L. H. MacDaniels, the vegetable articles by H. C. Thompson, G. E. Knott and E. V. Hardenburg, Mushrooms by A. J. Pratt, all of Cornell University, Propagation by H. T. Skinner, Phlox and Soils by E. T. Wherry, Roses by J. Horace McFarland. Other aids, in their fields, are A. J. Eames, H. H. Hume, Lewis Knudson, E. A. White. Many critical notes have been supplied by P. J. Van Melle of the Poughkeepsie, New York, Nursery Company.

The Nomenclature

It is necessary to state again that fixity or rigidity in botanical nomenclature is unattainable, either in Latin or vernacular names, although the tendency is naturally toward uniformity in practice. Species are not fixed and invariable entities. Demarcation between species and varieties is open to interpretation. Not nearly all the plants on the earth are yet discovered. Conclusions of careful investigators must be recorded. Knowledge in any science is subject always to modification and new statement, whether in physics or chemistry or biology. When knowledge and its formulas become static the science decays. There is no finality in interpretations of nature.

In a work of the present scope, covering plants from all over the world, one cannot expect to be aware at the moment of all essential changes in nomenclature, and the Editors may exercise their judgment in particular cases and await a Supplement or a subsequent Hortus before accepting changes. The acceptance herein of a generic treatment does not necessarily mean that the Editors approve of the segregation or the combination of names and categories.

Mention of changes in nomenclature (pronounced nō-menclature) may alarm the gardener; yet such changes are inevitable and natural, for the subject is a living and growing department of knowledge. We may deplore changes in names and thereby we may magnify names out of due proportion. The real problem is not nomenclature but identification. If the identification of the species is accurate, the names follow as a matter of course and every one of them has a meaning and adds to the interest and richness of intelligent gardening even though the changes may be troublesome in commerce. Changes in names need not lead to confusion if one really knows the plants and is interested in the essential elements of plant knowledge.

Names of genera and of species are spelled as they were made originally except for a few changes in genera adopted by international authority and in the endings of certain epithets or specific names. This accounts for the name *pensylvanica* of early authors, and *pennsylvanica* at a later time when the title of the State had become stabilized. It explains also why certain plants named for China may be *chinensis* and others *sinensis, sinica, cathayensis;* these names are not in conflict and are not inadvertencies: they are adopted as they stand. Similar cases are *virginica, virginiana, virginiensis; salicina* (Salix-like), *saligna, salicis; caroliniana, carolinensis; marilandica, marylandica, mariana; ohioensis, ohionis.* Terminations of personal names in the genitive, both masculine and feminine, have been unified on the basis of the International Rules in accord with an authoritative published proposal, and following the practice in the Standard Cyclopedia of Horticulture.

The designation var. (variety) is inserted before Latin names subordinate to a species. It represents plants not sufficiently separate or permanent to be accounted the rank of natural species. In trade catalogues the names are likely to be run continuously as a trinomial, but var. is understood to belong between the second and third Latin word. In horticultural writing one does not attempt to draw fine distinctions between variations, as to whether they are subspecies, varieties or formæ. Commercial growers like the Latin names because they are for the most part familiar, have definite application, and are easy to pronounce and remember; such names are *superba, grandiflora, nana, pumila, compacta, atropurpurea, speciosa, pyramidalis, gigantea, hybrida;* botanical rank of the plants may not appear to be important, yet the distinguishing of varieties as distinct from species constitutes one of the prime personal satisfactions in horticulture.

The word variety is often used in a very different meaning, not to designate a taxonomic practice but in the sense of "kinds," as when one speaks of the many varieties of maples or oaks or orchids when one really means the many species. It is confusion of ideas to speak of varieties and species as equivalent or interchangeable words.

Vernacular names of plants fall into three categories. 1. Names that by usage have become common and are part of the language. The most significant of these names in English are chosen for Hortus Second. 2. Titles of groups or species proposed as the result of taxonomic study and therefore based on biological or systematic reasons. These may be admitted. 3. Invented English names, in a series, provide an alternative nomenclature but they may not become common or popular and may remain for commercial or professional use; they presuppose that the user recognizes the species to which they belong and therefore is familiar with the Latin names by which the vernaculars may be identified.

Identification

Some of the responsibility in preserving a record of plants in cultivation in a given epoch rests with the growers themselves. If they introduce or grow novelties, the fact may well be transmitted to the Editor of the Hortuses. This statement applies particularly to species (the word *species* is both plural and singular) and marked botanical varieties rather than to vernacularly named and more or less transitory horticultural varieties or garden forms which cannot be covered in a work of this character. Frequently the grower wishes identification of a novelty, a service the Editor is glad to render if the applicant sends material that represents the plant. Only rarely can a plant be identified by a non-botanical description in correspondence.

A leaf or a flower or a little sprig is not sufficient for identification, among the million and more plants now described. The identifier needs a *specimen.* This specimen should be large enough to reveal what the plant is like, and it should show the essential parts,—foliage, flower-cluster, fruits or pods when possible. The sender should state the general stature or size of the plant, whether herb, shrub, tree, or vine, and disclose as much of its source or origin as may be known; also color of flowers.

The identifier makes an *herbarium specimen* of the material, for record and as a check on identification. It is mounted on standard herbarium paper, when pressed and dried; this paper measures 11½ x 16½ inches, and these dimensions indicate the limits of size of the material to be sent for identification.

If the distance is not too great, the fresh material may be sent in a box by mail as a florist ships cut-flowers. Otherwise, the specimen is sent *flat* tied tightly *between paper and cardboards.* It will be partially dry and preserved when it reaches destination, and the recipient completes the process of drying and pressing. It will be better if the sender is practiced in making herbarium specimens and sends the material ready prepared.

At all events, do not pack the material in cotton or in any kind of preservative or powder. Do not roll the plants. Keep them flat and tight. Be sure the material is dry when despatched, unless perfectly whole fresh sprays, like cut-flowers, are sent by mail and then preferably with special delivery postage. Always be careful to attach a label or number to each specimen; the parcel should bear name and address of the sender.

L. H. BAILEY
ETHEL ZOE BAILEY

Ithaca, N. Y.
October 1, 1940

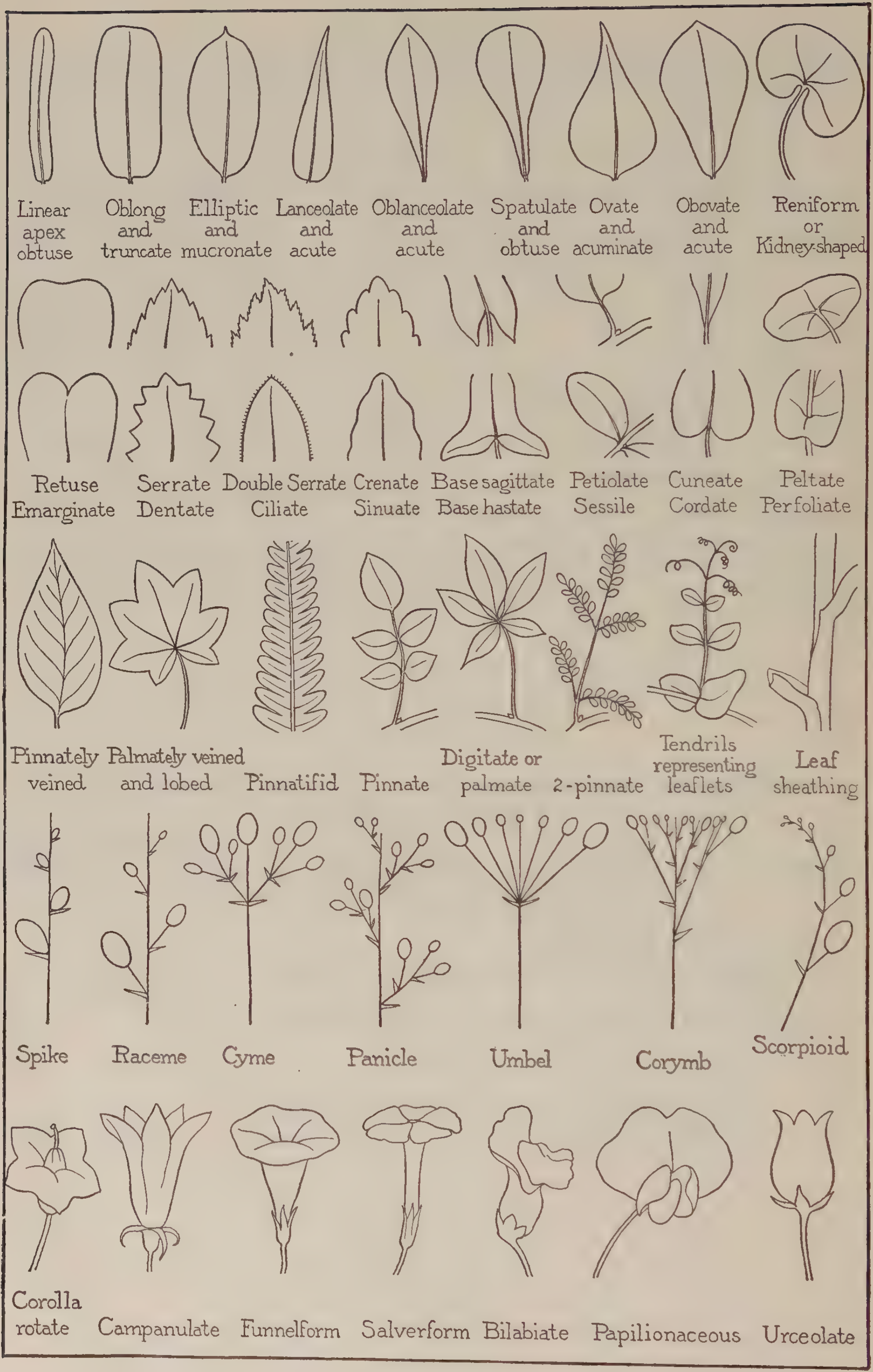
Abbreviations and elisions are necessary to the great condensation required in a work of this character. Aside from the usual abbreviations for countries, states and provinces, those employed in this volume are as follows:

ann.	annual
bien.	biennial
caps.	capsule
cent.	central
cult.	cultivated, cultivation
diam.	diameter
E.	East, eastern: E. U. S., Eastern United States; N. E. U. S., Northeastern United States.
fl.	flower
fld.	flowered
fls.	flowers
fr.	fruit
frs.	fruits
ft.	foot, feet
hort.	horticulture, horticultural
in.	inch, inches
infl.	inflorescence
intro.	introduced
isl., isls.	island, islands
lf.	leaf
lft.	leaflet
lfts.	leaflets
lvs.	leaves
mts.	mountains
N.	North, northern: N. N. Amer., Northern North America; N. S. Amer., Northern South America; N. Eu., Northern Europe.
nat.	naturalized
per.	perennial
S.	South, Southern; S. S. Amer., Southern South America; S. Calif., Southern California; S. W. U. S., Southwestern United States.
segm., segms.	segment, segments
st., sts.	stem, stems
subtrop.	subtropical
temp.	temperate (zone or region)
trop.	tropical
var.	variety (of a species)
W.	West

Statements on stature or measurement of plants and their parts are intended to indicate the upper and lower limits of size or at least of height. This is the customary practice in descriptive botany. Thus, "to 5 ft." suggests the plant may attain that height as a characteristic of the species, whatever may be the usual or average height in a garden.

APPROXIMATE COMPARABLE STATISTICS OF HORTUS, 1935 SUPPLEMENT, HORTUS SECOND

	Hortus	Hortus and Supplement	Hortus Second
1. CAPTIONS. A. Main separate articles (in **LARGE CAPITALS**)	2,881		3,332
B. Secondary entries and cross-references, definitions, vernaculars (in SMALL CAPITALS)	2,409		2,590
2. GENERA (in **LARGE CAPITALS**)		2,722	2,961
3. SPECIES. Names of specific rank (in **black small type**) not including synonyms		15,552	18,447
4. SYNONYMS. Names of specific rank as they stand in the regular generic articles but treated as synonyms (in **black small type**)	3,987		7,962
5. VARIETIES. Varietal Latin names (in **black small type**)		3,974	5,496
Total Latin binomials and trinomials in **black small type** (not counting synonyms and references in *italic type* or names in the subordinate captions 1B). 3, 4 and 5		23,526	31,905


Linear apex obtuse
Oblong and truncate
Elliptic and mucronate
Lanceolate and acute
Oblanceolate and acute
Spatulate and obtuse
Ovate and acuminate
Obovate and acute
Reniform or Kidney-shaped
Retuse
Emarginate
Serrate
Dentate
Double Serrate
Ciliate
Crenate
Sinuate
Base sagittate
Base hastate
Petiolate
Sessile
Cuneate
Cordate
Peltate
Perfoliate
Pinnately veined
Palmately veined and lobed
Pinnatifid
Pinnate
Digitate or palmate
2-pinnate
Tendrils representing leaflets
Leaf sheathing
Spike
Raceme
Cyme
Panicle
Umbel
Corymb
Scorpioid
Corolla rotate
Campanulate
Funnelform
Salverform
Bilabiate
Papilionaceous
Urceolate

HORTUS SECOND

A CONCISE DICTIONARY OF GARDENING AND GENERAL HORTICULTURE

A

ABACÁ: *Musa textilis.*

ABAMA: see *Narthecium.*

ABELE: *Populus alba.*

ABÈLIA. *Caprifoliaceæ.* Attractive shrubs with persistent or deciduous simple opposite lvs. and numerous small white or pink tubular fls. in axillary or terminal cymes with persistent large purplish sepals, blooming in summer; native in Asia and Mex.

Abelias thrive in a well-drained soil, enriched with leaf-mold, and in a sunny preferably protected situation. *A. floribunda* is sometimes grown in the greenhouse. Propagated by greenwood cuttings rooted under glass in the summer, or by cuttings of ripe wood in autumn; seed is rarely employed. *A. grandiflora* and *A. Engleriana* are hardy North, and other species less hardy.

chinénsis (*A. rupestris*). Deciduous shrub to 6 ft.: lvs. ovate, to 1½ in. long: fls. in dense terminal panicles, white, funnelform, ½ in. long, fragrant; sepals 5. China.—Plants grown under this name may be *A. grandiflora.*

Engleriàna. Deciduous shrub to 6 ft.: lvs. ovate to oval-lanceolate, to 1½ in. long: fls. in few-fld. axillary clusters, rosy-purple or rosy-pink, funnelform, ¾ in. long; sepals 2. China.

floribúnda. MEXICAN A. Evergreen shrub to 6 ft.: lvs. ovate, to 1½ in. long: fls. pendulous, solitary or in 2–3-fld. clusters, carmine-purple, tubular, 1½ in. long; sepals 5. Mex.

Gaûcheri. Listed as a hybrid having bright lavender-pink fls. with orange throat, slightly larger than those of *A. grandiflora.*

Graebneriàna. Deciduous shrub to 10 ft.: lvs. ovate or narrowly so, to 2½ in. long, acuminate: fls. solitary or few on short side branchlets or axillary, pink, yellow inside. China.

grandiflòra. GLOSSY A. Hybrid between *A. chinensis* and *A. uniflora:* half-evergreen shrub to 6 ft.: lvs. ovate, to 1½ in. long, shining: fls. in loose terminal panicles, white flushed pink, bell-shaped, ¾ in. long; sepals 2–5.—The common kind in cult.; often grown as *A. chinensis.* Var. **Shérwoodii** is listed as dwarf form to 3 ft. tall, with somewhat smaller lvs. and fls.

longitùba: probably *A. Schumannii.*

rupéstris: *A. chinensis,* but the plant in the trade is usually *A. grandiflora.*

Schùmannii. Deciduous slender shrub to 5 ft. or more: lvs. ovate to elliptic, to about 1 in. long, mucronate but otherwise nearly obtuse: fls. several on short side growths, pink, corolla slender at base. China.

triflòra. Deciduous shrub to 12 ft.: lvs. lanceolate or ovate-lanceolate, to 3 in. long: fls. in terminal clusters 2 in. across, rosy-white, salverform, ½ in. long; sepals 5. Himalayas.

uniflòra. Interesting as one of the parents of *A. grandiflora:* evergreen, to 6 ft.: lvs. ovate, acuminate, shining above, to 1 in. long: fls. pinkish-white, orange in throat, 1 in. long; sepals 2. China.

ABELIOPHÝLLUM. *Oleaceæ.* One deciduous shrub of recent introduction, native in Korea, allied to Fontanesia. **A. dístichum.** To 3 ft.: lvs. opposite, ovate, to 2 in. long, entire, pubescent: fls. white, ¼ in. across, in short racemes in May: fr. nearly orbicular, 1 in. across, winged on all sides.

ABELMOSCHUS: see *Hibiscus.*

ABERIA: see *Dovyalis.*

ÀBIES. FIR. *Pinaceæ.* Large evergreen trees 50 ft. and more in height and of pyramidal habit and continuous axis or trunk, having flat linear lvs. which are usually shiny above and with 2 white bands below, and erect cones with deciduous scales; native in the north temp. zone and hardy in cult. from the central regions north. Distinguished from the spruces (Picea) by the flat lvs. whitish beneath, erect cones with deciduous scales. Although distinct to those who know them, the firs are difficult to separate by brief descriptions. For cult. see *Conifers.*

ajanénsis: *Picea jezoensis.*

álba (*A. pectinata. A. Picea*). SILVER F. Lvs. to 1¼ in. long, rounded and notched at apex: cones cylindric, to 5½ in. long, green turning reddish-brown. Cent. and S. Eu.; hardy in northeastern states, but likely to lose its lower branches there and to become thin. Var. **columnàris,** head columnar; var. **compácta,** dwarf and compact; var. **equi-trojàni,** lvs. more pointed, cones oblong-cylindric; var. **péndula,** branches drooping; var. **pyramidàlis,** head columnar; var. **tortuòsa,** dwarf and compact with shining lvs. and crowded branches.

amábilis. CASCADE F. Lvs. about 1 in. long, notched or truncate at apex: cones oblong, to 6 in. long, purple. B. C. to Ore.; hardy in S. New England.

arizónica: *A. lasiocarpa* var.

baborénsis: *A. numidica.*

balsàmea. BALSAM F. Lvs. to 1 in. long, rounded or slightly notched at apex: cones oblong, to 2½ in. long, violet-purple. Lab. to W. Va. and Ia. Var. **hudsònia,** a dwarf form; var. **macrocárpa,** lvs. and cones longer; var. **nàna** is listed as a dwarf form; var. **phanerólepis,** bracts of cone exserted.

Beissneriàna: *A. Ernestii.*

Bòrisii-règis. Lvs. about 1 in. long, acute or sometimes notched at apex: cones cylindric, to 6 in. long. Balkan Peninsula.

Bornmuelleriàna. Lvs. 1¼ in. long, rounded or notched at apex: cones cylindric, to 5 in. long. Asia Minor.

brachyphýlla: *A. homolepis.*

canadénsis: *Tsuga canadensis.*

caroliniàna: *Tsuga caroliniana.*

cephalónica (*A. Reginæ-Amaliæ*). GREEK F. Lvs. to 1 in. long, sharp-pointed: cones cylindric, to 7 in. long, brownish. Greece; hardy in S. New England. Var. **Apóllinis** has thicker and broader less pointed lvs.

chensiénsis. Lvs. to 1½ in. long, usually rounded and notched at apex: cones ovoid-oblong, to 4 in. long, green turning red-brown. Cent. China; can be grown in S. New England.

cilícica. Lvs. about 1 in. long, slightly notched at apex: cones cylindric, to 9 in. long, reddish-brown. Asia Minor, Syria; hardy in climates like S. New England and N. Y.

cóncolor. WHITE F. Lvs. to 2 in. long, rounded or acute at apex: cones cylindric, to 5 in. long, greenish or purplish. Colo. to Mex.; hardy N. Var. **argéntea,** lvs. silvery-white; var. **aùrea,** lvs. golden-yellow when young; var. **brevifòlia,** lvs. short and thick; var. **cónica,** dwarf pyramidal form; var. **globòsa,** habit globose; var. **Lowiàna,** lvs. longer, notched at apex, Ore. to Calif.; var. **violàcea,** lvs. bluish-white; var. **Wattèzii,** lvs. pale yellowish becoming silvery-white.

Delavàyi: plants in cult. under this name are referable to *A. Fabri.*

Doúglasii: *Pseudotsuga taxifolia.*

Érnestii (*A. Beissneriana*). Lvs. to 1¼ in. long, flat above with pale bands beneath: cones peduncled. W. China: probably hardy in north central states.

Fábri (*A. Delavayi* of hort.). Lvs. to 1 in. long, notched at apex, margins revolute: cones cylindric to oblong, to 3 in. long, violet-black. W. China; hardy in such climates as S. New England.

Fargèsii. Lvs. to 1 in. long, notched at apex: cones ovoid-oblong, to 3 in. long, purple or red-brown. Cent. China; hardy S. New England but suffers in severe winters.

Faxoniàna. Lvs. to 1 in. long, rounded or notched at apex, margins slightly revolute: cones ovoid-oblong, to 3 in. long, violet-purple. W. China; probably hardy in N. Y. and S. New England.

fírma. Momi F. Lvs. to 1½ in. long, rounded and notched at apex, bands beneath inconspicuous: cones cylindric, to 5 in. long, yellowish-green. Japan; hardy in north central states and S. New England.

Fórrestii. Lvs. to 1½ in. long, rounded or notched at apex: cones cylindric, to 4 in. long, violet-purple. W. China; somewhat tender N. E.

Fràseri (*Picea hudsonia*). Southern Balsam F. Lvs. to 1 in. long, rounded and notched at apex: cones oblong or ovoid, to 2¼ in. long, purple. Alleghany Mts.; hardy N. Var. **horizontàlis** is listed as a dwarf spreading form.

Gordoniàna: *A. grandis.*

grándis (*A. Gordoniana*). Giant F. Lvs. to 2¼ in. long, rounded and notched at apex: cones cylindric, to 4 in. long, bright green. Vancouver Isl. to Calif. and Mont.; to be grown in central states; in S. New England remains small.

holophýlla. Needle F. Lvs. to 1½ in. long, rounded or acute at apex, spiny when young, bands beneath inconspicuous: cones cylindric, to 6 in. long, green becoming light brown. Manchuria, Korea; hardy N. Y. and New England.

homólepis (*A. brachyphylla. A. Tschonoskiana*). Nikko F. Lvs. about 1 in. long, rounded and slightly notched at apex: cones cylindric, 4 in. long, purple. Japan; hardy in northern states. Var. **Scóttiæ,** Dwarf Nikko F., is a branch-sport; var. **Tomòmi,** less branched, lvs. shorter; var. **umbellàta,** young cones green.

insígnis. Hybrid between *A. Pinsapo* and *A. Nordmanniana.* Named vars. are **Beissneriàna, Kentiàna, Mastersiàna,** and **speciòsa.**

koreàna. Lvs. to ¾ in. long, rounded and notched at apex, pointed when young, margins revolute: cones cylindric, to 3 in. long, violet-purple. Korea; hardy N. Y. and New England.

lasiocárpa (*Picea bifolia*). Alpine F. Lvs. to 1½ in. long, rounded or acute at apex, pale bluish-green: cones oblong-cylindric, to 4 in. long, purple. Alaska to New Mex. Var. **arizónica** (*A. arizonica*), Cork F., bark thick and corky; var. **compácta,** dwarf and compact.

magnífica. Red F. Lvs. 4-sided, to 1½ in. long, rounded at apex: cones cylindric-oblong, to 9 in. long, purplish-violet. Ore. to Calif.; hardy in parts of E. but needs shelter N. Var. **argéntea,** lvs. bluish-white; var. **glaùca,** Azure F., lvs. glaucous; var. **shasténsis,** bracts of cone exserted.

Marièsii. Lvs. to ¾ in. long, rounded or notched at apex: cones ovoid to oblong, to 3½ in. long, dark purple. Japan; hardy N. Y. and New England.

nephrólepis. Very similar to *A. sibirica* but with shorter lvs. and smaller cones. Siberia, China; hardy in sheltered positions N. E.

nóbilis. Noble F. Lvs. to 1½ in. long, rounded at apex, entire or slightly notched: cones cylindric-oblong, to 10 in. long, green becoming purplish-brown. Wash. to N. Calif.; not hardy throughout S. New England, and grows slowly. Var. **glaùca** has glaucous lvs.; hardy.

Nordmanniàna. Lvs. to 1½ in. long, rounded and notched at apex: cones cylindric, to 6 in. long, reddish-brown. Caucasus, Asia Minor, Greece; hardy and useful in northern states. Var. **aùrea,** lvs. yellow; var. **tortifòlia,** some of lvs. twisted.

numídica (*A. baborensis*). Algerian F. Lvs. to ¾ in. long, rounded and slightly notched at apex: cones cylindric, to 7 in. long, purple. N. Afr.; grows in S. New England in sheltered places.

obovàta: *Picea obovata.*

Omórika: *Picea Omorika.*

pectinàta: *A. alba.*

Pìcea: *A. alba.*

Píndrow. Lvs. to 2⅓ in. long, acute and notched at apex, bands beneath inconspicuous: cones cylindric, to 5½ in. long, deep purple. Himalayas; hardy in central states.

Pinsàpo. Spanish F. Lvs. to ¾ in. long, acute, thick and stiff, bands beneath inconspicuous: cones cylindric, to 5 in. long, purplish-brown. Spain; hardy in central states, also S. New England in sheltered positions. Var. **argéntea,** lvs. silvery-white; var. **glaùca,** lvs. glaucous; var. **péndula,** branches drooping.

recurvàta. Lvs. to 1½ in. long, acute or sharp-pointed, bands beneath inconspicuous: cones oblong-ovoid, to 4 in. long, violet-purple becoming brownish. W. China; hardy in S. New England.

Regìnæ-Amàliæ: *A. cephalonica.*

religiòsa. Lvs. to 1¼ in. long, acute at apex: cones cylindric-oblong, to 6 in. long, violet-blue. Mex.

rùbra: *Picea rubens.*

sachalinénsis. Saghalin F. Lvs. to 1½ in. long, entire or slightly notched and rounded at apex: cones cylindric, to 3 in. long, greenish-purple. N. Japan, Saghalin; very hardy. Var. **nemorénsis** (*A. Wilsonii*) has smaller cones.

sibírica. Lvs. to 1¼ in. long, rounded at apex, entire or notched: cones cylindric, to 3 in. long, bluish. N. Russia to Turkestan and Manchuria.—Sometimes suffers in hot dry summers.

spectábilis (*A. Webbiana*). Himalayan F. Lvs. to 2⅓ in. long, rounded or notched at apex: cones cylindric, to 7 in. long, violet-purple. Himalayas; hardy in central-southern regions. Var. **brevifòlia** has shorter lvs.

squamàta. Flaky F. Bark flaky: lvs. to 1 in. long, obtuse: cones oblong-ovoid, to 2½ in. long, violet. W. China.

sutchuenénsis. Similar to *A. Fargesii* but differing in the shorter lvs. with yellow petioles. W. China.

taxifòlia: *Pseudotsuga taxifolia.*

Tschonoskiàna: *A. homolepis.*

Veìtchii. Lvs. to 1 in. long, notched at apex: cones cylindric, to 2½ in. long, bluish-purple. Japan; very hardy. Var. **nikkoénsis,** cones smaller; var. **olivàcea,** young cones green.

venústa. Bristlecone F. Lvs. to 2½ in. long, stiff, spiny-pointed: cones ovoid, bristly, to 4 in. long, purplish-brown. Calif.

Vilmorínii. Hybrid between *A. cephalonica* and *A. Pinsapo.*

Webbiàna: *A. spectabilis.*

Wílsonii: *A. sachalinensis* var. *nemorensis.*

ABRÒNIA. Sand-Verbena. *Nyctaginaceæ.* Trailing or low annuals or perennials, with fragrant red, yellow, or white verbena-like fls. borne in a peduncled showy head subtended by bracts; native in W. N. Amer., a few of minor importance for borders and flower-gardens in sunny exposures.

Abronias are treated as annuals. For early summer bloom seeds may be started indoors, but they are usually sown directly in the open ground; in mild climates seeds may be sown in the fall. Remove the husk before planting; the seeds are often slow in germinating.

álba. Prostrate per.: fls. white. S. Calif. Var. **platyphýlla** has broader wavy lvs.

arenària: *A. latifolia.*

fràgrans. Erect per. to 10 in.: lvs. usually ovate, pale below: fls. white, to 1 in. long, night-blossoming. B. C. to N. Mex.

grandiflòra: *A. umbellata* var.

latifòlia (*A. arenaria*). Yellow S. Per., prostrate: fls. lemon-yellow. Sea-coast Calif. to B. C.

marítima. Prostrate per.: fls. dark red. Sea-coast S. Calif.

pogonántha. Trailing per., glandular-villous: fls. pale lavender or purple. Mohave Desert.

umbellàta. Pink S. The commonly cult. species: per., prostrate: fls. rose-purple. Sea-coast Calif. to B. C. Var. **grandiflòra** has larger fls. Var. **ròsea** has paler fls.

villòsa. Similar to *A. umbellata* but with glandular-villous pubescence. Calif., Ariz., Utah.

ABROPHÝLLUM. *Saxifragaceæ.* One Australian shrub or small tree sometimes planted in S. Calif. **A. órnans.** Lvs. alternate, ovate-lanceolate, to 9 in. long: fls. small, yellowish or greenish, in forking clusters shorter than lvs., the sepals and petals deciduous: fr. a berry ⅓ in. across.

ÀBRUS. *Leguminosæ.* Slender more or less woody vines with pinnate lvs. of many small lfts., small papilionaceous fls. in axillary racemes, and short pods; native in trop. regions and sometimes grown under glass N. for ornament and the interesting seeds.

Propagated by seeds which germinate more quickly if soaked, or by cuttings of firm shoots in sand under glass.

precatòrius. Rosary-Pea. Twining to 10 ft.: fls. red to purple, rarely white: pods oblong, to 1½ in. long, with shining scarlet seeds black at base, used in bead-work and for rosaries. Tropics.

pulchéllus. Twining to 20 ft.: fls. pale purple: pods linear, to 2 in. long. Trop. Afr. to Malaya.

ABSINTHIUM: *Artemisia Absinthium.*

ABUMON: *Agapanthus.*

ABÙTILON. Flowering Maple. *Malvaceæ.* Herbs and shrubs with alternate often lobed lvs. and bright red, yellow, white or striped mostly drooping fls.; distributed in warm climates.

Abutilons are used as house plants and for bedding out and *A. megapotamicum* makes an attractive basket-plant. They should be given the same cultivation as geraniums. Propagated by seeds and cuttings. Plants from seed sown in the open may be taken up in the fall and half of the new growth removed, for bloom in winter and spring. Some varieties are treated as annuals even if shrubby. Following are woody plants except *A. Theophrastii.*

Avicénnæ: *A. Theophrastii.*

Coòlidgei: hort. name for pink-fld. form, probably of the *A. hybridum* group.

hýbridum. Cultigens: lvs. slightly 3-lobed or unlobed, spotted: fls. of various colors. Most of the garden forms belong here as they cannot be referred to the pure species.

índicum. Shrubby per. to 5 ft.: lvs. entire or toothed, to 4 in. across, white-tomentose: fls. yellow, 1 in. across. Tropics.

insígne. Lvs. not lobed, wavy-toothed, to 4 in. long: fls. to 2½ in. across, white or rose with dark veins. Colombia.

máximum: hort. name.

megapotámicum (*A. vexillarium*). Habit drooping: lvs. not lobed, wavy-toothed, to 3 in. long, often arrow-shaped: fls. with yellow petals and red calyx, to 2 in. long, with exserted stamens, fuchsia-like. S. Amer.

mollíssimum. To 10 ft.: lvs. ovate, to 6 in. or more long, pubescent: fls. yellow, about ½ in. long. S. Amer.

píctum. Lvs. 3-lobed, toothed, middle lobe broadest at base, green or variegated: fls. orange or yellow veined crimson, 1¼ in. long. S. Brazil to Argentina.—Often passes as *A. striatum.*

pleniflòrum. Differs from *A. pictum* in the green lvs. and double fls. Of garden origin.

Savítzii: one of the *A. hybridum* group.

speciòsum: listed as a dwarf free-flowering plant with large bright orange fls.

striàtum. Lvs. 5–7-lobed, the middle lobe narrowed at base: fls. orange veined with dark crimson, to 1¾ in. long. Guatemala.—Not common in cult. Var. **Thómpsonii** has lvs. variegated with yellow.

Theophrástii (*A. Avicennæ*). Ann. herb to 5 ft.: lvs. nearly entire or toothed, pubescent, to 1 ft. across: fls. yellow, to ¾ in. across. S. Asia; nat. in N. Amer.

Thòmpsonii: *A. striatum* var.

variegàtum: hort. name, perhaps for a form of *A. striatum.*

vexillàrium: *A. megapotamicum.*

vitifòlium. Lvs. 3–7-lobed, to 5 in. across, tomentose beneath: fls. light blue, to 3½ in. across. Chile.

ACÀCIA. *Leguminosæ.* Shrubs and trees mostly of the tropics or warm temp. regions, particularly Australia, with bipinnate lvs. or the lvs. reduced to leaf-like petioles or phyllodia and resembling a simple lf., small usually yellow fls. in stalked heads or spikes, mostly in early spring, stamens free (not united at base as in Albizzia), and fr. a pod, ovate to linear, or moniliform (like a string of beads).

Acacias are grown extensively out-of-doors in warmer United States, particularly in California. They do not stand temperatures below 18–20° F. as a rule. They grow very quickly but are short-lived. In the tropics some species are grown as forage crops, for medicine, gums, soap, fibers, and other purposes. Acacias are often grown under glass for spring bloom, but are not usually well adapted to forcing as they do not thrive in temperatures above 40–50°. They need plenty of water and sunshine, and should be pruned after blooming and set out-of-doors for the summer.

Propagation is by seeds under glass or sown in the open. Germination is hastened by softening the hard seed-coats, either by placing the seed in hot ashes and leaving until cool, or by soaking in hot water which is allowed to cool for 12–48 hours. Propagated also by cuttings of half-ripened wood with a heel.

abyssínica. Sts. villous: phyllodia linear, usually 20–30, ciliate-puberulous: fls. yellow, on very short peduncles. Ethiopia.

accòla. Glabrous shrub to 8 ft.: phyllodia linear, 3–5 in. long, 1-nerved: fl.-heads several in racemes that are 1½–2 in. long: pods to 4 in. long and ½ in. broad, flat, with waxy lustre. Australia.

acinàcea. Much branched shrub: phyllodia oblong, about ½ in. long: fl.-heads ⅛ in. or less across, usually in pairs: pods linear, curved. S. Australia.

acuminàta. Tree to 40 ft.: phyllodia long-linear, to 10 in. long and ¼ in. broad, with fine parallel nerves: fls. in sessile spikes that are 1 ft. or less long: pods linear, less than ¼ in. broad, somewhat contracted between seeds. W. Australia.

adúnca: *A. crassiuscula.*

alàta. Shrub to 6 ft.: phyllodia decurrent along the st., forming wings to ½ in. across: fl.-heads ¼ in. across, solitary or in pairs. W. Australia. Var. **platýptera** (*A. platyptera*) has narrower phyllodia.

aneùra. Mulga. Shrub or tree: phyllodia narrow-linear, to 3 in. long: fls. in spikes to ¾ in. long: pods to 1½ in. long. Australia, where it is used as fodder for cattle in times of drought.

arábica: *A. nilotica.*

armàta (*A. paradoxa*). Kangaroo-Thorn. Shrub to 10 ft., with spines ¼ in. long: phyllodia half-ovate, to 1 in. long: fl.-heads ¼ in. across, solitary: pods to 2 in. long. Australia. Var. **péndula** has larger phyllodia and more straggling habit.

áspera. Shrub to 4 ft.: phyllodia oblong-linear, to 1½ in. long: fl.-heads solitary or in pairs: pods to 2 in. long, contracted between seeds. Victoria, New S. Wales.

auriculæfórmis. Small tree: phyllodia oblong-falcate, to 8 in. long: fl.-heads in short racemose spikes: pods much twisted. Albany Isl., Queensland.

Baileyàna. Shrub or small tree: lvs. bipinnate, the lfts. to ¼ in. long, glaucous: fl.-heads about ⅛ in. across, in racemes to 3 in. or more long: pods to 4 in. long, glaucous. New S. Wales. Var. **purpùrea,** listed name for a form with purple-tinged foliage.

Bancroftiàna: probably a Cæsalpinia.

Bétchei. Shrub to 12 ft.: phyllodia linear, 3 in. long: fl.-heads globular, small, in racemes 3 in. or less long: pods 4 in. long, nearly woody. New S. Wales.

binervàta. Shrub or tree to 40 ft.: phyllodia falcate to lanceolate, to 4 in. long: fl.-heads in short racemes: pods to 5 in. long. New S. Wales, Queensland.

brachybòtrya. Tall shrub: phyllodia obovate, to 1 in. or more long: fl.-heads in short racemes or solitary: pods linear. S. Australia.

buxifòlia. Shrub, branches angled: phyllodia oblong-lanceolate and oblique, mostly 1 in. or less long, thickish, veins not prominent: fl.-heads globular, small: pods flat, ⅓ in. or less broad. New S. Wales.

calamifòlia. Broom Wattle. Tall shrub: phyllodia narrow-linear, to 4 in. long: fl.-heads almost ¼ in. across, in short racemes or rarely solitary: pods to 6 in. long, constricted between seeds. S. Australia.

Cátechu. Tree: lvs. bipinnate, the lfts. ¼ in. long: fls. in spikes to 5 in. long: pods to 3 in. long. E. Indies, Himalayas.—Yields black catechu.

Cavènia. Espino Cavan. Shrub to 20 ft. with stout spines, and good for hedges: lvs. bipinnate: fl.-heads clustered. Chile.

confùsa. Tree to 50 ft., with terete branchlets: phyllodia narrow-lanceolate, to 5 in. or more long, rather obtuse, about 5-nerved: fl.-heads axillary and solitary: pods 3 in. or more long, somewhat inflated, more or less constricted. Philippines, Formosa.

constrícta (*Acaciopsis constricta*). Shrub to 10 ft. or more, spiny: lvs. bipinnate, lfts. to ¼ in. long: fls. bright yellow, fragrant, in globose heads: pods to 5 in. long, constricted between the seeds. Tex., Ariz., Mex.

cornígera. Bullhorn A. Shrub or small tree with large inflated spines resembling the horns of an ox, often twisted: lvs. bipinnate, the lfts. ¼ in. long: fls. in dense spikes to 1½ in. long: pods to 2½ in. long, beaked. Mex.

crassiúscula (*A. adunca*). Shrub, mostly with sharp-angled branches: phyllodia linear or some of them narrow-lanceolate, to 2 in. long, 1-nerved, thickish: fl.-heads small and dense, in racemes that are shorter than the phyllodia: pods linear, mostly less than ¼ in. broad, thick and coriaceous, contracted between seeds. Queensland to Tasmania.

cultrifórmis. Knife A. Tall shrub: phyllodia ovate, to 1 in. long, gray and glaucous: fl.-heads about ⅛ in. across, in long racemes forming a terminal panicle: pods to 3 in. long, glaucous. New S. Wales, Queensland.

cuneàta. Tall shrub: phyllodia oblong, to 1 in. long: fl.-heads solitary, on stalks about as long as phyllodia: pods to 3 in. long, curved. W. Australia.

cyanophýlla. Blue-leaf Wattle. Stoloniferous shrub to 18 ft.: phyllodia linear-oblong, 6–12 in. long: fl.-heads ¼ in. or more across, in short racemes: pods about 5 in. long, contracted between seeds. W. Australia.

cýclops. Shrub to 10 ft.: phyllodia narrow-oblong, to 3½ in. long: fl.-heads solitary or in short racemes, July–Dec.: pods to 2½ in. long, curved. W. Australia.

dealbàta: *A. decurrens* var.

decípiens. Shrub to 12 ft.: phyllodia triangular, to ⅜ in. long: fl.-heads solitary or in pairs: pods to 2 in. long, much curved. W. Australia.

decòra. Shrub, with angled branchlets: phyllodia lanceolate or linear, to 2 in. long, 1-nerved: fl.-heads globular, in racemes exceeding the phyllodia: pods flat, about ¼ in. broad, little if at all contracted between seeds. Queensland, New S. Wales.

decúrrens. Green Wattle. Tree: lvs. bipinnate, the lfts. to ⅓ in. long: fl.-heads ¼ in. across, in racemes: pods to 4 in. long. Australia. Var. **dealbàta** (*A. dealbata*). Silver Wattle. To 50 ft.: lvs. silvery-gray. Var. **móllis** (*A. mollissima*). Black Wattle. To 50 ft.: lvs. tomentose, yellowish when young. Var. **normàlis.** Glabrous or young parts tomentose.

dentífera. Tall shrub: phyllodia narrow-linear, to 8 in. long: fl.-heads solitary or in pairs: pods to 3 in. long. W. Australia.

Dietrichiàna. Phyllodia linear, to 3 in. and more long: fl.-heads about ⅛ in. across, solitary: pods 2½ in. long, contracted between seeds. Queensland.

diffùsa. Shrub to 6 ft.: phyllodia linear, about ¾ in. long, stiff: fl.-heads usually in pairs: pods to 4 in. long. S. Australia, Tasmania.

díscolor. Shrub or small tree: lvs. bipinnate, the lfts. ¼ in. long, pale beneath: fl.-heads in racemes: pods to 3 in. long. S. Australia, Tasmania.

dodonæifòlia. Tall shrub: phyllodia lanceolate, to 4 in. long: fl.-heads solitary or in pairs: pods long and flat. S. Australia.

doratóxylon. Shrub or small tree: phyllodia to 8 in. long and ⅓ in. across: fl.-heads in dense spikes to 1 in. long: pods to 4 in. long. Australia.

Drúmmondii. Shrub or small tree: lvs. bipinnate, the lfts. ¼ in. long: fl.-heads in dense drooping spikes to 1½ in. long: pods to 1 in. long. W. Australia.

ebúrnea. Shrub with stipular spines to 2 in. long: lvs. bipinnate, the lfts. to ⅛ in. long: fl.-heads ½ in. or less across, solitary: pods to 6 in. long. Arabia to India and Ceylon.

elàta. Tree to 60 ft.: lvs. bipinnate, the lfts. to 2 in. long: fl.-heads in racemes to 6 in. long, Sept.–Dec.: pods to 6 in. long. New S. Wales.

elongàta. Tall shrub: phyllodia narrow-linear, to 4 in. long: fl.-heads solitary or in pairs: pods to 2½ in. long. S. Australia.

exténsa. Shrub to 5 ft.: phyllodia linear, to 4 in. and more long, resembling branchlets: fl.-heads solitary or in short racemes: pods to 4 in. long, contracted between seeds. W. Australia.

falcàta. Shrub or small tree: phyllodia lanceolate-falcate, to 6 in. or more long: fl.-heads in short racemes: pods to 3 in. long. Queensland, New S. Wales.

Farnesiàna (*Vachellia Farnesiana*). Popinac. Opopanax. Cassie. Huisache. Sweet A. Thorny much branched shrub to 10 ft.: lvs. bipinnate, the lfts. to ⅙ in. long: fl.-heads ¼–½ in. across, very fragrant, in small clusters: pods to 3 in. long. Tex., Mex., Asia, Afr., Australia; original nativity uncertain.

filicioìdes: see *A. hirta*.

fimbriàta: a form of *A. linifolia* var. *prominens*.

floribúnda: *A. longifolia* var.

Giráffæ. Camel-Thorn. Tree to 40 ft. with long stout spines: lvs. bipinnate: fl.-heads in clusters: pods oval, indehiscent. S. Afr.

glaucéscens. Tree to 60 ft.: phyllodia lanceolate or falcate, to 6 in. long, gray-pubescent: fls. in spikes to 2 in. long: pods twisted or coiled. Queensland, New S. Wales.

grándis: *A. pulchella* var.

Gréggii (*Senegalia Greggii*). Texas Mimosa. Shrub or sometimes tree to 20 ft.: lvs. bipinnate: fls. pale yellow, in spikes to 2¼ in. long, in summer: pods to 4 in. long, twisted. Tex. to Mex.

gummífera. Tree to 30 ft., with stipular spines: lvs. bipinnate: fl.-heads in spikes: pods white-tomentose, contracted between seeds. Afr.

hakioìdes. Small tree or shrub: phyllodia linear-spatulate, to 5 in. long and ½ in. wide, usually obtuse, 1-nerved: racemes of about 20 fls., small and head-like. Australia.

harpophýlla. Tall tree: phyllodia falcate-lanceolate, to 8 in. long, pale or glaucous: fl.-heads in clusters or short racemes: pods to 6 in. long, slightly contracted between seeds. Queensland.

hastulàta. Shrub to 3 ft.: phyllodia crowded, hastate-lanceolate, to ¼ in. long, spiny-pointed: fl.-heads ⅛ in. or less across, solitary: pods to 2 in. long, curved. W. Australia.

heterophýlla. Shrub to 5 ft.: phyllodia linear, often with bipinnate lvs. on adult branches: fl.-heads in racemes. Mascarene Isls.

hírta (*Acaciella hirta*). To 3 ft., herbaceous: lvs. bipinnate into 24–30 pairs of linear lfts.: pods oblong, 2 in. long. Mo. to Tex., Fla.—Probably the plant cult. as *A. filicioides* belongs here.

hispidíssima: *A. pulchella* var.

holoserícea. Shrub or tree to 20 ft., covered with white silky pubescence: phyllodia oval-oblong, to 6 in. long: fl.-heads in spikes to 2 in. long: pods twisted. N. Australia.

homalophýlla. Small tree: phyllodia lanceolate to linear, to 3 in. long: fl.-heads in pairs or clusters: pods linear, slightly curved. Australia.

hórrida. Karroo-Thorn. Shrub or small tree: phyllodia oblong-linear, obtuse to subacute, to ⅓ in. long, sharp ivory-white stipular spines to 3 in. long: fls. in capitate clusters with peduncles bracteate at middle: pods linear, flat, to 4 in. long, glabrous, curved. S. Afr.

impléxa. Tree to 50 ft.: phyllodia lanceolate-falcate, to 6 in. or more long: fl.-heads in short racemes: pods narrow-linear, much twisted, contracted between seeds. Australia.

Jònesii. Shrub to 3 ft., very slender, branchlets hairy: lvs. bipinnate, with 5 or 6 pairs of pinnules that bear many lfts. ¼ in. or less long, nearly or quite linear: fl.-heads racemose: pods compressed and narrow, to 3 in. long. New S. Wales.

Julibríssin: *Albizzia Julibrissin*.

juncifòlia (*A. pinifolia*). Tall shrub: phyllodia linear, to 6 in. or more long: fl.-heads solitary or in pairs: pods to 4 in. long. Australia.

juniperìna. Prickly Wattle. Shrub to 12 ft.: phyllodia linear, to ½ in. long: fl.-heads solitary: pods to 2 in. long, contracted between seeds. Australia, Tasmania.

Kòa. Koa. Tree to 60 ft.: phyllodia falcate, to 5 in. long: fl.-heads usually in short racemes: pods to 6 in. long and 1 in. wide. Hawaiian Isls.

latifòlia. Phyllodia to 6 in. long and 2 in. across, glaucous: fl.-heads in loose spikes to 2 in. long: pods to 4 in. long. N. Australia.

Lébbek: *Albizzia Lebbek*.

lepròsa. Shrub or small tree: phyllodia linear-lanceolate, to 3 in. long: fl.-heads in pairs or clusters: pods falcate. Victoria, New S. Wales.

leptóclada. Shrub: lvs. bipinnate, the lfts. 1/12 in. or less long: fl.-heads small, in racemes. Queensland.

ligulàta: the plant grown under this name is probably *A. salicina*.

lineàris. Shrub: phyllodia narrow-linear, to 6 in. or more long: fl.-heads in loose spikes to 2 in. long: pods to 4 in. long. Australia.

lineàta. Shrub: phyllodia linear, to ¾ in. long: fl.-heads solitary: pods curved or twisted. Australia.

linifòlia. Tall shrub: phyllodia linear, to 1½ in. long: fl.-heads in short racemes: pods to 4 in. long. Queensland, New S. Wales. Var. **próminens** (*A. prominens*) has broader phyllodia and pods.

longifòlia. Sydney Golden Wattle. Shrub or small tree: phyllodia oblong-lanceolate, to 6 in. long: fl.-heads in loose spikes to 2¼ in. long: pods to 5 in. long. Australia. Var. **floribúnda** (*A. floribunda*). Foliage at ends of branches: fls. whitish-yellow. Var. **mucronàta** (*A. mucronata*). Phyllodia very narrow. Var. **Sophòræ** (*A. Sophoræ*). Phyllodia to 3 in. long and 1 in. wide, very obtuse.

lophántha: *Albizzia lophantha*.

lunàta. Shrub: phyllodia oblong-falcate, to 1 in. long: fl.-heads in racemes longer than phyllodia: pods glaucous. Australia.

macracántha. Shrub or tree to 20 ft., with spines to 2 in. long: lvs. bipinnate, the lfts. ⅙ in. long: fl.-heads to ½ in. across, solitary or clustered: pods to 5 in. long. Mex., S. Amer.

macracanthoìdes (*Poponax macracanthoides*). Shrub or tree to 40 ft. or more, with bipinnate lvs. and numerous narrow lfts. about ¼ in. long, and fls. in small yellow globular peduncled heads: pods 3 in. or more long and about ⅓ in. broad, flat: spines mostly 1½ in. or less long and essentially terete. W. Indies, Venezuela.—This is the plant commonly known erroneously as *A. macracantha*, but that species has flattened ridged spines 2½ in. or more long and larger broader pods.

macradènia. Shrub to 12 ft.: phyllodia lanceolate-falcate, to 6 in. and more long: fl.-heads in short racemes: pods to 4 in. long. Queensland.

Màidenii. Shrub or tree to 50 ft.: phyllodia lanceolate-falcate, to 6 in. long: fl.-heads in spikes 1 in. long: pods much twisted. Australia.

Meìssneri. Tall shrub: phyllodia obovate-oblong, to 1 in. long: fl.-heads solitary: pods long and narrow. W. Australia.

melanóxylon. Blackwood A. Large tree: phyllodia oblanceolate, to 4 in. long and 1 in. wide, often with bipinnate lvs. also on young shoots: fl.-heads cream, ¼ in. across, in short racemes: pods to 5 in. long, twisted. Australia.

mollíssima: *A. decurrens* var. *mollis.*

mucronàta: *A. longifolia* var.

myrtifòlia. Tall shrub: phyllodia obovate to linear, to 2 in. and more long: fl.-heads in short racemes: pods to 3 in. long, curved. Australia.

Nèmu: *Albizzia Julibrissin.*

neriifòlia. Bald A. Shrub or small tree: phyllodia linear-lanceolate, to 5 in. long: fl.-heads to ¼ in. across, in short racemes: pods to 6 in. long. Australia.

nígricans. Shrub to 6 ft.: lvs. bipinnate, the lfts. to ⅕ in. long: fl.-heads solitary: pods to 1½ in. long. W. Australia.

nilótica (*A. arabica. A. scorpioides*). Gum Arabic Tree. Tree with stipular spines: lvs. bipinnate, the lfts. to ¼ in. long: fl.-heads in pairs or clusters: pods to 6 in. long, moniliform. N. Afr., Eu.—The gum arabic of commerce is obtained from *A. Senegal*, not known to be cult. here.

oblìqua. Drooping much branched shrub: phyllodia obovate or orbicular, to ½ in. long: fl.-heads solitary or in pairs: pods to 2 in. long, twisted. S. Australia.

obtusàta. Tall shrub: phyllodia oblong-linear, to 3 in. long, stiff: fl.-heads in short racemes. New S. Wales.

Óswaldii. Shrub to 10 ft.: phyllodia falcate-lanceolate to linear, to 2 in. long, stiff: fl.-heads solitary or in clusters: pods curved or twisted. Australia.

Oxycédrus. Stiff shrub: phyllodia linear-lanceolate, to 1 in. long: fl.-heads in dense spikes 1 in. long: pods to 3 in. long. Australia.

paradóxa: *A. armata.*

péndula. Weeping Myall. Small tree with drooping branchlets: phyllodia linear-lanceolate, to 3 in. long, stiff, gray: fl.-heads in pairs or clusters: pods to 3 in. long, the sutures narrowly winged. Queensland, New S. Wales.

penninérvis. Tree to 40 ft. or more: phyllodia lanceolate-falcate, to 4 in. long or more: fl.-heads in short loose racemes: pods to 5 in. long. Australia. Var. **falcifórmis.** Shrub with longer and more falcate phyllodia.

pentadènia. Tall shrub, with usually 4-angled branchlets: lvs. bipinnate, the 2–5 pairs of pinnules bearing many lfts. ¼ in. or less long: fl.-heads globular, clustered: pods flat, 1½ in. or less long, the valves elastic. W. Australia.

pinifòlia: *A. juncifolia.*

pinnàta: *A. tamarindifolia.*

pinnatifòlia: listed name.

platyphýlla of lists is probably *A. alata.*

platýptera: *A. alata* var.

podalyriæfòlia. Pearl A. Tall glaucous pubescent shrub: phyllodia ovate or oblong, to 1½ in. long: fl.-heads in long racemes: pods to 3 in. long. Queensland.

polybótrya. Small tree with subterete branches: phyllodia oblong, to ⅓ in. long, obtuse, hairy beneath: fls. in many-headed paniculate racemes. Australia.

pravíssima. Screwpod A. Tree to 20 ft., with drooping branchlets: phyllodia ovate, to 1 in. long: fl.-heads less than ⅛ in. across, in racemes longer than phyllodia: pods to 3 in. long, much twisted. Victoria.

próminens: *A. linifolia* var.

pruinòsa. Small tree: lvs. bipinnate, the lfts. to ¾ in. long: fl.-heads in racemes: pods to 3 in. long. New S. Wales.

pubéscens. Hairy Wattle. Shrub with drooping branchlets: lvs. bipinnate, the lfts. to ⅙ in. long: fl.-heads in racemes longer than lvs.: pods flat. New S. Wales.

pulchélla. Spiny shrub: lvs. bipinnate, the lfts. to ¼ in. long: fl.-heads solitary: pods to 2 in. long. W. Australia. Var. **grándis** (*A. grandis*) is glabrous with larger lfts. Var. **hispidíssima** (*A. hispidissima*) is hairy with narrow lfts.

pycnántha. Golden or Broad-leaved Wattle. Small tree: phyllodia to 6 in. long and 1½ in. wide or sometimes 4 in. wide on seedlings: fl.-heads ¼ in. or more across, fragrant, in many-fld. racemes: pods to 5 in. long. S. Australia.

retinòdes. Shrub or small tree: phyllodia linear-lanceolate, to 5 in. long: fl.-heads in short branched racemes: pods to 8 in. long. S. Australia. Vars. **floribúnda** and **gracíllima** are listed.

Riceàna. Shrub or small tree: phyllodia linear, to 1½ in. long, scattered: fl.-heads in loose spikes to 2 in. long: pods to 3 in. long, curved, contracted between seeds. Tasmania.

rùbida. Glabrous shrub, branches angular: phyllodia lanceolate, to 3 in. long, acute, 1-nerved: fls. in 10–12-headed racemes. New S. Wales.

salícina. Shrub or small tree with drooping branches: phyllodia oblong-linear, to 5 in. long: fl.-heads in short racemes or solitary: pods to 3 in. long. Australia. Var. **Wàyæ.** Shrub to 8 ft.

salígna. Shrub or small tree: phyllodia lanceolate, to 8 in. and more long: fl.-heads ½ in. across, in racemes: pods to 5 in. long, contracted between seeds. W. Australia.

scorpioìdes: *A. nilotica.*

Sénegal. Tree to 30 ft.: lvs. bipinnate: fls. white, in axillary spikes. Trop. Afr.

Séntis. Tree to 40 ft.: lvs. lanceolate-oblong to linear, to 2 in. long: fl.-heads solitary or in pairs: pods to 3 in. long. Australia.

siculifórmis. Tall shrub: phyllodia linear or linear-lanceolate, to 1½ in. long, stiff: fl.-heads solitary: pods to 1 in. long. S. Australia, Tasmania.

Sideróxylon: listed name.

Sophòræ: *A. longifolia* var.

spectábilis. Branches glaucescent: phyllodia obovate-oblong, to ½ in. long, obtuse, fleshy, obscurely 2–3-nerved: fls. in many-headed racemes: pods to 4 in. long, glabrous. Australia.

stenophýlla. Tree: phyllodia linear, to 1 ft. long: fl.-heads mostly in short racemes: pods to 8 in. long, moniliform. Australia.

stenóptera. Stiff low shrub or bush: phyllodia running into long opposite wings, the upper or free part lanceolate or narrower: fl.-heads on very short peduncles: pods falcate, acuminate. W. Australia.

suavèolens. Shrub to 6 ft.: phyllodia linear, to 6 in. long: fl.-heads in racemes: pods to 1½ in. long, glaucous. Australia, Tasmania.

subulàta. Shrub to 10 ft.: phyllodia narrow-linear, to 6 in. long: fl.-heads in racemes. New S. Wales.

Sùma (*Senegalia Suma*). Small tree: lvs. bipinnate, the lfts. to ¼ in. long: fl.-heads nearly white, in spikes to 4 in. long: pods to 4 in. long. India, Ceylon.

tamarindifòlia (*A. pinnata. Senegalia tamarindifolia*). Shrub, prickly, often vine-like: phyllodia 10–20 pairs, linear-oblong, to ⅝ in. long, glands often present between the pinnæ, stipules large, ovate: fls. in panicled heads: pods 3–5 in. long, mostly glabrescent. Trop. Amer.

tenuifòlia (*Senegalia tenuifolia*). Shrub with drooping branchlets: phyllodia linear-subulate, to 1 in. long: fl.-heads solitary: pods to 3 in. long. Victoria.

undulifòlia. Shrub or low bush, sometimes becoming large: phyllodia ovate to nearly orbicular, to 1 in. or less long, 1-nerved, undulate: fl.-heads globular, on slender peduncles: pods flat, to ¾ in. broad. Queensland, New S. Wales.

verticillàta. Star or Whorl-leaved A. Shrub or small tree: phyllodia linear-subulate, to ¾ in. long, in whorls: fl.-heads in spikes 1 in. long: pods to 3 in. long. Victoria, Tasmania.

vestìta. Branches hispid, terete: phyllodia falcate-elliptic, to ½ in. long, aristate, base obliquely unequal, 1-nerved, usually hispidulous, margins undulate: heads in small lax racemes to 1½ in. long. New S. Wales.

viscídula. Shrub to 15 ft.: phyllodia narrow-linear, to 3 in. long: fl.-heads mostly in pairs: pods to 2 in. long. New S. Wales.

ACACIA, BLACK: *Robinia PseudoAcacia.* **False:** *Robinia PseudoAcacia.* **Rose:** *Robinia hispida.*

ACACIELLA: see *Acacia hirta.*

ACACIOPSIS: see *Acacia constricta.*

ACÆNA. *Rosaceæ.* More or less evergreen trailing perennials used in mild countries as ground-cover, and sometimes N. with protection, with pinnate lvs., inconspicuous fls. in terminal heads or spikes, and fr. a bristly achene; native in the southern hemisphere, also Calif. Propagated by seeds, division and cuttings. Useful in rock-gardens, and some of them more or less woody.

argéntea. Sts. creeping: lvs. silvery, of 3–4 lfts.: fls. in globose spikes. Chile.

Buchánanii. Sts. prostrate and rooting: lvs. to ¾ in. long, of 11–13 lfts., whitish-green: fls. in small sessile heads, with yellowish spines. New Zeal.

cæ̀sia glaùca: listed name.

cylindrostàchya. Sts. prostrate: lvs. of 10–11 lfts. silky beneath: fls. in cylindrical spikes. Peru.

glàbra. Sts. creeping: lvs. to 1¼ in. long, of 7–11 lfts., pale or glaucous beneath: fls. in brownish-green globose heads to ¾ in. across. New Zeal.

glaùca: listed name.

Hierónymii. Similar to *A. pinnatifida* from which it differs in the achenes bristly only at the apex. Argentina.

inérmis: *A. microphylla* var.

microphýlla. New Zealand Bur. Sts. prostrate: lvs. to 2 in. long, with 7–13 lfts.: fls. in globose stalked heads to ¾ in. across, with purplish-red spines. New Zeal. Var. **inérmis** has longer lvs. and spineless frs.

myriophýlla. Sts. ascending: lvs. with 7–9 deeply cut lfts. silky beneath: fls. in interrupted spikes. Chile.

nòvæ-zelándiæ. Sts. creeping and rooting: lvs. to 3 in. long, with 11–13 lfts.: fls. in globose stalked heads to 1¼ in. across, with purplish-red spines. New Zeal.

ovalifòlia. Similar to *A. microphylla* but with larger lvs. Chile.

ovìna. Sts. ascending to 2 ft.: lfts. to ¾ in. long, crenate or pinnately cut: fls. purple, in long interrupted spikes. Australia.

pinnatífida. Sts. erect, to 6 in.: lvs. of 3–5 pairs of 3–5-parted lfts., the segms. linear: fls. in cylindrical spikes. Chile.

Sanguisórbæ. Sts. creeping and rooting: lvs. to 3 in. long, of 7–11 lfts., pale beneath: fls. in globose stalked heads to ¾ in. across. Australia, New Zeal.

serícea. Sts. creeping: lvs. of 3–5 pairs of obovate cut-toothed lfts., silky beneath: fls. in crowded cylindrical spikes. Patagonia.

ACALỲPHA. *Euphorbiaceæ.* Herbs, or the cult. species monœcious or diœcious shrubs with attractive foliage and small inconspicuous fls. often assembled in bracted, showy, axillary or terminal spikes or racemes. The species are many, in temp. and trop. regions of both hemispheres, some of them weedy annuals. Ours are conservatory ornamentals, employed also for bedding out far S. and for hedges and lawn specimens. The cult. is simple.

Propagated by cuttings taken from outdoor bedded plants in the fall; from plants lifted in the fall and cut back; and in summer from stock kept from the previous season; the last is the best method as cuttings with a heel may be obtained which give excellent plants for use in the conservatory in fall and winter.

Godseffiàna. Profuse shrub, bushy and dense: lvs. mostly green with cream-colored margin, variable in form, lance-ovate to variously shredded: fl.-clusters shorter than lvs., greenish-yellow. New Guinea, but probably a state of *A. Wilkesiana.* The *heterophylla* form with ragged lvs. sometimes reduced to shreds may occur on the same plant with other lvs.

Hamiltoniàna: probably a form of *A. Godseffiana* is meant.

heterophýlla: *A. Godseffiana* var.

híspida (*A. Sanderi*). Chenille Plant. Redhot Cat-tail. Diœcious shrub to 15 ft.: lvs. green, broad-ovate, to 8 in. long: pistillate spikes drooping, dense, to 1½ ft. long and 1 in. wide, red or purple. E. Indies. Var. **álba** has creamy-white fls. and **ramòsa** has compound spikes.

illústris: *A. Wilkesiana.*

Macafeàna: *A. Wilkesiana* var.

macrophýlla: *A. Wilkesiana* var.

marginàta: *A. Wilkesiana* var.

Miltoniàna. Described as differing from *A. Godseffiana* in larger size and more finely cut lvs.

musàica: *A. Wilkesiana* var.

obovàta: *A. Wilkesiana* var.

ramòsa: *A. hispida* var.

Sánderi: *A. hispida.*

trícolor: *A. Wilkesiana.*

triúmphans: *A. Wilkesiana* var.

Wilkesiàna (*A. illustris. A. tricolor*). Copper-leaf. Monœcious shrub to 15 ft.: lvs. profuse, elliptic or ovate, 5–8 in. long, serrate, bronzy-green mottled with copper, red or purplish: spikes slender, 8 in. long and ¼ in. wide, reddish. S. Sea Isls. There are many vars. in the trade: **Macafeàna,** lvs. red marked crimson and bronze; **macrophýlla,** lvs. russet-brown; **marginàta,** lvs. with crimson or other margins; **musàica** (*mosaica*), lvs. green with orange and red markings; **obovàta,** lvs. becoming bronzy-green with rosy-pink margins; **triúmphans,** lvs. spotted crimson, green and brown. In its many color strains this plant is much planted in S. Fla. and the American tropics, less in S. Calif.

ACÁMPE. *Orchidaceæ.* Strong epiphytes with thick two-ranked lvs. and small fls. mostly in short lateral racemes, the lip with a short spur. Require trop. conditions; for cult. see *Orchids.*

multiflòra. To 24 in. high: lvs. to about 1 ft. long and 2 in. wide: racemes or panicles almost as long as lvs.; sepals and petals yellow spotted with red-brown; lip whitish transversely lined with dark red. Mar.–Sept. China.

papillòsa. To about 10 in. high: lvs. to about 4 in. long and ½ in. wide: racemes about ½ in. long, densely few-fld.; sepals and petals yellow spotted with brown; lip white transversely barred with purple. Nov.–Dec., Aug. Himalayas, Burma.

ACANTHÀCEÆ. Acanthus Family. About 180 genera, mostly herbs widely distributed, largely in trop. countries, sometimes spine-bearing: lvs. opposite, simple: fls. bisexual, irregular; calyx 4–5-parted; corolla gamopetalous, 5-lobed or 2-lipped; stamens 2 or 4; ovary 2-celled with slender style: fr. a dry caps. Plants in many genera are grown for ornament in greenhouses and the open, both for showy fls. and for colored striking foliage, as Acanthus, Adhatoda, Anisacanthus, Aphelandra, Asystasia, Barleria, Beloperone, Crossandra, Dyschoriste, Eranthemum, Fittonia, Graptophyllum, Hemigraphis, Jacobinia, Justicia, Mackaya, Odontonema, Pachystachys, Peristrophe, Pseuderanthemum, Ruellia, Sanchezia, Schaueria, Stenandrium, Strobilanthes, Thunbergia, Whitfieldia.

ACANTHOCALÝCIUM. *Cactaceæ.* S. American genus allied to Echinopsis, resembling it in general habit but differing in having perianth-tube and ovary covered with woolly recurved and pungently-tipped scales, and outer segms. with acuminate or mucronate chartaceous tips.

formòsum: *Echinopsis formosa.*

spiniflòrum (*Lobivia* and *Echinopsis spiniflora. Echinocactus spiniflorus*). Globose to cylindrical, to 2 ft. tall and 6 in. diam.; ribs 17–22, notched, areoles about ⅓ in. apart and whitish; spines straight, centrals 1–3, radials 10–20, reddish-brown to yellow becoming whitish, to ¾ in. long: fls. pink, funnelform, to 1¾ in. long. Argentina.

thionánthum (*Lobivia* and *Echinopsis thionantha*). Usually solitary, globose to subcylindric, to 5 in. tall and about 4 in. diam.; ribs 13–15, somewhat wavy, low, tubercles not distinct; spines to ½ in. long, radials 8–11, awl-shaped, grayish, central 1: fls. yellow, to 1½ in. long. Argentina.

violàceum (*Echinopsis violacea*). Globose to cylindrical, to 8 in. tall and 5 in. diam.; ribs about 15, to ⅝ in. high, notched; spines straight, centrals 3–4, to 1¾ in. long, yellow tipped brown, radials 10–12, to 1½ in. long, yellow: fls. pale violet, to 3½ in. long, narrowly funnelform. Argentina.

ACANTHOCÈREUS. *Cactaceæ.* Slender jointed mostly strongly 3-angled clambering or trailing cacti, usually several ft. long, the areoles with soft wool and several stiff spines: fls. white or greenish, funnelform, solitary, nocturnal: coasts of Fla. and Tex. to S. Amer. See *Cacti.*

hondurénsis: probably *Selenicereus hondurensis.*

horríbilis (*A. horridus*). Plant stout, with wider more deeply crenate joints than *A. pentagonus;* radial spines

1–6, to ½ in. long, very stout; centrals 1–2, to 3 in. long: fls. to 8 in. long. Guatemala.

hórridus: *A. horribilis.*

pentagònus (*Cereus pentagonus. C. baxaniensis*). To 20 ft., sometimes rooting at tips; spines several, to 2 in. long: fls. 6–8 in. long. Fla. and Tex., south.—Sometimes employed as a greenhouse plant and in the open in its native regions.

tetragònus: see *Cereus tetragonus.*

ACANTHOLÌMON. Prickly-Thrift. *Plumbaginaceæ.* Dwarf tufted hardy perennials with evergreen sharp-pointed linear rigid lvs. and fls. rose or white in tight heads, spikes or racemes; native S. E. Eu. to Asia.

The prickly-thrifts are slow-growing plants for rock-gardens and sandy places, needing sun and warmth. Propagated by cuttings in late summer and wintered under protection in a coldframe; also by layering.

armènum. To 6 in.: lvs. glaucous, flat to somewhat 3-sided: fls. white veined rose-pink, in dense 12–15-fld. spikes. Armenia.

glumàceum. To 6 in.: fls. small, rose, in dense one-sided racemes. July–Sept. Armenia.

gramíneum. Densely tufted, to 8 in.: lvs. silvery-glaucous: fls. bright rose-pink, in elongated ascending or arching spikes. Turkestan.

lepturoìdes. To 3 in.: lvs. glaucous: fls. whitish, in loose racemes. Caucasus.

venústum. To 8 in.: lvs. glaucous: fls. rose or purple, in loose racemes. July–Sept. Asia Minor.

ACANTHÓPANAX. *Araliaceæ.* E. Asian shrubs and trees, usually prickly, with alternate palmately lobed or compound lvs., small greenish fls. in umbels, and little blackish berries; grown for ornament and the following mostly hardy N.

Propagated by seeds sown at once or stratified, by root-cuttings over heat, or softwood cuttings from forced plants.

japónicus: the plant grown under this name is *Aralia elata;* the true *Acanthopanax japonicus* is not known to be in cult.

lasiógyne. To 20 ft.: lfts. 3, glabrous, obovate to oblong, to 2 in. or more, acute, sometimes serrate above middle: fls. in umbels. China.

pentaphýllus: *A. Sieboldianus.*

ricinifòlius: *Kalopanax pictus.*

senticòsus. Shrub to 15 ft.: sts. with slender prickles: lfts. 5, occasionally 3, to 5 in. long, doubly serrate, stalked, veins pubescent when young: fls. in long-peduncled umbels. N. China.

septémlobus: *Kalopanax pictus.*

sessiliflòrus. To 12 ft.: lvs. of mostly 3-toothed lfts. to 7 in. long: fls. dull purplish, in globular heads. Manchuria, N. China.

Sieboldiànus (*A. pentaphyllus. Aralia pentaphylla*). To 10 ft., with arching branches: lvs. of 5–7 toothed lfts. to 2½ in. long: fls. greenish-white. Japan.—A good hardy shrub. Var. **variegàtus** has lvs. edged with white.

spinòsus. Differs from *A. Sieboldianus* in the thinner lvs. and 2 nearly distinct styles rather than 5 styles united almost to top. Japan.—Hort. material is usually *A. Sieboldianus.*

trifoliàtus. Climbing shrub to 20 ft.: sts. with few hooked spines: lfts. usually 3, ovate to lanceolate, to 3 in. long, serrulate, light green beneath: fls. slender pedicelled, umbels in terminal whorls. China.

ACANTHOPHŒ̀NIX. *Palmaceæ.* Two feather-leaf palms of the Mascarene Isls. (beyond Madagascar) apparently not in cult. in N. Amer. unless in test plantations. Lf.-sheaths spine-bearing: they produce a single closely ringed spineless trunk to 50 or 60 ft. or more and hanging clusters at base of crown-shaft beneath the lvs.: fr. about ½ in. long, globose or oblong, hard, black. Probably these palms have been confused with Linoma (Dictyosperma) by cultivators.

ACANTHOPHÝLLUM. *Caryophyllaceæ.* Stiff herbs, apparently not in cult., the plants grown as *A. pungens* (*A. spinosum*) being *Dianthus Noeanus.*

ACANTHORRHÌZA. *Palmaceæ.* A few American small woods fan-palms that bear root-spines along the single trunk but otherwise with the general look of Thrinax or Coccothrinax. Fl.-clusters among the lvs., somewhat branching, fls. hermaphrodite: fr. small, globular or pyriform: lvs. usually glaucous. Not in cult. within our territory unless under test. The genus has been combined recently with *Cryosophila,* which see.

ACANTHOSABAL CÆSPITOSA: *Paurotis Wrightii.*

ACÁNTHUS. Bears-Breech. *Acanthaceæ.* Per. herbs or small shrubs with mostly basal broad toothed or pinnatifid lvs., showy fls. dull white to rose or purple in long erect spikes; native in the Medit. region, Asia and Afr., only a few employed as ornamentals.

Heavy winter protection is needed in the North. 'They do best in rich well-drained soil. Propagated by seeds or by division in early autumn or spring. The bold leaves of acanthus have suggested important decorative features in art.

latifòlius: *A. mollis* var.

lusitánicus: *A. mollis* var. *latifolius.*

móllis. To 2 ft.: lvs. not spiny, to 2 ft. long and half as broad, cordate at base, sinuately-lobed: fls. rose, lilac, or whitish, in spikes 1½ ft. long. S. Eu. Var. **latifòlius** (*A. latifolius, A. lusitanicus*) is larger-lvd., more hardy, 3 ft. tall.

montànus. To 3 ft.: lvs. 1 ft. long, pinnatifid, spiny: fls. rose-tinted, in a terminal spike to 10 in. long. W. Afr.

soròsus: listed as an Abyssinian species with large clusters of pink fls.: not known botanically.

spinòsus. To 3 ft.: lvs. pinnatifid, the lobes toothed or cut, spiny: fls. purplish, in dense spikes. S. Eu., Asia Minor.

ACAULESCENT: stemless, or apparently stemless; sometimes the stem is subterranean or protrudes only slightly and is not noticeable; a descriptive term.

ACAULON: *Aistocaulon.*

ÀCER. Maple. *Aceraceæ.* Mostly deciduous trees with opposite usually palmately lobed or sometimes compound lvs., commonly unisexual fls., and fr. of 2 samaras long-winged on one side; native in north temp. zone.

Maples are used extensively for lawn, park and street planting; many are valuable timber trees. Most of the species are hardy in the northern states. They are strong and free-growing subjects. Ordinary soil is satisfactory for the maples. Propagated by seed sown soon after maturity or stratified and sown in spring; rare species and varieties may be budded in summer on species of the same group. Some shrubby species are propagated by layers or half-ripened greenwood cuttings, or by cuttings in early spring from plants forced in greenhouses. Fancy maples may be winter-grafted by the veneer method on seedlings of the same or related species.

argùtum. To 25 ft.: lvs. 5–7-lobed, to 3 in. across, pale beneath: fls. in racemes to 2 in. long. Japan.

auràtum: *A. Negundo* var.

barbinérve. To 25 ft.: lvs. 5-lobed, pubescent beneath, at least on veins, margins coarsely doubly-serrate: fls. yellowish-green, in racemes to 2 in. long: nutlet of fr. about 1¼ in. long. Manchuria.

Buergeriànum (*A. trifidum*). Trident M. Small tree: lvs. 3-lobed, to 3 in. across, pale beneath: fls. in panicles. China, Japan.

Cámpbellii. To 50 ft.: lvs. 5–7-lobed, to 5 in. across: fls. in cymes to 6 in. long. Himalayas.

campéstre. Hedge M. To 50 ft. or more, the branches slightly corky: lvs. 3–5-lobed, to 4 in. across: fls. in erect corymbs. Eu., W. Asia. Some hort. vars. are: **álbovariegàtum,** lvs. with large white blotches; **austrìacum,** lvs. 5-lobed; **hebecárpum,** fr. pubescent; **pulveruléntum,** lvs. speckled with white; **taùricum,** lvs. 5-lobed, pubescent beneath.

capíllipes. To 30 ft.: lvs. 3-lobed, to 5 in. long: fls. in drooping racemes to 4 in. long. Japan.

cappadócicum (*A. lætum*). Coliseum M. To 50 ft.: lvs. 5–7-lobed, to 5½ in. across: fls. in corymbs. W. Asia. Var. **aùreum,** lvs. red and golden-yellow. Var. **rùbrum** (*A. colchicum* var. *rubrum. A. lætum* var. *horticola*), lvs. when young blood-red. Var. **sínicum,** smaller, lvs. 5-lobed. China. Var. **tricaudàtum,** lvs. 3-lobed. Var. **trícolor,** lvs. when young blood-red sprinkled with rosy-pink.

carpinifòlium. HORNBEAM M. To 30 ft.: lvs. ovate-oblong, to 5 in. long, pinnately veined, toothed: fls. in short racemes. Japan.

catalpifòlium. To 60 ft.: lvs. ovate, to 8 in. long, undivided or 3-lobed: fls. in loose corymbs. China; not hardy N.

caudàtum. Large tree: lvs. 7-lobed, to 5½ in. across: fls. in erect spikes 6 in. long. Himalayas. Var. **multiserràtum.** To 30 ft.: lvs. glabrous beneath. China. Var. **ukurunduénse.** Small tree: lvs. pubescent beneath. Japan, Manchuria.

circinàtum. VINE M. Small round-headed tree to 40 ft.: lvs. 7–9-lobed, to 5 in. across: fls. in drooping corymbs, the sepals purple: fr. red. B. C. to Calif.

cissifòlium (*Negundo cissifolium*). To 30 ft.: lvs. of 3 lfts. to 3 in. long, toothed: fls. in racemes to 4 in. long. Japan.

cratægifòlium. HAWTHORN M. To 30 ft.: lvs. oblong-ovate, to 3 in. long, often with 2 or 4 lobes near the base, pinnate-veined, bluish-green: fls. in erect racemes 2 in. long. Japan.

créticum: *A. orientale.*

dasycárpum: *A. saccharinum.*

Dàvidii. To 50 ft., with shining striped branchlets: lvs. ovate, to 6 in. long, not lobed, pinnate-veined, in young plants lvs. often lobed at base: fls. in drooping racemes to 3½ in. long: fr. 1–1¼ in. long. China.

diabólicum. To 30 ft.: lvs. 5-lobed, to 6 in. across: fls. yellow, staminate in clusters, pistillate in racemes. Japan. Var. **purpuráscens.** Fls. purple: lvs. red when young: fr. purplish.

Diéckii (*A. platanoides* var. *integrilobum*). Hybrid between *A. platanoides* and *A. Lobelii,* with lobes of lvs. entire.

disséctum: *A. palmatum* var.

Doúglasii: *A. glabrum* var.

Drúmmondii: *A. rubrum* var.

filicifòlium: listed name of a plant which may be *A. japonicum* var. *aconitifolium.*

floridànum (*Saccharodendron floridanum*). To 50 ft., the bark white: lvs. 3–5-lobed, 2½ in. across, glaucous beneath: fls. in corymbs. Va. to Fla. and Tex.

Gínnala (*A. tataricum* var. *aidzuense*). AMUR M. Graceful shrub or tree to 20 ft.: lvs. 3-lobed, to 3 in. long, terminal lobe long, shining above, pale beneath: fls. fragrant, in panicles. Manchuria, China, Japan. Var. **Semenòvii.** Shrub: lvs. deeply 3- or 5-lobed. Turkestan.

glàbrum. ROCKY MT. M. Shrub or tree to 25 ft.: lvs. 3–5-lobed or 3-parted, to 5 in. across, shining above, pale beneath: fls. in corymbs: fr. often rose-colored. Mont. to Calif. Var. **Doúglasii** (*A. Douglasii*) has 3-lobed lvs. and frs. slightly larger than the type. Alaska to Ore. and Wyo. Var. **rhodocárpum** has bright red frs. Var. **tripartìtum** (var. *trisectum*) has lvs. usually 3-parted.

grandidentàtum. To 40 ft., with dark brown scaly bark: lvs. 3–5-lobed, to 3 in. across, pubescent beneath: fls. in corymbs: fr. often rose-colored. Wyo. to N. Mex.

gríseum. PAPERBARK M. To 25 ft., with cinnamon-brown flaky bark: lvs. of 3 coarsely toothed lfts. to 2½ in. long, pubescent beneath: fls. in cymes. China.

Heldreìchii. BALKAN M. Medium-sized tree: lvs. 5-lobed, to 5 in. across, middle lobe divided nearly to base, shining above, glaucous beneath: fls. in erect panicles. S. E. Eu. Var. **purpuràtum,** under surface of lvs. red.

Hénryi. To 30 ft.: lvs. of 3 elliptic remotely toothed lfts. to 4 in. long: fls. in drooping racemes. China.

Hérsii. Closely related to *A. Davidii,* from which it differs in its 3-lobed ovate lvs., and fr. slightly less than 1 in. long. N. China.

Hoòkeri. To 50 ft.: lvs. oblong-ovate, to 5½ in. long, toothed, caudate-acuminate: fls. in racemes to 4½ in. long. Himalayas; not hardy N.

hyrcànum (*A. Opalus* var. *hyrcanum. A. tauricum*). To 30 ft.: lvs. deeply 5-lobed, to 4 in. across, petioles red: fls. in drooping corymbs. S. E. Eu.

insígne: *A. velutinum* var. *glabrescens.*

ítalum: *A. Opalus.*

japónicum. FULLMOON M. Small tree or shrub: lvs. 7–11-lobed, to 5½ in. across: fls. purple, in nodding corymbs. Japan. Var. **aùreum,** lvs. yellow. Var. **macrophýllum,** lvs. larger. Var. **aconitifòlium** (vars. *Parsonsii, filicifolium* and *laciniatum*). FERNLEAF M. Lvs. divided nearly to base into 9–11 pinnately cut segms.

lætum: *A. cappadocicum.*

laxiflòrum. To 50 ft.: lvs. oblong-ovate, to 4 in. long, sharp-toothed with 2 or 4 short lobes near base: fls. in drooping racemes. China; not hardy N. Var. **longilobum,** lvs. 5-lobed.

leucodérme (*Saccharodendron leucoderme*). CHALK M. To 25 ft., rarely 40 ft., with light gray or grayish-brown bark: lvs. 3–5-lobed, to 3 in. across, pubescent beneath: fls. in corymbs. N. C. to Ga. and La.

lóngipes. To 30 ft.: lvs. 3–5-lobed, to 6½ in. across, the lobes entire, sometimes lvs. undivided: fls. in corymbs 4 in. across. China.

macrophýllum. OREGON M. To 100 ft.: lvs. 3–5-lobed or divided, to 1 ft. across, shining above: fls. fragrant, in drooping or spreading racemes to 5 in. long. Alaska to Calif.

mandshùricum. Shrub or tree to 30 ft.: lvs. of 3 oblong toothed lfts. to 4 in. long, glaucous beneath, petioles slender, red: fls. in cymes. Manchuria, Korea.

micránthum. Shrubby tree to 20 ft.: lvs. 5–7-lobed, to 3 in. across, lobes long-acuminate, doubly serrate, glabrous: fls. in racemes to 3 in. long: nutlet of fr. to ¾ in. long. Japan.

Miyàbei. To 40 ft., bark of branches corky: lvs. 5-lobed, to 6 in. across, pubescent beneath: fls. in corymbs. Japan.

Mòno (*A. pictum*). PAINTED M. To 60 ft.: lvs. 5–7-lobed, to 6 in. across, the triangular lobes entire: fls. in corymbs 2½ in. across. Japan. Vars. **álbo-maculàtum** and **marmoràtum** have lvs. spotted white. Var. **parviflòrum,** lvs. cordate at base. China, Korea.—The name *A. pictum* was originally misapplied by Thunberg to Kalopanax.

monspessulànum. MONTPELIER M. Shrub or tree to 25 ft.: lvs. 3-lobed, to 3 in. across, shining above, nearly evergreen: fls. in drooping corymbs. S. Eu., W. Asia.—Thrives in dry situations. Var. **ibéricum,** lvs. larger, inner lobes slightly 3-lobed.

Negúndo (*Negundo fraxinifolium. N. aceroides. Rulac Negundo*). BOX-ELDER. To 70 ft.: lvs. of 3–5 ovate to oblong lfts. to 4 in. long, rarely 7–9: fls. before lvs. Ont. to Fla. and Tex. Var. **argénteo-variegàtum** is *variegatum;* **auràtum** (var. *californicum aureum*), lvs. yellow; **aùreo-marginàtum,** lvs. edged with yellow; **aùreo-variegàtum,** lvs. spotted with yellow; **califórnicum** (*Negundo californicum*), lfts. 3; **críspum,** lfts. curled; **pseùdo-califórnicum,** vigorous form with bloomy branchlets; var. **variegàtum** (var. *argenteo-variegatum*), lvs. with white margins; **violàceum,** branchlets purplish or violet, lfts. usually 5–7.

neopolitànum: *A. Opalus* var. *tomentosum.*

nìgrum (*A. saccharum* var. *nigrum. Saccharodendron nigrum*). BLACK M. To 120 ft., with black deeply furrowed bark: lvs. 3-lobed, to 5½ in. across, pubescent on veins beneath and often on petioles: fls. in corymbs. Que. to Ky. and Mo.

nikoénse. To 40 ft., branchlets pubescent: lvs. of 3 ovate to oblong slightly toothed lfts. to 5 in. long, pubescent beneath: fls. in nodding cymes. Japan, China.

oblóngum. To 50 ft., partially evergreen: lvs. oblong, to 5 in. long, entire or sometimes 3-lobed, glaucous beneath: fls. in short panicles. Himalayas, China. Var. **cóncolor,** lvs. green beneath.

obtusàtum: *A. Opalus* var.

Oliveriànum. To 30 ft.: lvs. 5-lobed, to 4 in. across, lobes long-acuminate, shining beneath: fls. in panicles. China.

Ópalus (*A. italum. A. opulifolium*). To 30 ft.: lvs. 5-lobed, the lobes short and broad, to 4 in. across: fls. in corymbs. S. Eu. Var. **obtusàtum** (*A. obtusatum*), lvs. 5 in. across, pubescent beneath. Var. **tomentòsum** (*A. neopolitanum*), lvs. to 6½ in. across, tomentose beneath. Italy.

opulifòlium: *A. Opalus.*

orientàle (*A. creticum*). To 15 ft. or more, half-evergreen: lvs. ovate or 3-lobed, to 2 in. long, leathery: fls. in corymbs. Medit. region.

palmàtum (*A. polymorphum*). JAPANESE M. Shrub or tree to 25 ft.: lvs. deeply 5–9-lobed or divided, to 4 in. across, lobes acuminate: fls. purple, in corymbs. Japan, Korea. There are many hort. vars. as follows: **aconitifòlium,** lobes divided to base and coarsely serrate; **argénteum,** lvs. marked with silver; **atrolineàre,** lvs. dark red, divided nearly to base; **atropurpùreum** (var. *nigrum*), lvs. deep purple; **aùreum,** lvs. yellow; **bícolor,** lvs. purple and red; **críspum,** margins of lvs. rolled in; **disséctum** (var. *multifidum,* var. *decompositum, A. polymorphum* var. *palmatifidum*), lvs. divided to base into pinnately cut lobes; **filicifòlium,** lvs. laciniate; **Fredericii-Guilélmii,** lvs. finely cut, spotted with pink and white; **heptálobum** (var. *septemlobum*), lvs. usually 7-lobed; **Héssei,** lvs. dark purple; **linearilobum,** lvs. divided nearly to base into linear lobes; **multífidum** is var. *dissectum;* **Nícholsonii; nìgrum** is *atropurpureum;* **ornàtum,** lvs. pinnately cut, deep red; **reticulàtum,** lvs. greenish-yellow with dark green veins and margins; **ribesifòlium,** lvs. divided to base into jagged-edged lobes; **ròseo-marginàtum,** lvs. deeply cut, narrowly edged with pink; **rubéllum,** a form of *multifidum* with young lvs. red; **rùbrum,** lvs. large, deep red when young; **sanguíneum,** lvs. purplish-red; **septémlobum** is var. *heptalobum;* **sessilifòlium,** lvs. deeply cut, very short-stalked; **sinuàtum; Thúnbergii,** lobes coarsely toothed or cut; **trícolor,** lvs. spotted with red, pink and white; **versícolor,** lvs. green with large white spots.

pensylvánicum (*A. striatum*). Moosewood. Striped M. To 40 ft., bark greenish striped with white: lvs. 3-lobed at apex, to 7 in. long: fls. in drooping racemes to 6 in. long. Que. to Ga.

píctum: *A. Mono.*

platanoìdes. Norway M. To 100 ft.: lvs. 5-lobed, to 7 in. across, shining above: fls. in erect corymbs. Eu., W. Asia. Some of the hort. vars. are: **álbo-marginàtum,** lvs. margined with white, perhaps not distinct from var. *Drummondii* of European collections; **aùreo-marginàtum,** lvs. margined with yellow; **Clárkei,** a selected strain of *albo-marginatum*: **columnàre,** habit columnar; **cucullàtum,** lvs. with short crimped lobes; **globòsum,** with dense globose head; **laciniàtum,** habit columnar, lvs. with irregular claw-like lobes; **Lorbérgii,** lvs. divided nearly to base, light green; **palmatífidum** (var. *dissectum*), lvs. divided nearly to base, dark green; **rùbrum** (var. *Reitenbachii*), lvs. greenish-red turning to dark red; **Schwédleri,** lvs. bright red when young; **Stóllii,** lvs. with 3 entire lobes, purple when unfolding; **variegàtum** (var. *albo-variegatum*), lvs. spotted with white.

polymórphum: *A. palmatum.*

Pseùdo-Plátanus. Sycamore M. To 100 ft.: lvs. 5-lobed, to 6 in. across: fls. in drooping panicles to 5 in. long. Eu., W. Asia. Some hort vars. are: **atropurpùreum** is var. *purpureum;* **bícolor,** lvs. spotted yellow turning white; **erythrocárpum,** lvs. shining, fr. red; **flàvo-variegàtum,** lvs. variegated with yellow; **Handjéryi,** lvs. purplish beneath; **Lèopoldii,** young lvs. rosy-pink variegated with yellowish-pink; **nervòsum,** of pyramidal habit, lvs. yellow between veins; **purpùreum** (var. *purpurascens,* var. *atropurpureum*), lvs. purple beneath; **quadrícolor,** lvs. spotted white, pink when young; **rùbrum,** perhaps not distinct from var. *purpureum;* **tomentòsum** (var. *villosum*), lvs. pubescent beneath: **trícolor,** young lvs. purplish spotted with yellow; **variegàtum** (var. *albo-variegatum*), lvs. variegated with white; **Wórleei,** lvs. deep yellow, petiole reddish.

pseùdo-Sieboldiànum. Differs from *A. Sieboldianum* in lvs. 9–11-lobed, the lobes doubly serrate: fls. purple, on glabrous peduncles. E. Asia.

rùbrum (*Rufacer rubrum*). Red, Scarlet, or Swamp M. To 120 ft.: lvs. 3–5-lobed, to 4 in. long, shining above, glaucous beneath: fls. red or scarlet, before lvs. Newf. to Fla. and Tex. Valuable as a street and park tree. Var. **columnàre,** of columnar habit; **Drúmmondii** (*A. Drummondii*), lvs. 5-lobed, pubescent beneath, Ind. to La.; **globòsum,** of compact habit; **magníficum,** lvs. scarlet in fall, veined green; **tomentòsum,** lvs. 5-lobed, pubescent beneath; **trìlobum** (var. *tridens*), lvs. 3-lobed near apex, pubescent beneath.

rufinérve. To 40 ft., young branches glaucous: lvs. 3-lobed, to 5 in. long: fls. in erect racemes. Japan. Var. **álbo-limbàtum,** lvs. with margin of white spots.

saccharìnum (*A. dasycarpum. Argentacer saccharinum*). Silver or White M. To 120 ft.: lvs. deeply 5-lobed, to 6 in. across, silver-white beneath. Que. to Fla. and Okla. Garden vars. are: **álbo-variegàtum,** lvs. spotted white or pink; **aùreum,** lvs. variegated yellow; **críspum,** lvs. cut and crimped; **heterophýllum,** lvs. with deep unequal lobes; **laciniàtum** (var. *Wieri*), Wiers Weeping M., branches drooping, lvs. deeply divided into cut lobes; **lutéscens,** lvs. yellow; **pyramidàle,** of pyramidal habit; **Skínneri,** listed as a cut-leaf form with pendulous branches; **tripartìtum,** lvs. divided nearly to base into 3 lobes; **Wièri** is var. *laciniatum.*

sáccharum (*Saccharodendron barbatum*). Sugar or Rock M. To 120 ft.: lvs. 3–5-lobed, to 6 in. across, light green beneath: fls. in corymbs. Que. to Fla. and Tex. Var. **monumentàle,** Sentry M., of columnar habit. Var. **Rùgelii,** lvs. usually with 3 entire lobes.

Shirasawànum. Related to *A. palmatum* but lvs. usually 11-lobed, cordate, fls. yellowish-white. Japan.

Sieboldiànum. Shrub or small tree: lvs. 7–9-lobed, to 3 in. across, lobes acuminate, serrate: fls. yellowish, in nodding corymbs, on pubescent peduncles. Japan. Var. **microphýllum** has lvs. about 2 in. across.

Spaèthii: form of *A. Pseudo-Platanus* with lvs. purple beneath and splashed with silver above.

spicàtum. Mountain M. Shrub or tree rarely 30 ft.: lvs. 3- or slightly 5-lobed, to 5 in. long, pubescent beneath: fls. in erect spikes to 5 in. long: fr. bright red in summer. E. N. Amer. Var. **laciniàtum,** lvs. deeply lobed and cut.

striàtum: *A. pensylvanicum.*

tatáricum. Shrub or tree to 20 ft.: lvs. ovate, to 4 in. long, pinnate-veined, toothed: fls. in erect panicles: fr. bright red in summer. S. E. Eu., W. Asia.

taùricum: *A. hyrcanum.*

tetrámerum. To 30 ft.: lvs. ovate, to 3 in. long, usually 3-nerved at base, toothed, sometimes slightly lobed: fls. in racemes. China. Var. **lobulàtum,** lvs. slightly lobed. Var. **tiliifòlium,** lvs. cordate, pubescent beneath.

Trautvétteri. To 50 ft.: lvs. deeply 5-lobed, to 6 in. across, shining above, glaucous beneath: fls. in erect panicles. Caucasus.

trífidum: *A. Buergerianum.*

truncàtum. To 25 ft.: lvs. deeply 5-lobed, 4 in. across, lobes entire or middle one sometimes 3-lobed, acuminate: fls. in erect corymbs to 3 in. across. China.

Tschonóskii. To 20 ft.: lvs. 5–7-lobed, to 4 in. across: fls. in racemes. Japan.

velùtinum (*A. insigne* var. *velutinum*). Persian M. To 50 ft.: lvs. 5-lobed, to 7 in. across, pubescent beneath: fls. in erect panicles 4 in. across. Caucasus, N. Persia. Var. **glabréscens** (*A. insigne*) has lvs. glabrous and glaucous beneath with individuals intermediate between this and the pubescent-lvd. forms often more common than the extremes. Var. **Van Volxémii** has lvs. to 1 ft. across and fls. in dense subglobose corymbs. A form related to var. *glabrescens* is **Wólfii** which differs only in lvs. purplish-red beneath and the plant listed in trade as *A. insigne* var. *atropurpureum* probably belongs here.

ACERÀCEÆ. Maple Family. Two genera, Acer and Dipteronia, of trees and shrubs. The plants bear opposite prevailingly simple lvs., polygamous or diœcious fls. having 4–5 sepals and petals, rarely apetalous, 4–10 stamens, superior 2-celled ovary, and fr. of 2 samaras.

ACERÁNTHUS. *Berberidaceæ.* Hardy herbaceous perennials from Asia, with fls. in loose racemes; useful in the rock-garden or other semi-shady positions. Cult. as for *Epimedium.*

diphýllus (*Epimedium diphyllum*). Maplewort. To 5 in.: lvs. in 2's, obliquely cordate-ovate: fls. white, small. May–June. Japan. Var. **ròseus** has pink fls.

ACERÀTES. *Asclepiadaceæ.* N. American per. herbs differing from Asclepias in the hoods of the crown (in the fl.) being crestless or with an obscure crest-like keel; fls. greenish.

pùmila. Probably *Asclepias verticillata* var. *pumila,* a tufted plant to 10 in. with crowded needle-like lvs. to 2 in. long, small greenish-white fls. in umbels and milkweed-like pods to 3 in. long. Ia. to New Mex.

ACHANIA: *Malvaviscus.*

ACHENE (akene): a dry indehiscent one-seeded pericarp or fruit, as the "seeds" on the surface of the strawberry.

ACHILLÈA. Yarrow. *Compositæ.* Hardy herbaceous perennials bearing clustered small white, yellow or pink heads and often finely cut foliage: heads rayed; pappus none. Native in north temp. zone.

Yarrows are grown in borders and the smaller species in rock-gardens, and bloom in spring and summer, often lasting until autumn. They are of easy culture. Propagated by division and rarely by cuttings. Seeds should give blooming plants the second year.

abrotanifòlia: a confused name applied correctly to certain dissected-lvd. members of the genera Tanacetum and Chrysanthemum.

abrotanoìdes. Erect, to 15 in., more or less hairy: lvs. bipinnate, green: heads corymbed, white, rays 8–9, about as long as involucre. S. E. Eu.—Differs from *A. atrata* in involucral bracts having pale margins.

ageratifòlia. To 8 in., tufted, silvery-pubescent: lvs. pinnatifid: fls. white. Greece. Var. **Aizoón** (*Anthemis Aizoon*) has lvs. entire or merely toothed.

Agératum. Sweet Y. To 1½ ft.: lvs. oblong, obtuse, to 1 in., rarely to 2 in., long, toothed: fls. yellow, in compact corymbs to 1½ in. across. Eu.

Aizoón: *A. ageratifolia* var.

argéntea. Silvery Y. Less than 1 ft. high: lvs. 3-parted or pinnatifid, silvery-silky-pubescent: fls. white. Dalmatia.—Some of the material cult. under this name is *A. Clavennæ.*

atràta. Per., spreading, to 10 in.: lvs. linear-oblong, to 1 in. long, acutely and somewhat coarsely pinnatisect, segms. glabrous, mucronate: fls. white, in compact infl. to 1 in. across, rays 7–12, margins of involucral bracts dark brown or blackish. Cent. Eu.—**A. Clusiàna** differs in its more finely divided lvs. and smaller heads and is probably not specifically distinct from *A. atrata.*

aùrea: cult. form of *A. tomentosa.*

canéscens: *A. Fraasii* var.

cartilagínea. To 2 ft.: lvs. oblong- or elliptic-lanceolate, to 2 in. long, finely serrate, densely glandular-punctate: fls. white, in loose infl. to 3 in. across, ray-fls. 8–12. Eu. —Resembles *A. Ptarmica,* differing in its broader punctate lvs.

chrysócoma. Low villous per. with very finely pinnatisect lvs. whose segms. are linear-setaceous and crowded terminal corymbs of yellow-rayed heads. Mts. of Macedonia.

cinèrea: *A. Fraasii* var. *canescens.*

Clavénnæ. To 1 ft., tufted, silvery-pubescent: lvs. pinnatifid: fls. white, rays 6–20, in compact heads to ¾ in. across. Eu.—Entire lvd. forms are known.

Clusiàna: see *A. atrata.*

clypeolàta. White-tomentose: lvs. linear-lanceolate, pinnatisect, segms. not deeply incised and usually entire or only toothed: fls. yellow, in dense clusters. Greece.

Eupatòrium: *A. filipendulina.*

filipendulìna (*A. Eupatòrium*). FERNLEAF Y. To 5 ft., stout: lvs. 1–2-pinnately parted: fls. yellow, heads small in rounded clusters 2½–4 in. across. Orient.

Fraàsii. To 16 in., simple, closely silky-tomentose: radical lvs. bipinnate, narrow: fls. white, heads ⅜ in. across, short-stalked in corymbs. Greece. Var. **canéscens** (*A. cinerea*) is gray-canescent throughout and has larger heads.

Fronmuèlleri. Hybrid between *A. abrotanoides* and *A. moschata.*

Grìsebachii: listed name.

Hérba-ròta. To 8 in., aromatic when handled: lvs. oblong to lanceolate, glandular-punctate, finely serrate, numerous on st., those of sterile rosettes obtuse: fls. white, large for size of plant, in loose clusters. Mts., S. Eu.

holoserícea. To 1½ ft., silky-pubescent: lvs. pinnatifid: fls. yellow, rays 4–5, about ½ as long as involucre. Greece.

impàtiens (*A. nitida*). To 3 ft., glabrous: lvs. lanceolate, pinnatifid, glabrous or nearly so: fls. white, rays 7–9, equalling or exceeding involucre. Siberia, E. Eu.

Kélwayi: *A. Millefolium* var.

lanulòsa. Similar to *A. Millefolium* from which it differs in its more woolly sts. and lvs. and in the infl. convex, not flat-topped. Que. to Yukon, south to Okla., Calif. and Mex.

Lèwisii. Hybrid between *A. tomentosa* and *A. argentea,* to 6 in. high having gray woolly pinnatisect lvs. and pale yellow fls.

ligústica. MARJORAM-SCENTED Y. Hairy and glandular, to 30 in., very leafy: lvs. ovate, pinnatifid, lower st.-lvs. with only 3–5 lateral segms.: fls. white, in compound corymbs. Eu., W. Asia.—Differs from *A. Millefolium* in its coarser lf.-segms. and in having the central lf.-axis somewhat toothed.

macedónica: poorly understood plant from Eu., of questionable identity; plants so listed are probably referable to other species here accounted for.

mágna. To 3 ft.: lvs. 1–3-pinnately parted: fls. usually pink, the involucral bracts edged dark brown. Eu.—By some authors referred to *A. ligustica.*

Millefòlium. COMMON Y. MILFOIL. To 3 ft.: lvs. 1–2-pinnately parted: fls. white, but with pink in var. **ròsea.** Eurasia, N. Amer. Var. **Kélwayi** (*A. Kelwayi*) is listed as having magenta-red fls. Var. **rùbra** has dark pink fls.

mongólica: *A. sibirica.*

moschàta. To 6 in., tufted, sts. simple and erect: lvs. glabrous, pectinate-pinnately parted, the segms. obtuse and nearly or quite entire, glandular-punctate beneath: fls. white, heads about ½ in. across. Eu.

nàna. To 6 in., sts. ascending, woolly: lvs. pinnatifid: fls. white, rays 5–8, about ½ as long as involucre. S. Eu.—Probably not in cult., much of the material so listed being *A. Millefolium.*

Neilreìchii: *A. nobilis.*

nítida: *A. impatiens.*

nóbilis (*A. Neilreichii*). To 1½ or 2 ft., white-hairy or nearly glabrous: lvs. 2-pinnate, segms. ovate, toothed: fls. dirty white, rays 3–7, less than half as long as involucre. Eu.

odoràta. To 1 ft., st. little branched, woolly: lvs. 2-pinnate, segms. ovate-oblong, entire: fls. white. S. Eu.

Ptármica (*A. salicifolia*). SNEEZEWORT. To 2 ft.: lvs. linear-lanceolate, glabrous, finely serrate, apex attenuate: fls. white, heads to ⅝ in. across. Eurasia, N. Amer. The var. Pearl, double, is common. Boule de Neige, Perry White and Globe are planted.

pyrenàica. To 2 ft., sts. glabrous or nearly so: lvs. lanceolate, acute, to 3 in. long, serrate, punctate, often pubescent, apex nearly obtuse, not attenuate: fls. white, heads to ¾ in. across, rays 10–15. France, Spain.

ròsea: *A. Millefolium* var.

rupéstris. To 8 in., tufted: lvs. linear-spatulate, to ¾ in. long, entire: fls. white, usually 5–6-rayed, heads to ⅜ in. across. S. Italy.—Allied to *A. Herba-rota,* differing in lvs. of sterile rosettes acute.

salicifòlia: *A. Ptarmica.*

santolinoìdes. To 1 ft., sts. short-woolly matted, much branched: lvs. pinnatisect, about ¼ in. long, the segms. less than ⅙ in. long, densely short-woolly: fls. white, in short-rayed heads about ⅛ in. across. Spain.

sérbica. To 10 in., finely pubescent: radical lvs. clustered, narrow, entire or minutely toothed; st.-lvs. 1½ in. or less long, broad-based, toothed: heads stalked, white, rays large. Balkan region.—Grown often as *A. ageratifolia* and perhaps only a variant of it.

serícea. Botanically a synonym of *A. coarctata,* but plants so listed may be *A. Millefolium.*

setàcea. To 3 ft., pubescent: lvs. 2-pinnatifid, the segms. filiform and often slightly prickly: fls. white or yellowish, in dense corymbs. Eu.

sibírica (*A. mongolica*). To 3 ft.: lvs. lanceolate, toothed or pinnatifid: fls. white, rays 6–8, usually shorter than involucre. Eu., N. Asia.

stricta. Robust, erect, woolly above: lvs. bi- or tri-pinnate: heads white. Balkan region.

tomentòsa. WOOLLY Y. To 1 ft., woolly, mat-forming: lvs. 1–2-pinnatifid: fls. yellow, few-rayed. Eu., Orient, N. Amer. Vars. **álba, aùrea** and **nàna** are listed.

Tournefórtii. To 1½ ft.: lvs. pinnatifid, segms. coarsely dentate and obtuse: fls. pale yellow. Greece.

umbellàta. To 5 in., densely woolly: lvs. pinnatifid, segms. oblong, obtuse, entire or toothed: fls. white, large-rayed. Greece.

Wilczekiàna. To 1 ft., gray-pubescent: radical lvs. oblanceolate and obtuse, double-serrate, 3 in. long; st.-lvs. short, oblong, serrate: heads several in corymb, large, rays white. N. Italy.—Described as a hybrid between *A. Herba-rota* var. *ambigua* and *A. nana.*

ACHÍMENES. *Gesneriaceæ.* Per. mostly branching herbs, 1–2 ft., with thickened, scaly or tuberous roots, grown under glass and sometimes planted out for the showy somewhat gloxinia-like fls. borne in the axils of the lvs., in reds, violet and white, spring and summer; native in trop. Amer. Most of the garden kinds are hybrids or variations from the original species.

After blooming the plants are dried off, the dry tubers being potted and started again in late winter or early spring. Propagated by offsets or division of the rhizomes, sometimes by cuttings.

grandiflòra. Lvs. ovate, toothed, reddish beneath: fls. large, red-purple, often more than 1 in axil. Mex.

Haageàna: *A. longiflora.*

longiflòra (*A. Haageana*). TRUMPET A. Lvs. oval or ovate-oblong, toothed, pale beneath: fls. long-tubed, limb violet-blue, 1 in an axil. Guatemala.—There is a white var.

magnífica: hort. form with violet-blue fls.

pàtens. To 1½ ft.: lvs. ovate-pointed, unequal, serrate, hispid: fls. violet-blue, the tube shorter than limb. Mex.

Swàinsonii: hort. form with mauve fls. spotted blue and throat white.

ÀCHLYS. *Berberidaceæ.* Per. herbs of 2 species in W. N. Amer. and Japan: lvs. of 3 lfts., long-stalked: fls. minute, without petals, borne in dense spikes on leafless scapes.

triphýlla. DEER-FOOT. To 1 ft.: lfts. fan-shaped, to 6 in. across, wavy-toothed: spikes 1 in. long. Woods, B. C. to Calif.—Sometimes planted in rock-gardens and similar places.

ÁCHRAS (*Calocarpum*). *Sapotaceæ.* Evergreen trees grown in trop. Amer. for their edible fr.: lvs. simple, thick, clustered near ends of branchlets: fls. white, gamopetalous, in clusters of 6–12 in the lf.-axils.

Sapotes are grown in the tropics and will not endure frost. They thrive in clay or clay loam soils. Propagated by seeds from which the husk should be removed before planting. The seeds should be only slightly covered and transferred into pots when 6 or 8 inches high.

Sapòta: *Sapota Achras.*

Zapòta (*Lucuma mammosa*). SAPOTE. MARMALADE-PLUM. To 65 ft.: lvs. obovate, to 16 in. long: fls. ½ in. across: fr. to 6 in. long, russet-brown, flesh reddish, with 1 shining brown seed. Cent. Amer. but widely distributed in trop. Amer.

ACHYRÁNTHES. *Amaranthaceæ.* A large group of trop. herbs or subshrubs not known to be in cult. in this country. The materials listed in the trade under this genus belong to *Alternanthera* or *Iresine.*

acuminàta: *Iresine Lindenii.*

aùrea: *Alternanthera Bettzickiana* var.

Bésteri: *Alternanthera Bettzickiana* var.

Bettzickiàna: *Alternanthera Bettzickiana.*

Blárdii: *Alternanthera Bettzickiana* var.

brilliantíssima: *Alternanthera Bettzickiana* var.

Émersonii: *Iresine Lindenii.*

Gíbsonii: *Alternanthera Bettzickiana* var.

Hérbstii: *Iresine Herbstii.*

Líndenii: *Iresine Lindenii.*

Verschafféltii: *Iresine Herbstii.*

ACHYRODES: *Lamarckia.*

ACIDANTHÈRA. *Iridaceæ.* Tender summer-blooming cormous plants somewhat intermediate in appearance between Gladiolus and Ixia; species about 18, in Afr.

Propagation is commonly by means of the abundant spawn or cormels that form about the old corm. Treat as for gladiolus.

bícolor. To 18 in.: fls. long-tubed, drooping, creamy-white with very dark center, 1½–2 in. across. Trop. Afr.

Mùrieliæ: *Gladiolus Murieliæ.*

ACINÈTA. *Orchidaceæ.* Strong epiphytes with large pseudobulbs, plaited lvs., and fls. in pendulous racemes on lateral leafless scapes, the lip 3-lobed. Require hothouse temperatures; for cult. see *Orchids.*

Bárkeri. Pseudobulbs to 6 in. long, bearing 2–4 lvs. up to 26 in. long and 3 in. wide: fls. golden-yellow, the lip spotted with red, about 1½ in. long, in racemes to 18 in. long. Sept.–Nov. Mex., Guatemala.

Húmboldtii: *A. superba.*

supérba (*A. Humboldtii*). Pseudobulbs to over 4 in. long, bearing 3 lvs. to 16 in. long and 2¾ in. wide: fls. reddish-brown spotted with red within, lip yellow or brown-red spotted with purple, about 3 in. across, in racemes to 16 in. long. Venezuela, Colombia, Ecuador.

ACIPHÝLLA. *Umbelliferæ.* A genus of about 30 species of erect and usually spinescent glabrous perennials with thick pinnate lvs. and small fls. in compound spiny-bracted umbels: plants usually diœcious. They are grown in the rock-garden or border.

Colensòi. To 5 ft.: basal lvs. numerous, 1–2-pinnate, to 2½ ft. long, lfts. to 15 in. long and ½ in. wide terminating in long stout spine: fls. white, in narrowly cylindrical panicle, staminate infl. much more lax than pistillate. New Zeal.

Monròi. To 14 in.: basal lvs. 1–2-pinnate, to 9 in. long, oblong-lanceolate, lfts. to 1½ in. long and ⅙ in. wide, usually 4–8 pairs, pungent but not spine-tipped: fls. in compound umbels forming an open panicle. New Zeal.

símilis. To 15 in.: lvs. of 4–10 pairs of narrowly linear lfts. to 3 in. long, apex with short pungent point: fls. white, in compound umbels on stout peduncles. New Zeal.

ACKÀMA. *Cunoniaceæ.* Small trees native in New Zeal., Australia and New Guinea, with opposite pinnate lvs., small unisexual fls. in compound panicles, and fr. a small leathery caps.; one species sometimes grown in S. Calif.

rosæfòlia. To 40 ft.: lvs. of 3–8 pairs of oblong toothed lfts. to 3 in. long. New Zeal.

ACŒLORRAPHE: *Paurotis.*

ACOKANTHÈRA (*Toxicophlœa*). *Apocynaceæ.* Shrubs or small trees, containing strong poisons, sometimes grown under glass and in the open in warm countries for the showy white or pinkish fragrant fls.; native in Afr. Propagated usually by cuttings in early spring.

spectábilis. WINTER-SWEET. Shrub 8–10 ft. or more with long narrow lvs. and clustered slender fls. nearly or about 1 in. long. S. Afr.

venenàta. BUSHMANS-POISON. Lvs. broad and relatively short: fls. smaller. S. Afr.

ACOMASTYLIS: *Geum.*

ACONITE: *Aconitum.* **Winter:** *Eranthis.*

ACONÌTUM. ACONITE. MONKSHOOD. *Ranunculaceæ.* Herbaceous perennials, usually branched, sometimes semi-climbing, with tuberous or thickened roots, delphinium-like foliage, showy hooded fls. in blue, white and sometimes yellow in late summer and autumn; they contain violent poisons; native in north temp. zone.

Aconitums require a rich soil; partial shade is better than full sun as the flowers last longer. They should not be moved until absolutely necessary. They are useful in rear borders and as specimen clumps. Propagated by seed or division of the roots, seeds giving flowers second and third years. The tall slender kinds of the Fischeri group may need staking. The cultivated monkshoods are not clearly differentiated. The hood or helmet is formed of one of the sepals, in which the two upper petals are contained; the other three petals are minute or may be absent.

acuminàtum: *A. paniculatum.*

acùtum: *A. Napellus.*

Anthòra (*A. pyrenaicum*). PYRENEES M. To 2 ft.: segms. of lvs. linear: fls. pale yellow, the rounded helmet produced into short beak. S. Eu. Var. **aùreum** is deeper yellow.

aùreum: *A. Anthora* var.

autumnàle. To 5 ft.: lvs. pedately 5-lobed: fls. blue, lilac or whitish, the helmet closed. N. China.—It is not certain whether the plants cult. under this name really belong here.

Bàkeri. To 2 ft.: lvs. cut into 5–7 deeply divided lobes: fls. dark blue, in a spike-like infl. Colo.

barbàtum: *A. lycoctonum.*

Bárkeri: catalogue name, probably for *A. Bakeri.*

bícolor: probably a form of *A. Fischeri.*

califórnicum: *A. columbianum.*

Cammàrum (*A. exaltatum*). To 4 ft.: lvs. with bluntish lobes: fls. purple, in loose few-fld. panicles, the hood closed. Hungary.

chinénse. To 6 ft.: lvs. cut into 3 toothed or divided lobes: fls. bright blue, the helmet semi-circular. China.

columbiànum (*A. californicum*). To 3 ft.: lvs. cut into 5 toothed or divided lobes: fls. blue or rarely white, the helmet strongly beaked and higher than broad. B. C. to Calif. and New Mex.—Very close to *A. Fischeri* and by some authorities not kept distinct.

cordàtum: confused name.

delphinifòlium. To 1 ft., rarely to 2½ ft.: lvs. 5-lobed, segms. linear: fls. blue, few, rounded helmet produced into a very short beak. Alta. to Alaska.—By some considered a var. of *A. Napellus.*

exaltàtum: *A. Cammarum.*

fèrox. Erect to 6 ft.: lvs. ovate-orbiculate, palmately 5-lobed, segms. ovate-cuneate and incised: fls. pale dirty blue, helmet with short sharp beak, in terminal dense racemes. Himalayas.

Físcheri (*A. sinense*). To 6 ft.: lvs. cut into 3 lobed or notched divisions: fls. blue or white, the helmet about as broad as long and produced into spur-like visor. Asia.—Many garden names are associated with this group which seems to be highly variable.

Howèllii. To 3 ft., sts. weak: lvs. laciniately cut, bearing bulblets in the axils: fls. pale blue. Ore., N. Calif.

japónicum. To 4 ft.: lvs. 2–3-divided, shining dark green: fls. deep blue or violet tinged red, the conical helmet with abruptly pointed beak. Japan.

longiligulàtum: listed name.

lùridum. Erect to 3 ft., sts. simple, few-lvd.: lvs. palmately 5-lobed below the middle, to 3 in. across, segms. 3-divided, coarsely crenate: fls. dull red, helmet with long straight beak, racemes to 1 ft. long. E. Himalayas.

lutéscens. To 2½ ft.: lvs. cut into toothed lobes: fls. pale yellow. New Mex. to Mont. and Ida.

lycóctonum (*A. septentrionale. A. vulparia. A. barbatum*). Wolfsbane. To 6 ft.: lvs. cut into 3–9 broad toothed or lobed divisions: fls. yellow or cream, the conical helmet constricted below the summit. Eu., Siberia.

moldávicum: a synonym or form of *A. lycoctonum.*

Napéllus (*A. tauricum. A. Willdenowii. A. acutum. A. strictum*). To 4 ft.: lvs. 2–3-divided into linear segms: fls. blue, the helmet much broader than high and with beak-like visor. Eu. Very poisonous. Var. **álbum** has white fls. and var. **bícolor** blue and white. Var. **cárneum,** fls. flesh-color. Var. **pyramidàle,** fls. blue late blossoming, but may not differ from type. Var. **ròseum,** with pink fls., is listed. Var. **præcox** is advertised, also **Spárksii** or Sparks var. with dark blue fls.

orientàle. To 4–5 ft., with broad panicle: lvs. palmatifid, the lobes acute: fls. cream-color, helmet long and narrowly cylindrical. Caucasus.

paniculàtum (*A. acuminatum*). To 3 ft.: lvs. cut into 3–7 toothed or divided lobes: fls. blue, the helmet swollen on one side and beaked. Eu.

prӕ̀cox: *A. Napellus* var.

pyramidàle: *A. Napellus* var.

pyrenàicum: *A. Anthora.*

rostràtum: *A. variegatum.*

septentrionàle: *A. lycoctonum.*

sinénse: *A. Fischeri.*

Spárksii: *A. Napellus* var.

Stoerkiànum. The plant in the trade under this name is probably a form of *A. Fischeri.*

stríctum: *A. Napellus.*

taùricum: *A. Napellus.*

thyràicum. To 2 ft., the sts. thickly leaved: lvs. cut into 7 toothed or cut lobes: fls. dark blue. Carpathians.

uncinàtum. To 5 ft., partially climbing: lvs. cut into 3–5 toothed or divided lobes: fls. blue, the helmet about as broad as long and decurved beak. Pa. to Ga. and Wis.

variegàtum (*A. rostratum*). Erect to 6 ft., but usually to 3½ ft.: lvs. palmately 3-lobed, segms. coarsely serrate to laciniate, lower lvs. long-petioled, upper ones sessile: fls. blue to violet or white, in loose panicles, helmet bent forward, higher than broad and without prominent beak. Eu.

Vilmoriniànum. Climbing: lvs. deeply cut into 3 lobed or toothed divisions: fls. deep blue. China.

volùbile. The plant in cult. under this name is probably *A. uncinatum.*

vulpària: *A. lycoctonum.*

Willdenòwii: *A. Napellus.*

Wîlsonii: a form or variety of *A. Fischeri* with violet fls.

ÁCORUS. *Araceæ.* Herbs inhabiting marshy places, having long slender parallel-veined grass-like lvs., and fls. on a greenish spadix which appears to be borne laterally on the scape due to the leaf-like spathe; sometimes planted in bog-gardens; hardy. Propagated by division.

Cálamus. Sweet Flag. To 6 ft.: lvs. to ¾ in. wide: spadix to 4 in. long. Northern hemisphere. Var. **variegàtus** has lvs. striped yellow.

gramíneus. To 1 ft.: lvs. grass-like: spadix to 2 in. long. Asia. Var. **pusîllus** is a dwarf form. Var. **variegàtus** has lvs. striped white.

japónicus variegàtus: *A. Calamus* var. *variegatus.*

ACROCLINIUM: *Helipterum roseum.*

ACROCÒMIA. Gru-Gru. *Palmaceæ.* Monœcious feather-palms, mostly armed, more than 20 kinds in trop. Amer., some of which are planted in Fla., Gulf Coast and S. Calif.: trunk mostly tall, cylindric or swollen: lvs. pinnate, with narrow mostly drooping or curving pinnæ: spadices among the lvs., branched and drooping, with 2 stiff-hairy or prickly spathes; staminate fls. on upper part of branches; stamens 6: fr. rather large, usually 1 in. or more diam., the endocarp or inner shell with 3 pores near middle; outer part ripening into an eggshell-like nearly or quite smooth covering, the mesocarp between the shell and nut soft and usually edible and yielding oil but drying into a tough fibrous mass. See *Palm.*

Two groups or classes characterize the gru-grus. 1. One group holds the petioles on the trunk for several years, the leaf-stalk breaking midway, the persistent bases or "boots" bearing spines; when the petiole-bases finally fall by decay the trunk is nearly or quite unarmed, and is marked by deep rut-like scars; often the bases are as hard as stone. To this group belong *A. sclerocarpa, A. mexicana, A. vinifera.* 2. The other group, most frequently seen under cultivation in the United States, is known by deciduous petioles, the entire leaf usually falling intact, and shallow rings alternating with circles of spines mark the bole; some or nearly all the spines may fall eventually by weathering.

The spathe in Acrocomia is double. The small outer spathe or valve usually falls early and is not observed if the ground is kept clean under the tree. The main inner spathe persists after the fruit is fallen, hanging as a long shell inside which is the spadix or flower-bearing part.

The trees have important uses in their native regions for food, oil, building materials and the making of liquors. What species of Acrocomia may be in cultivation in the United States is not yet well known, but the following are to be expected. In Spanish-speaking West Indies the Acrocomias are known as corozo and corojo, but botanically that name should be reserved for the genus Corozo.

aculeàta. Tall, to 50 ft., bole stout and cylindric or slightly thickened toward top, very spiny, petioles deciduous: pinnæ glabrous, main ones 1–1½ in. broad, more or less glossy above, green or at least not glaucous-blue underneath, rachis bearing spines: main spathe 3 ft. or more long, broad, densely brown-felted and bearing a few scattered spines: fr. depressed-globose to oblate, 1½ in. or more diam. Martinique; glou-glou or gru-gru.

armentàlis (*A. crispa*). Tall, to 40 or 50 ft., bole slender and conspicuously spindle-shaped at maturity, spines disappearing by weathering, petioles deciduous: pinnæ glabrous, 1 in. or less broad, shining green on upper surface and gray or bluish but not glaucous underneath, rachis often nearly or quite unarmed: main spathe 3–5 ft. long and very narrow, tomentose and scantily or not at all spiny: fr. small and very smooth, globose to depressed-globose, 1 in. or a trifle more diam. Cuba, where it is the common corojo.—The specific name is transferred from *Gastrococos armentalis* of Morales, 1865.

críspa: *A. armentalis.*

fusifórmis. Trunk rather slender, to 40 ft. or so, gradually swollen or fusiform in upper part, spiny, petioles deciduous: pinnæ glabrous, about ¾ in. or less broad, glossy above, grayish underneath, rachis spiny: main spathe often 5 or 6 ft. long, broad and heavy, brown-tomentose and mostly spineless unless along edges of dehiscence: fr. depressed-globose, about 1½ in. diam. Jamaica, where it is known as the mackaw-tree.

mèdia. Stout tree to 40 ft. or more, bole cylindrical or practically so, very spiny, petioles deciduous: pinnæ narrow, about ¾ in. or less broad at middle, glabrous and more or less glossy above, glaucous-blue and finely pubescent underneath, rachis spiny: main spathe 3–5 ft. long, broad, brown-tomentose and nearly free of spines: fr. depressed-globose, 1½ in. diam. Puerto Rico, where known as corozo.

mexicàna. Usually a low tree, trunk covered with petiole-bases or boots: pinnæ rather broad, 1 in. or more at middle, nearly-pubescent above, glaucous-blue and hairy-pubescent underneath, rachis bearing many long white-based spines: spathe 3–4 ft. long, broad, brown-tomentose and sometimes with a few spines: fr. depressed-globose, large, 1½ in. diam. S. Mex., where known as coyol.

sclerocárpa. Tree to 30 ft. tall, bole covered with persistent petiole-bases at least until maturity: pinnæ narrow, glabrous above, gray or glaucous and finely pubescent underneath, rachis and petiole tomentose and bearing brownish spines: main spathe 2–3 ft. long, outside covered with short spines: fr. depressed, almost oblate, about 1½ in. diam. Brazil; species confused, and still in doubt.

Totài. Slender tall tree, said to reach 80 ft. in its native regions, bole nearly or quite cylindric, spiny but becoming bare by weathering, petioles deciduous: pinnæ very narrow, mostly ¾ in. or less broad, glabrous and green on both surfaces: main spathe very slender, 4 ft. long and about 3 in. diam. at middle after dehiscence, brown-woolly, spineless: fr. small, smooth and polished, about 1 in. diam., not depressed. N. Argentina, Paraguay, E. Bolivia, where it is known as totai by certain aborigines; apparently little planted within our territory, the trees so named being probably *A. aculeata* and others.

vinífera. Tree to 40 ft., bole slender and long holding the boots, usually cylindric but often tumid at middle, petiole-bases persistent: pinnæ very narrow, about ¾ in. or less broad, sparsely hairy underneath: fr. depressed, mostly more than 1½ in. diam.: supposed to differ from *A. mexicana* in main spathe very long narrow and cylindric, the rachillæ or branchlets of spadix more or less appressed. Nicaragua to Panama; known as corozo and coyal and palma de vino.

ACRÒDON. *Aizoaceæ.* Dwarf succulents allied to Mesembryanthemum, with 3-cornered lvs. having 1 or 2 small teeth on keel near apex; stigmas and fr.-cells 5.

bellidiflòrus (*M. bellidiflorum*). Plant to 3 in.: lvs. to 3 in. long and ¼–⅓ in. wide, recurved-spreading, glaucous: fls. solitary, petals white with a pink stripe, to 1¾ in. across; stigmas plumose.

ACRONÝCHIA. *Rutaceæ.* Trees or shrubs with mostly simple lvs. (of 1 lft.) and white or yellowish polygamous fls. in panicles or cymes; native from trop. Asia to Pacific Isls., one planted in S. Calif.

Baùeri. Tree: lvs. opposite, ovate or obovate, to 4 in. long: fls. very small, pubescent outside: fr. ½ in. diam. Australia.

ACROPERA LODDIGESII: *Gongora galeata.*

ACRÓSTICHUM. *Polypodiaceæ.* Coarse swamp ferns with stout erect rootstocks, often forming massive tussocks; fronds tall, thick leathery and 1-pinnate with the pinnæ entire or obscurely toothed; sporangia borne in a dense mass over the entire under surface of the fertile pinnæ; native in the tropics.

aùreum. Fronds erect, 3–9 ft. high, with only the upper pinnæ fertile. Old and New World tropics.

crinìtum: *Elaphoglossum crinitum.*

danææfòlium (*A. excelsum*). Fronds suberect, 5–13 ft. high, with all or most of the pinnæ fertile. New World tropics.

excélsum: *A. danææfolium.*

ACTÆA. Actea. Baneberry. Cohosh. *Ranunculaceæ.* Herbaceous perennials with compound lvs., small white fls. in showy terminal clusters in spring, and attractive shiny berries in summer and autumn.

They are useful in the rockery, the wild-garden or the border. They also do well in woods or in other shady places. Propagated by seed sown in late fall or in spring; root-division in spring is the best method.

álba: the American plant long known by this name is now treated as *A. pachypoda;* the true *A. alba* of Philip Miller and based on European material is considered synonymous with the older *A. spicata.*

argùta (*A. spicata* var. *arguta*). Similar to *A. rubra* but with smaller nearly spherical berries. Alaska to Calif. and New Mex.

Cimicífuga: *Cimicifuga fœtida.*

japónica: *Cimicifuga japonica.*

pachýpoda (*A. alba* of American authors). White B. To 1½ ft.: lvs. glabrous beneath except for few hairs on veins: fl.-pedicels stout, to ¼ in. long: berries white, or red in var. **rubrocárpa.** S. E. Canada to Ga., La. and Okla.

rùbra. Red B. To 2 ft.: lvs. usually with scattered hairs over lower surface: fl.-pedicels slender, to ⅝ in. long: berries crimson-red, rarely white in var. **neglécta.** Lab. to N. J. west to S. D. and Neb.

spicàta. Herb-Christopher. Black B. To 2 ft.: fls. white or bluish: berries purplish-black. Eu., Japan.

ACTINÈA (*Actinella. Tetraneuris*). *Compositæ.* American herbs with narrow alternate resinous-dotted lvs. and solitary yellow heads of ray- and disk-fls.; pappus of scales; related to Helenium.

acaùlis. Similar to *A. simplex* but foliage silvery-silky. N. D. to New Mex.

fastigiàta (*T. stenophylla*). Per. to 4 in.: lvs. basal, narrow linear-oblanceolate, to 1½ in. long, glabrous: heads about 1 in. across, rays light yellow. Kans. to Tex.

grandiflòra (*Rydbergia grandiflora*). Per. to 1 ft.: lvs. 1-2-pinnatifid into linear segms.: heads 2 in. and more across, the yellow rays to ¾ in. long. Mts., Mont. to New Mex.

herbàcea. Per. to 8 in.: lvs. basal, linear-spatulate, to 3 in. long, hairy: heads 2 in. across. Ont. to Ill.

linearifòlia (*T. linearifolia*). Ann. or bien. to 15 in., branched: basal lvs. spatulate, st.-lvs. narrowly linear, to 1½ in. long: heads to ¾ in. across, many, on slender peduncles. Kans. to La., west to New Mex.

símplex. Per. to 10 in.: lvs. basal, linear-spatulate, to 3 in. long, becoming glabrous: heads to 1¾ in. across, rays golden-yellow veined orange. S. D. to Colo.

stenophýlla: *A. fastigiata.*

ACTINELLA: *Actinea.*

ACTINÍDIA. *Dilleniaceæ.* Shrubby twining vines grown for their attractive foliage and *A. chinensis* also for the edible berries: lvs. alternate, long-stalked: fls. in axillary clusters or sometimes solitary, cup-shaped, usually white: native in Asia. The species here listed are hardy N. with the exception of *A. chinensis* and perhaps *A. coriacea.*

Actinidias grow equally well in sunny and half-shady locations. Propagated by seeds, sown in spring; also by cuttings of half-ripened wood in summer or of hard wood under glass; or even by layers. They are good vines for trellises and arbors.

argùta (*A. volubilis*). Bower A. Tara-Vine. Lvs. to 6 in. long: fls. white, brownish at base, ¾ in. across, anthers dark purple: fr. greenish-yellow, sweet. Japan, Korea, Manchuria.

chinénsis. Yangtao. Lvs. to 5 in. long, white-tomentose beneath: fls. white turning yellow, to 2 in. across: fr. with gooseberry-like flavor. China.

coriàcea. Lvs. oblong, to 4 in. long, glabrous: fls. reddish, small: fr. spotted. China.

Kolomíkta. Lvs. often variegated with white or pink, to 5 in. long: fls. white, ¾ in. across, solitary: fr. yellow or greenish. Japan, Manchuria, China.

lanceolàta. Shrub, branches somewhat pendent: lvs. lanceolate, to 3 in. long, acuminate, white-tomentose beneath, margins with mucronate serrations: fls. greenish, 3–6 in axillary cymes. China.

polýgama. Silver-Vine. Lvs. to 6 in. long, usually variegated with white or yellowish: fls. white, ¾ in. across, solitary: fr. yellow, bitter. Japan, Korea, Manchuria, China.

purpùrea. Lvs. oblong or elliptic, to 4 in. or more long, dentate, glabrous underneath unless on midrib: fls. about ½ in. across: fr. purple, to 1 in. long, sweet. China.

volùbilis: *A. arguta.*

ACTINOLEPIS CORONARIA: *Baeria aristata.*

ACTINÓMERIS. *Compositæ.* Tall sunflower-like branching native perennials, adapted to wild-garden, hardy border or amongst shrubbery. The plants resemble Helianthus and Verbesina, differing from the former in the flat or winged achenes and from the latter in having neutral ray-fls. rather than pistillate ones. Cult. as for Helianthus, propagated by seed or division.

alternifòlia (*A. squarrosa*). To 8 ft.: lvs. lanceolate-oblong, to 10 in. long, acuminate, serrate, base somewhat cuneate: fls. yellow, usually 1-2 in. across, heads many in corymbs, ray-fls. irregular, 2–10. E. N. Amer.

squarròsa: *A. alternifolia.*

ACTINOPHLŒ̀US. Cluster Palms. *Palmaceæ.* A few neat unarmed monœcious small spineless feather-palms of New Guinea and neighboring islands, distinguished from Ptychosperma (with which it has been united) by the homogeneous rather than ruminate albumen in the seed which is also very deeply sulcate, lvs. often irregularly pinnate and the segms. or pinnæ long or elongate, and the clustered or multiple trunks. See *Palm.*

hóspitus: *A. Macarthuri* var.

Macárthuri (*Ptychosperma* and *Kentia Macarthuri*). Handsome palm with few or several slender ringed green trunks to 10 ft. and more high and graceful spreading and curved bright green rather soft foliage that is commonly transversely mottled: lvs. 2–3 ft. long, lighter colored underneath; pinnæ to 40 or more, 6–12 in. long, with prominent secondary ribs, truncate and erose or jagged and fingered at apex, upper ones opposite: infl. below the lvs., short but branched: fr. ½–¾ in. long, cartridge-shaped, wrinkled and furrowed in drying.—Does well in S. Fla. in partial shade; a good palm as a tub specimen under glass. Var. **hóspitus.** Differs from *A. Macarthuri* in its much narrower lateral lfts. which are usually under

1½ in. broad and their sides more nearly parallel, without much transverse mottling.—Planted in S. Fla.

Nicolài (*Romanovia Nicolai*). Much like *A. Macarthuri* but young lvs. and spathe purple or purple-red: pinnæ sometimes but not commonly more than 2 in. broad, midrib very prominent.—Planted in Cuba; to be expected in S. Fla.

Sanderiànus (*Kentia Sanderiana*). Ornamental plant with many strongly ringed sts., to 10 ft. or so: lvs. 2–3 ft., gracefully spreading or arching on the mature plant; pinnæ more slender and narrow than in *A. Macarthuri*, the lower ones very narrow and long-acuminate, others oblique and erose or the narrow terminal ones truncate or barely so: fr. much as in the above.—An attractive delicate pot-plant; probably not now in cult. in N. Amer. outside testing places.

ACTINÓSTROBUS. *Cupressaceæ.* One species allied to Callitris but differing in having numerous scale-like bracts at base of cone. **A. pyramidàlis** (*Callitris Actinostrobus*). Shrub, densely branched: lvs. scale-like or sometimes needle-like: cones of 6 scales, ⅗ in. across. W. Australia.

ACTINÒTUS. *Umbelliferæ.* A small genus of Australian herbs, one grown for cutting. **A. Heliánthi.** Flannel-Flower. Erect per. to 2 ft., woolly-tomentose: lvs. 2–3-pinnate, segms. linear-oblong: fls. minute, apetalous, forming dense head-like umbels subtended by radiating involucre to 4 in. across composed of 10–18 white-woolly petal-like bracts.—Not hardy N., but may be treated as an annual.

ACUAN: *Desmanthus.*

ACUTE: sharp; ending in a point.

ÀDA. *Orchidaceæ.* Two epiphytic orchids of which one is sometimes grown in a cool greenhouse. **A. aurantìaca.** Pseudobulbs to 4 in. long, bearing 1–3 lvs. to 9 in. long and ½ in. wide: fls. orange- or cinnabar-red, 1½ in. long, with narrow sepals and petals and much shorter 2-keeled lip, in arching 5–13-fld. racemes about as long as lvs. Nov.–May. Colombia.

ADAM-AND-EVE: *Aplectrum.*

ADAMS-NEEDLE: *Yucca filamentosa.*

ADANSÒNIA. *Bombacaceæ.* Big trees of Afr. and Australia with digitately compound lvs., large solitary pendulous fls. and woody frs.; planted as a shade tree in the tropics. The bark yields fiber and the fr. is said to be edible, known as "monkeys-bread."

digitàta. Baobab. Monkey-Bread Tree. To 60 ft., developing a relatively short soft trunk to 30 ft. in diam. and a spread of branches of 30 ft.: lfts. to 5 in. long: fls. white, 6 in. across, often in advance of lvs., on long stalks, the petals soon rolling back exposing the purplish stamens: fr. to 1 ft. long, densely tomentose. Trop. Afr., where it has many uses.

ADDERS-TONGUE: *Erythronium.*

ADELIA: *Forestiera.*

ADELOCÀRYUM. *Boraginaceæ.* Per. or bien. herbs with alternate simple lvs. and bell-shaped fls. in terminal cymes; rarely grown in the flower-garden in warm countries. Differs from Cynoglossum in surface of nutlet concave and not flat or convex.

cœlestìnum (*Cynoglossum* and *Paracaryum cœlestinum*). To 5 ft., somewhat hairy: lvs. broadly ovate, to 1 ft. long, upper ones becoming smaller: fls. blue, ⅓ in. diam., in branched racemes or cymes, nearly sessile. India.—The plant cult. under this name is likely to be *Cynoglossum Wallichii.*

ADENANTHÈRA. Bead-Tree. *Leguminosæ.* Trees, allied to Mimosa, with compound lvs., long slender racemes of small yellow or white fls., and fr. a narrow pod with bright colored seeds; native in Old World tropics. One species grown for the ornamental seeds, under glass or in the open far S. Propagated by seeds which have been soaked in hot water.

pavonìna. Red Sandalwood Tree. Peacock Flower-Fence. Lfts. about 13, oblong or ovate, to 1½ in. long: fls. white and yellow, in racemes to 6 in. or more long: pods to 9 in. long, after dehiscing much coiled; seeds red, lens-shaped, "Circassian seeds," sometimes used as beads. Trop. Asia and Afr.

ADENOCALÝMNA. *Bignoniaceæ.* S. American climbing shrubs with 2 lfts. and a terminal tendril, or 3 lfts., showy funnelform fls. in racemes or panicles, and long woody frs.; grown under glass or in the open only in warm regions, but little planted in U. S. Propagated by cuttings.

allìàceum (*Bignonia alliacea*). Lvs. of 2 oblong lfts. to 6 in. long: fls. whitish, 2 in. long, onion-scented, in 5–8-fld. racemes. Guiana.

ADENOCÁRPUS. *Leguminosæ.* Low shrubs with small alternate lvs. of 3 lfts., yellow papilionaceous fls. in terminal racemes, and fr. a flat pod; native in S. Eu., Afr. and Asia Minor. Grown under glass or in the open in the S. Propagated by seeds, by cuttings of green wood, and by layers.

foliòsus. Branches and lvs. pubescent, densely crowded: fls. abundant in many-fld. racemes; calyx pubescent. Canary Isls.

viscòsus. Evergreen: branches pubescent: lfts. linear-oblong: calyx glandular. Teneriffe.

ADENÓPHORA. Ladybell. *Campanulaceæ.* Erect per. herbs with fleshy roots and fls. usually in shades of violet, much confused with Campanula, from which they differ in the presence of a tubular or cup-like disk surrounding the base of the style underneath the expanded filaments of the stamens. There is little in the external appearance of the plants to distinguish them from regular bellflowers. In the dried pressed fl. the disk can often be distinguished through a lens when the blossom is held to the light. Mostly montane; native in Siberia, China and Japan and a few of them in Eu. Summer bloomers in cult. Many of the plants grown as Adenophora are *Campanula rapunculoides* or related species.

Ladybells are handled the same as campanulas; propagated by seeds or by cuttings in spring. Roots should be disturbed as little as possible. Some of the species are useful in rock-gardens.

Bulleyàna. Sts. puberulent, to 3 ft. or so tall, branched at top: lvs. on st. oblong-ovate to lanceolate, serrate, to 3 in. long: fls. close together on upper part of branches, sometimes 3 together, dark lavender, about 1 in. long. W. China.

chinénsis: *A. sinensis.*

commùnis: *A. lilifolia.*

confùsa (*A. Farreri*). Erect and stiff to 3 ft., slightly pilose to glabrous: st.-lvs. many, sessile or nearly so, rhomboid-ovate to lance-ovate, irregularly denticulate or crenate: fls. deep blue, nearly 1 in. long and lobed ⅓ to base, in a slightly branched panicle; style somewhat exserted. China.

cordàta: plants seen in cult. under this name were *Campanula Grossekii.*

denticulàta: *A. tricuspidata.* Plants grown under the name *A. denticulata* are likely to be Campanulas.

diplodónta. To 3 ft. tall, pubescent: lvs. on st. ovate, narrowed at base, doubly or unequally serrate, to 3 in. or more long, hirsute underneath: fls. in racemes or panicles, sometimes twin, narrowly bell-shaped, nearly 1 in. long, lilac to white, style long-exserted, calyx-lobes very narrow. Yunnan, W. China.—*A. Bulleyana* may be grown under this name.

Fárreri: *A. confusa.*

Lamárckii. Glabrous, to 2 ft.: lvs. on st. ovate-lanceolate, 2 in. long, sharply serrate, paler on under surface, ciliate on margins: fls. many in long racemes, bluish, ½ in. long and broad. Altai region, Siberia.

latifòlia. Sts. strict and simple, 1 ft. or more, glabrous, with remotely scattered foliage: lvs. on st. verticillate, ovate-oblong, 2 in. long, serrate, glabrous except margin perhaps ciliate: fls. 2-3 on a peduncle or sometimes single, bluish, ¾ in. or less long. Siberia.—Plants grown under this name are likely to be Campanulas.

lilifòlia (*A. suaveolens. A. communis. A. liliflora* erroneously). Sts. thick, to 4 ft. or so tall, from a thick fusiform root, glabrous: root-lvs. round-ovate and cordate, lvs. on st. ovate-lanceolate and coarsely serrate, to 3 in. long, glabrous or nearly so: fls. sweet-scented, paniculate, corolla about ½ in. long, bluish or whitish-blue. Cent. Eu., Siberia.—The specific name is commonly spelled *liliiflora* but not so by Linnæus in Campanula. In gardens confused with Campanulas.

marsupiiflòra. Slender, erect, 2–3 ft., branched: lvs. mostly on lower part of sts., linear to lance-linear, long-pointed, entire or nearly so, 2–3 in. long: fls. narrow-bell-shaped, on slender pedicels, bluish, style long-exserted. Siberia.—Plants in cult. under this name may be Campanulas.

megalántha. Sts. glabrous, to 2 ft.: lvs. on st. very narrow at base, obovate or obovate-elliptic, to 4 in. long, coarsely serrate, hairy on upper surface and setulose on nerves underneath: fls. racemose, large, nearly 2 in. long, deep rich bluish, style not exserted. W. China. Var. **álba,** white-fld., is listed.

niepénsis: listed name.

nikoénsis. Small, scarcely 1 ft. high, glabrous: lvs. on st. lanceolate, sessile, alternate, glaucous underneath, about 1 in. long: fls. few in simple spikes, bluish, about ¾ in. long, style included. Japan.

ornàta. Sts. 2–4 ft., puberulent or glabrous: lvs. on st. sessile, obovate to elongated-obovate, strongly serrate, to 2½ in. long, pubescent or glabrous: fls. paniculate or racemose, 1 in. long, deep bluish, style included. W. China.

palústris. Sts. 2–3 ft., glabrous, densely leafy: lvs. on st. thick, sessile, shining, oblong or orbicular-ovate, crenate-dentate: fls. in spike-like racemes, broadly bell-shaped, bluish, about ¾ in. across, style little if at all exserted. E. Asia.

polymórpha. To 3 ft., sts. branched, at least midway: lvs. on st. narrow-ovate to broad-lanceolate, sharp-pointed and strongly toothed, sessile and narrowed to base: fls. violet to purple, broad-bell-shaped, 1 in. across. Russia to Japan, in several forms or vars.

Potanìnii. Sts. weak or nearly scandent at base but becoming erect, to 3 ft. and more, from a thick root, pilose: lvs. on st. ovate-lanceolate to lanceolate, to 2 in. long, strongly few-toothed to nearly entire, hairy: fls. in simple panicles, broad-bell-shaped, about ¾ in. long and somewhat broader, violet, style exserted. W. China.—Plants cult. under this name need verification.

remotiflòra. Sts. glabrous, erect 2–3 ft.: lvs. on st. petioled, cordate-ovate or narrower, acuminate, serrate or dentate: fls. loosely racemose or paniculate, violet, narrowly bell-shaped, style exserted. Japan.

sinénsis (*A. chinensis*). Sts. erect, 1 ft. and more, glabrous or pubescent: lvs. on st. sessile, ovate-lanceolate, to 2 in. long, sharply serrate, glabrous on both surfaces but paler in color underneath: fls. racemose or paniculate, trumpet-shaped, about 2 in. long, style exserted. China.

stricta. Plant of strict habit, whitish-hairy on upper sts. and lvs., the latter sessile and elliptic-ovate or obovate, 2–3 in. long, short-pointed or nearly obtuse, serrate: fls. in dense spikes, violet, pubescent on outside, bell-shaped, style little if at all exserted. Japan.

stylòsa. Sts. simple, about 1 ft. tall, glabrous: lvs. on st. obovate to ovate and acuminate, 1½ in. long, serrate, or the lower ones sinuate, glabrous: fls. in long lax racemes, corolla less than ½ in. long, bluish, style equalling corolla or sometimes exserted. Siberia.—Plants seen in cult. have been Campanulas.

suavèolens: *A. lilifolia.*

Takèdai. Very slender, weak, less than 2 ft., glabrous: lvs. on st. few, thin, puberulent near margins on upper surface, glabrous underneath, linear, serrulate, ¾ in. or less long: fls. about 1 in. long, bell-shaped, violet-blue, style scarcely exserted. Japan.

Tashiròi. Low, glabrous, 2–10 in. tall, sts. often slender: lvs. on st. few, subsessile or petiolate, elliptic, ovate or obovate-oblong, coarsely serrate, about ¾ in. or less long: fls. few or solitary, ¾ in. or less long, violet-blue, style exserted. Japan.

tricuspidàta (*A. denticulata*). Sts. simple, about 1 ft. tall, glabrous, leafy: lvs. on st. ovate-lanceolate, 1½ in. or less long, somewhat hairy on margins: fls. in long lax racemes, bell-shaped, bluish, less than ½ in. long and broad, style not exserted. China.

verticillàta. Tall and slender, 2–3 ft., nearly or quite simple, sts. glabrous: lvs. on st. 3–6 at each insertion, ovate-lanceolate, to 2 in. and more long, dentate: fls. usually few or several at a node, sometimes on slender branchlets, small and narrow, about ⅛ in. long, style exserted. Siberia, China, Japan.—Variable; plants grown under this name may be Campanulas. It is an open grower, with fls. small for size of plant.

ADENOROPIUM: *Jatropha.*

ADENÓSTOMA. Chamiso. *Rosaceæ.* Evergreen shrubs with small needle-shaped and heath-like lvs., white fls. in terminal panicles, stamens 10–15 in 2's or 3's, pistil single, style not exserted, and fr. an achene.

Planted somewhat in their native or similar regions. They need a sunny position and well-drained soil. Propagated by greenwood cuttings or by seed in the spring.

fasciculàtum. To 10 ft.: lvs. about ¼ in. long: panicles to 4 in. long. May–June. S. Calif., Lower Calif.—Herbage somewhat resinous and sweet-smelling.

ADHÁTODA. *Acanthaceæ.* Trop. shrubs with opposite entire lvs., tubular 2-lipped fls. in terminal spikes, and capsular frs.; cult. as for Jacobinia, in mild climates.

Vásica. To 8 ft. or more: lvs. oval, to 8 in. long, pubescent: fls. white striped with red, to ½ in. across, in spikes to 3 in. long. India to Ceylon.

ADIÁNTUM. Maidenhair-Fern. *Polypodiaceæ.* Dainty shade-loving ferns with shiny black or purplish stipes and thin delicate fronds or lf.-blades either simple or divided into fan-shaped segms.; sori borne at edges of fronds; mostly of trop. Amer., in many species, a few in temp. N. Amer. and 1 native as far north as Que. and Alaska.

The greenhouse species require a temperature of 60–65°, a fairly moist atmosphere, and should be protected from full exposure to sun; soil of good loam and leaf-mold. The native species may be grown in the open in places like their native habitat, protected from wind and roots covered in winter.

acùtum: a form or derivative of *A. tenerum.*

ǽmulum: *A. cuneatum.*

affine (*A. Cunninghamii*). Fronds to 15 in. long and 9 in. wide, 2-pinnate, segms. to 1 in. long, the stipes black and shining. New Zeal.

Bárdii: a form of *A. cuneatum* with fronds to 2 ft. long.

Baùsei: hort. form of *A. tenerum.*

béllum. Bermuda M. Fronds tufted, bipinnate, to 1½ ft. long, the segms. to ¾ in. long. Bermuda.

Capíllus-Véneris (*A. Fergusonii*). Southern M. Venus-Hair. Slender, erect, spreading, to 1½ ft. high: fronds 2–3-pinnate, segms. to 1 in. across, very variable. Temp. and trop. Amer., warmer parts of Old World. Var. **daphnìtes** has simpler fronds.

cardiochlǽnum: *A. polyphyllum.*

caudàtum. Trailing M. Fronds to 1 ft. long, 1-pinnate, segms. to ¾ in. long, stipes short, brownish, hairy, rooting at apex. Old World tropics.

concínnum. Fronds 2–3-pinnate, to 1½ ft. long and 9 in. broad, on stout black stipes. Mex. to Brazil. Var. **làtum** is stiff and upright with much larger fronds.

Croweànum: *A. cuneatum* var.

cuneàtum (*A. æmulum*). Delta M. Fronds 3–4-pinnate, to 15 in. long and 9 in. wide, segms. to ½ in. across. Brazil. There are many forms as var. **Chárlottiæ**; var. **Croweànum** (*A. Croweanum*), large, vigorous, hardy; var. **gracíllimum** (*A. gracillimum*), fronds finely divided; var. **grándiceps,** Tassel M., tassel-like growths at ends of fronds; var. **variegàtum** has white-striped segms. Vars. **defléxum** and **disséctum** are also listed.

Cúnninghamii: *A. affine.*

curvàtum. Fronds forked, the main divisions again once or twice forked, on shining stipes. Brazil.

decòrum. Rather stiff, erect, stipes stout, brown-black: fronds 10 in. long, half or more as broad, dull green. Peru.

diáphanum. Fronds to 6 in. long, simply pinnate or usually 2-pinnate at base, segms. to ½ in. long. Asia to New Zeal.

élegans: hort. form of *A. decorum.*

excìsum. Fronds to 1 ft. long and 4 in. wide, 2–3-pinnate, segms. with lobed margins. Chile. Var. **multífidum** has more finely cut fronds.

farleyénse: *A. tenerum* var.

Fégusonii: *A. Capillus-Veneris.*

formòsum. Australian M. Fronds to 2 ft. long and two-thirds as broad, usually 3-pinnate, segms. to ¾ in. long, stipes rough. Australia.

fragrantíssimum: hort. form of *A. cuneatum.*

gloriòsa Lémkesii: an improved form of *A. tenerum* var. *farleyense*, with larger fronds tinted pink when young.

gracíllimum: *A. cuneatum* var.

hispídulum. Fronds forked at base, 2–3-pinnate, segms. to ⅔ in. long, rachis hairy and rough. Old World tropics.

hýbridum: a hort. name of doubtful status; has been referred to *A. cuneatum.*

Làthomii: hort. form of *A. tenerum.*

LeGrándii: a form of *A. cuneatum* var. *gracillimum.*

lunulàtum. Walking M. Fronds 1 ft. long, rooting at apex, simply pinnate, on shiny black stipes. Tropics.

macrophýllum. Fronds 1 ft. long, simply pinnate, segms. to 2 in. long. Trop. Amer.

magníficum: form of *A. tenerum.*

Moòrei. Fronds to 15 in. long, 2–3-pinnate, segms. to ½ in. long, deeply lobed. Peru.

múndulum: a form of *A. cuneatum.*

O'Brìenii: *A. cuneatum* form.

pedàtum. American M. Hardy: fronds forked, nearly orbicular, to 1½ ft. across, segms. oblong, stipes purplish. Woods, N. Amer.

peruviànum. Fronds 1 ft. long, simply pinnate, segms. to 2 in. long. Peru.

polyphýllum (*A. cardiochlænum*). Fronds 2–3-pinnate, segms. to 1 in. long, the stipes smooth and polished. S. Amer.

príinceps: hort. form of *A. tenerum.*

rhodophýllum: hort. form of *A. tenerum.*

Sánctæ-Catharìnæ: a form of *A. trapeziforme* with deeper lobes.

scùtum: a form of *A. tenerum.*

Siebréchtii. Supposed to be a cross between *A. decorum* and *A. Williamsii.*

ténerum. Brittle M. Fan M. Erect, to 3 ft.: fronds 3-pinnate, segms. ¾ in. across, deeply notched, on stout shining brown-black stipes. Trop. Amer. Var. **farleyénse** (*A. farleyense*). Farley or Barbados M. Fronds to 3 ft. long and 2 ft. wide, infertile, drooping, delicate green sometimes rose-tinted, segms. deeply cut. The race of *farleyense* known as Gloriosa produces indusia and is said to be fertile.

trapezifórme. Fronds to 1½ ft. or more long, 2-pinnate, segms. trapezoidal, to ¾ in. across. Trop. Amer.

versaillénse: hort. form of *A. cuneatum.*

Victòriæ: hort. form of *A. tenerum.*

Wágneri: hort. form of *A. decorum.*

Weigándii: a form of *A. decorum* with larger less cuneate segms.

Westleyànum: a hort. name of doubtful status.

Wílliamsii. Fronds triangular, nearly 1 ft. long, segms. nearly semicircular, 3–4-lobed. Peru.

Wrìghtii: probably a form of *A. cuneatum.*

ADICEA: *Pilea.*

ADIPERA: *Cassia.*

ADLAY: see *Coix.*

ADLÙMIA. *Fumariaceæ.* One attractive bien. vine native in E. N. Amer. and sometimes planted for ornament. It thrives in a cool damp place protected from sun and wind, as in a thicket. Propagated by seeds in spring, and often spontaneous thereafter. **A. fungòsa** (*A. cirrhosa*). Climbing Fumitory. Mountain Fringe. Allegheny-vine. Lvs. 3-pinnate, fern-like, the petioles holding st. to the support: fls. white or purplish, dicentra-like, ½ in. or more long, in drooping axillary panicles: fr. an oblong caps.

ADONÍDIA. *Palmaceæ.* One attractive monœcious unarmed ringed feather-palm of the Philippines where it is cult., now planted in S. Fla.: spadices borne below the lf.-sheaths, at top of trunk, short-peduncled, branched; fls. in 3's, a pistillate between 2 staminate; stamens numerous: fr. drupe-like with thin pulp, elliptic-ovoid, upwards of 1 in. long, bright red and showy, in clusters; seed 1, with ruminate albumen. **A. Mérrillii** (*Normanbya Merrillii*). Manila Palm. Rather slender single trunk, 15–20 ft.: lvs. 6 ft. or so long, strongly arching; pinnæ many and closely placed, 24–30 in. long and to 2 in. broad, bifid at apex, 1-ribbed and prominently nerved at margins.

ADÒNIS. Pheasants-Eye. *Ranunculaceæ.* Hardy herbaceous perennials and annuals with alternate finely dissected lvs. and solitary terminal red or yellow fls.; native in temp. Eu. and Asia.

A few are grown in the border and rock-garden and sometimes in the front rows of margins, the annuals in flower-gardens. Cultivation simple as any soil is satisfactory and either sunny situations or partial shade. Both the annuals and perennials may be propagated by seed sown in the spring or fall; root-division in the spring may be used for perennials.

æstivàlis. Summer A. Ann. to 1½ ft.: fls. crimson, to 1½ in. across. June–July. Cent. Eu. Var. **citrìna,** fls. citron-yellow.

aléppica. Ann. to 1 ft.: fls. red, to 2 in. across. Syria.

amurénsis. Per. to 1½ ft.: fls. golden-yellow, varying to white and pink, 2 in. across. Mar. Manchuria, Japan. Sometimes double.

ánnua (*A. autumnalis*). Autumn A. Flos A. Ann. to 2 ft.: fls. deep red with darker center, about ¾ in. across. June–Sept. Cent. Eu. to W. Asia.

autumnàlis: *A. annua.*

chrysocyàthus. Per. to 1¼ ft.: fls. golden-yellow, to 2½ in. across. June–July. Himalayas.—Differs from *A. pyrenaica* in the numerous and much smaller achenes of the fr.

flámmea. Ann. to 1½ ft.: fls. bright scarlet, sometimes with black spot at base, to 1¼ in. across. May–July. Eu., W. Asia.

pyrenàica. Per. to 1 ft.: fls. yellow, smaller than *A. vernalis.* June–July. Pyrenees.—Differs from *A. vernalis* in the lower lvs. not being reduced to scales.

vernàlis. Spring A. Per. to 1½ ft.: fls. yellow, to 3 in. across, early spring. Eu. A white form, **álba,** and a double-fld. var. are in cult.

ADOPOGON: *Krigia.*

ADÓXA. *Adoxaceæ.* One little per. herb with tuberous roots, native in N. N. Amer., N. Eu. and N. Asia and sometimes grown in the rock-garden. **A. Moschatéllina.** Musk-Root. To 6 in.: lvs. ternately compound into ovate 3-parted segms.: fls. green, small, in heads to ⅓ in. across, above the foliage: fr. a small green drupe.

ADOXÀCEÆ. Moschatel Family. Only one genus, Adoxa, of one species: fls. gamopetalous, with wheel-shaped 4–6-lobed corolla, 8–12 stamens, and 3–5-celled ovary.

ADROMÍSCHUS. *Crassulaceæ.* Succulent herbs distinguished from Cotyledon by the small tubular erect fls. in spike-like racemes terminating the stout bracted st.; S. Africa.

caryophyllàceus: botanical status uncertain.

clavàtus: hort. name.

clavifòlius. Per. to 6 in., with short sts. having aërial roots: lvs. ovate-lanceolate or spatulate, to 1½ in. long and ⅓ in. thick, indistinctly spotted: fls. greenish tipped with red, ½ in. long.

Coòperi (*Cotyledon Cooperi*). A little plant to 12 in., scarcely caulescent: lvs. 5–6 near base, spatulate, 2 in. long, spotted: fls. 6–10, red and greenish, tubular, about ⅝ in. long.

cristàtus. Per. to 10 in., with stout st. densely beset with short aerial roots: lvs. and sts. pubescent; lvs. wedge-shaped, undulate-dentate at apex, petiolate, to 1 in. long: fls. ½ in. long.

hemisphǽricus. Per. to 14 in., with short leafy st.: lvs. orbicular or obovate, flat above, convex on back, 1–2 in. long, 1–1½ in. wide.

maculàtus. Per. with flat suborbicular lvs., gray-green heavily blotched with dark red-purple.

rhombifòlius. Per. with flat gray-green scaly lvs., 2–3½ in. long, 1½–2 in. wide.

rhomboídeus: hort. name.

ADVENTITIOUS: foreign; said of a plant introduced but not yet naturalized or established; applied also to buds and shoots that arise otherwise than in the normal order or place.

ÆCHMÈA (*Hoplophytum*). *Bromeliaceæ.* Epiphytic herbs from S. Amer. with stiff lvs. in a basal rosette and yellow or red fls. borne in spikes, panicles or racemes with often colored bracts; grown for ornament in the greenhouse. For cult. see *Bromelia.*

Bárleei. To 3½ ft.: lvs. to 3 ft. long, sword-shaped, pale green, marginal spines to ¼ in. long: fls. pale yellow, subtended by red bracts to 3 in. long. Brazil.

calyculàta. To 1 ft.: lvs. to 1 ft., margins denticulate, rounded tip cuspidate: fls. bright yellow, in globose heads. S. Amer.

díscolor: *Æ. fulgens* var. or *Æ. miniata* var.

dístans: *Hohenbergia distans.*

fasciàta (*Billbergia rhodocyanea*). Lvs. to 2 ft. long, toothed, lined and marbled with white on back: fls. pink, with pale red bract-lvs., in globose heads. Brazil.

fúlgens. Lvs. to 16 in. long and 3 in. wide, with small teeth: fls. red tipped with blue, in panicles branched below and simple above. Brazil. Var. **díscolor** has lvs. brownish or violet-red beneath.

Marìæ-Reginæ. Lvs. to 3 ft. long and 4 in. wide, prickly-margined: fls. red tipped with violet, in dense spikes to 1 ft. or more long, the bract-lvs. brilliant crimson. Costa Rica.

miniàta. Lvs. with many close-set teeth: fls. red with blue petals, in branched panicles much longer than lvs. Brazil. Var. **díscolor** has lvs. purplish or brownish on back.

Ortgièsii. Lvs. to 1 ft. long and ¾ in. wide, prickly-margined: fls. red with straw-colored bracts, borne on short spikes. Brazil.

polystàchya. Lvs. to 2 ft. long and 1½ in. wide, prickly-margined: fls. violet with prominent bracts, in erect panicles. Brazil.

speciòsa minùta is a listed name of unknown botanical standing.

Thibautiàna: hort. name.

tinctòria. Plant with ensiform lvs. strongly recurved, upper two-thirds of margin with coarse blackish spinular teeth to ¼ in. long, lower third entire: fls. many in erect infl., small and yellow in more or less dense heads, subtended by red or green floral bracts on a densely white-woolly scape. Brazil.

Veìtchii. To 1 ft.: lvs. serrate, spotted: fls. pale greenish-yellow, subtended by larger bright red serrate bracts. S. Amer.

viminàlis: listed name of unknown botanical standing.

Weilbáchii. To 1 ft.: lvs. short: fls. blue and red on a red-stemmed scape. S. Amer.

ÆGLE. *Rutaceæ.* Only one species, the BAEL FRUIT of India, **Æ. Mármelos.** Small tree with lvs. of 3 ovate lfts. and greenish-yellow frs. 4–6 in. across, having a very hard shell and fragrant mucilaginous edible pulp. The pulp is used in making drinks and also has medicinal value. Propagated by seeds and suited to any good soil; may be grown in the warmer citrus regions, but little planted in the U. S. *A. sepiaria* is *Poncirus trifoliata.*

ÆGLÓPSIS. *Rutaceæ.* One species, **Æ. Chevalièri,** in swamps near the sea in trop. W. Afr., grown experimentally in this country as a possible stock for Citrus: spiny tree or large shrub with simple persistent lvs., small fls. in clusters and bearing 10 stamens, and globose or somewhat pear-shaped usually 6-celled whitish frs. ½–¾ in. diam. with a fragrant pulp or mucilage.

ÆGOPÒDIUM. *Umbelliferæ.* Coarse per. herbs with creeping rootstocks, biternate lvs., yellow or white little fls. in compound umbels; 2 species in Eu. and Asia. The variegated form is commonly planted for edgings and mats in shady places. Propagated by division.

Podagrària. GOUTWEED. BISHOPS-WEED. To 14 in.: fls. white. June. Eu.; nat. in N. Amer. Var. **variegàtum** has lvs. margined with white.

ÆÒNIUM. *Crassulaceæ.* Succulent plants of Madeira and the Canary Isls. ordinarily referred to Sempervivum (which see) but by recent writers kept distinct. The group is marked by technical characters, such as calyx with 6–12 teeth or lobes, carpels partially sunk in calyx-tube; scales various. These plants are adapted to outdoor cult. in Calif., and are interesting under glass.

arbòreum. Tender, to 3 ft.: rosettes terminal, 6 in. and more across, the oblanceolate or spatulate lvs. ciliate on margins: fls. golden-yellow, about ¾ in. across, numerous in terminal thyrse. Morocco.—Cult. in S. Calif. and known sometimes as *Sedum* or *Crassula purpurascens* because of color of foliage in autumn. Var. **fòliis purpùreis,** lvs. dark purple.

balsamíferum. To 3 ft., shrubby, with balsamic odor: rosettes terminal, loose, lvs. spatulate, ciliate: fls. yellow, in dense infl. to 4 in. long.

Búrchardii. Subshrub to 1 ft. or more, with rich brown shining branches: lvs. in loose rosette or scattered, obovate-spatulate, thickened down center: fls. buff with red line down middle, ½ in. across.

cæspitòsum (*Æ. floribundum. Sempervivum hybridum*). Tender plant to 6 in., woody: lvs. oblong-linear, ciliate, lined with brown: fls. yellow, in a forking corymb.

canariénse (*Æ. giganticum*). Evergreen subshrub grown under glass and in the open in Calif., to 1½ ft. or more in bloom: lvs. in a large flattened or bowl-like rosette, large, obovate to spoon-shaped, with velvety appearance: fls. many in clusters, white or yellowish; petals 7–9, very narrow.

Castéllo-Paìviæ. Shrub to 1 ft. or more: lvs. in loose rosettes, spatulate, glaucous, limp and soft: fls. pinkish-white, in loose infl. to 8 in. long.

ciliàtum. To 3 ft., shrubby, branches rough with tubercles: lvs. in loose rosettes, spatulate, margins red, shining: fls. greenish-white or pinkish, the infl. to 1 ft. long.

Coòperi: listed name.

cruéntum: *A. spathulatum* var.

cuneàtum. St. fleshy and woody, plant glabrous, to 1½ ft.: lvs. rigid, long-cuneate, light green, mucronate, short-ciliate: fls. yellow.

decòrum. Much branched shrublet: lvs. thick, lanceolate, attenuate at base and sessile, acuminate-pointed, shining green and rose-tinted: fls. corymbose; petals white with rose lines.

domésticum: *Aichryson domesticum.*

floribúndum: *A. cæspitosum.*

gigánticum: *A. canariense.*

glutinòsum. Very sticky per. to 2 ft., often decumbent: lvs. broad-spatulate, ciliate: fls. golden-yellow, ½ in. across, the infl. to 1 ft. long. Madeira.

Goòchiæ. Much branched clammy shrub to 6 in. with woody tortuous branches: rosettes loose, the lvs. limp, rhomboid-obovate: fls. pink, ½ in. across, in loose infl. 2 in. across.

Hawórthii. St. or trunk woody and much branched at base, to 1 ft. or more, the branches short: lvs. thick, ovate-acute, glaucous and ciliate: fls. pale yellow flushed rose, 40–50 in a terminal panicle.

hierrénse. Unbranched subshrub to 4 ft., dying after flowering; rosettes terminal, lvs. spatulate, glaucous, margins red and ciliate: fls. pink to white, ½ in. across, in large infl. to 2 ft. long.

holochrỳsum. St. woody and fleshy, with spreading branches: lvs. rosulate, glabrous, broad-spatulate, narrow to base, ciliate, purplish-keeled: fls. orange, in dense thyrse.

Líndleyi. To 1 ft., much branched, shrubby, with tortuous branches: lvs. obovate-spatulate, very fleshy and sticky-pubescent: fls. yellow, the infl. to 3 in. across.

Manriqueòrum. Per. to 6 ft., woody, with tortuous branches: rosettes terminal, to 8 in. across, the lvs. spatulate, shining, ciliate: fls. bright yellow, the infl. glandular-pubescent, to 8 in. long.

nóbile. To 2 ft., dying after flowering: lvs. semi-circular, to 1 ft. long, very thick, pale yellowish-green: fls. dark red, in a dense flat infl. to 2 ft. across.

percárneum. Subshrub to 4 ft.: rosettes terminal, loose, the lvs. cuneate-spatulate, fleshy, margins red and ciliate, purple in sun: fls. pink, the infl. 10 in. long and broad.

pseùdo-tabulæfórme. Hybrid, probably with *A. tabulæforme* as one parent, but nearly stemless and rosette very flat: fls. golden.

sedifòlium. Shrub to 1 ft., very twiggy, the branches tortuous: lvs. obovate, ½ in. long, shining and sticky, marked with red: fls. bright yellow, in small clusters.

spathulàtum (*Æ. strepsicladum. Æ. Tournefortii*). Tender shrubby plant, with stout sts. 1 ft. or more high: rosettes with lvs. marked with red-brown: fls. yellow, in large many-fld. panicles. Var. **cruéntum** (*A. cruentum, Sempervivum pulchellum*), sts. and lvs. red when grown in exposure.

strepsiclàdum: *A. spathulatum.*

tabulæfórme. Evergreen subshrub to 1 ft. or more, grown under glass and in Calif. in the open: lvs. in flat rosettes at ends of branches, oblong-spatulate, ciliate: fls. pale yellow; petals 10–12, narrow.

tabulàris: botanical status uncertain.

Tournefórtii: *A. spathulatum.*

undulàtum (*Sempervivum Doramæ*). Robust, woody, 1½ ft.: lvs. spatulate-ovate, narrowed at base, mucronate, undulate, ciliate, sometimes reddish: fls. yellow.

úrbicum. Unbranched shrub to 5 ft., dying after flowering: rosettes terminal, lvs. long-spatulate, margins red and ciliate: fls. greenish-white or pinkish, ¾ in. across, in pyramidal infl. to 2½ ft. long.

AËRÁNGIS. *Orchidaceæ.* Very short-stemmed epiphytes with mostly white fls. in long many-fld. racemes, the lip with long slender spur. See *Orchids* for cult.

modésta (*Angræcum modestum* and *Sanderianum*). Lvs. to 6 in. long: fls. snow-white, about 1¼ in. across, the spur to 3 in. long, in pendulous racemes. Apr.–May. Madagascar.

AËRÌDES. *Orchidaceæ.* Epiphytes with thick two-ranked lvs. sheathing at base and fls. in lateral pendulous racemes, the 2 lateral sepals attached to base of column, the dorsal sepals and petals similar, the lip 3-lobed and produced into a hollow usually upturned spur. Cult. in the hothouse; see *Orchids.*

affìne: *A. multiflorum.*

crassifòlium. Lvs. to 8 in. long and 2 in. wide: fls. rose-purple, 1½ in. long, the spur greenish at tip, in racemes longer than lvs. May–June. Burma.

críspum. Lvs. to 10 in. long, lorate, retuse: fls. large, many in drooping racemes; sepals and petals white tinged rose, lip 3-lobed, middle lobe fringed, white at base and deep rose-purple on terminal half. E. Indies. Var. **Lindleyànum** has large branching spikes of white and purplish-pink fls.

expánsum: *A. falcatum.*

falcàtum (*A. Larpentæ. A. expansum*). Similar to *A. crassifolium* but with amethyst-red lip and white sepals and petals spotted with purple. May–June. Burma. Var. **Houlletiànum** (*A. Houlletianum*) has whiter lip and yellowish-brown sepals and petals. Var. **Leòniæ** (*A. Leoniæ*) has larger fls. with white lip spotted and edged with dark red.

Fièldingii. Lvs. to 10 in. long and 1¾ in. wide: fls. white dotted and suffused with rose, 1½ in. across, the spur white, in racemes longer than lvs. May–June. India.

Houlletiànum: *A. falcatum* var.

Larpéntæ: *A. falcatum.*

Láwrenceæ. Lvs. to 1 ft. long and 2 in. wide: fls. 1½ in. across, sepals and petals white tipped with amethyst-purple, the lip white with purple central lobe and green spur, in racemes as long as lvs. June–Aug. Philippines. Var. **Sanderiànum** has creamy-white sepals and petals tipped with magenta, and yellow-magenta and creamy-white lip.

Leòniæ: *A. falcatum* var.

multiflòrum (*A. affine. A. roseum*). Lvs. to 9 in. long and ¾ in. wide: fls. 1 in. across, the sepals and petals white spotted and tipped with purple, the lip light purple deeper in middle, in racemes longer than lvs. July–Sept. Himalayas to Cochin-China.

odoràtum (*A. suavissimum*). Lvs. to 8 in. long and 2 in. wide: fls. fragrant, to 1 in. long, the petals and sepals white with purple spot at tip, the lip white spotted with red and the middle lobe rose, in racemes often longer than lvs. July–Sept. India to China, Philippines. Var. **álbum** has white fls. Var. **màjus** (*A. virens*) has larger spikes of fls. than type.

quinquevúlnerum. Differs from the last only in having the middle lobe of the lip toothed on the edges. Philippines.

ròseum: *A. multiflorum.*

Sanderiànum: *A. Lawrenceæ* var.

suavíssimum: *A. odoratum.*

vandárum. Lvs. to 8 in. long, cylindrical: fls. 2 in. long, white and somewhat transparent, in 1–3-fld. racemes shorter than the lvs. Feb.–Mar. Himalayas.

vìrens: *A. odoratum* var. *majus.*

AËRIDOVÁNDA. *Orchidaceæ.* A group of bigeneric hybrids between Aërides and Vanda. **A. Múndayi** (*A. vandarum* × *V. teres*) has white fls. tinged with lilac. Cult. as for *Aërides.*

ǼRVA. *Amaranthaceæ.* Herbs or subshrubs of trop. Asia and Afr.: lvs. alternate or opposite: fls. very small, often polygamous, in spikes. One is grown as a border plant in warm regions.

sanguínea: *Æ. scandens* var.

scándens. More or less climbing subshrub but may be trimmed as a tall edging subject: lvs. ovate to lanceolate, to 4 in. long: spikes to 1 in. long, white-woolly, shining. Asia. Afr. Var. **sanguínea** (*Æ. sanguinea*) has dark red lvs.

ÆSCHYNANTHUS: *Trichosporum.*

ǼSCULUS. Horse-Chestnut. Buckeye. *Hippocastanaceæ.* Large deciduous shrubs or trees cult. for their showy clusters of red, white or yellow fls. mostly in May and June, for the large digitately compound lvs., and for the large often spiny frs.

Horse-chestnuts are mostly hardy north except Californian and Himalayan species. Propagated by seed sown in the autumn or stratified, by side-grafting, by budding on common species and the shrubby kinds also by layers. *Æ. parviflora* may also be propagated by root-cuttings.

argùta. Texas B. Shrub to 7 ft.: lfts. 7–9, lanceolate or broader, to 5 in. long, bluntly serrate, becoming glabrous: fls. yellowish-green. E. Tex.

austrìna: *Æ. discolor* var. *mollis.*

Briòtii: *Æ. carnea* var.

Búshii. Hybrid between *Æ. discolor* and *Æ. glabra:* tree to 30 ft.: fls. pink and yellow. Ark., Miss.

califórnica. Tree to 40 ft.: lfts. 5–7, stalked: fls. white or pale rose, in panicles to 8 in. long. Calif.

cárnea (*Æ. rubicunda*). Red H. Hybrid between *Æ. Hippocastanum* and *Æ. Pavia:* tree to 40 ft.: lfts. usually 5, nearly sessile: fls. flesh-color to scarlet, in panicles to 8 in. long. Var. **Briòtii,** fls. scarlet. Var. **plantierénsis,** Damask H., fls. whitish tinged pink, fading to pink. Var. **péndula,** branches drooping.

chinénsis. Tree to 60 ft.: lfts. 5–7: fls. white, ½ in. or less long. China.

díscolor. Woolly B. Shrub or tree to 30 ft.: lfts. 5, short-stalked, white-tomentose beneath: fls. yellow and red, in panicles to 8 in. long. Ga. to Tex. Var. **móllis** (*Æ. austrina*), fls. bright scarlet. Var. **flavéscens,** fls. yellow. Var. **Koèhnei,** low, fls. red and yellow.—Some of the cult. material of this species is *Æ. neglecta* var. *tomentosa.*

flàva: *Æ. octandra.*

georgiàna: *Æ. neglecta* var.

glàbra (*Æ. ohioensis*). Ohio B. Tree to 30 ft.: lfts. 5, short-stalked: fls. greenish-yellow, in panicles to 6 in. long. Pa. to Ala. and Neb. Var. **leucodérmis.** Bark smooth, nearly white. Mo., Ark. Var. **Sárgentii** (var. *Buckleyi*). Shrub: lfts. 6–7. Ohio to Miss.

Hárbisonii: *Æ. mutabilis* var.

Hippocástanum. Common H. Tree to 100 ft.: lfts. 5–7, sessile: fls. white blotched with red and yellow, in panicles to 1 ft. long. Balkan Peninsula. Some of the vars. are: **álba,** fls. pure white; **Baùmannii,** fls. white, double; **Hénkelii,** lfts. cut-lobed; **incìsa,** lfts. deeply toothed or lobed; **laciniàta,** lfts. deeply cut; **lùteo-variegàta,** lvs. variegated with yellow; **Memmíngeri,** lvs. marked with white; **pùmila,** dwarf; **pyramidàlis,** habit pyramidal; **Schírnhoferi,** fls. yellowish-red, double; **umbraculífera,** head round.

hùmilis: *Æ. Pavia* var.

hýbrida (*Æ. Lyonii*). Hybrid between *Æ. octandra* and *Æ. Pavia:* tree: lfts. 5, short-stalked: fls. red and yellow, in panicles to 6 in. long.

índica. Tree to 60 ft.: lfts. 5–9, short-stalked: fls. white, upper petals yellow blotched, lower tinged rose, in panicles to 15 in. long. Himalayas.

lùtea: *Æ. octandra.*

Lỳonii: *Æ. hybrida.*

macrostàchya: *Æ. parviflora.*

marylándica. Hybrid between *Æ. glabra* and *Æ. octandra.*

Michaùxii: *Æ. neglecta* var. *tomentosa.*

mutábilis. Hybrid between *A. discolor* var. *mollis* and *A. neglecta* var. *georgiana*, having panicles 4–6 in. long of yellow and red fls. Var. **Hárbisonii** (*Æ. Harbisonii*) has bright red fls. in panicles 6–8 in. long.

neglécta. Tree to 60 ft.: lfts. 5, nearly sessile: fls. pale yellow veined red, in panicles to 6 in. long. N. C. Var. **georgiàna** (*Æ. georgiana*), shrub to 6 ft. with broader panicles of bright yellow or red fls. or a mixture of the two colors. Fla. and Ala. Var. **tomentòsa** (*Æ. Michauxii* of cult.), has lvs. tomentose to villous beneath and bright red fls. S. C.

octándra (*Æ. flava. Æ. lutea*). Yellow B. Sweet B. Tree to 90 ft.: lfts. 5, short-stalked: fls. yellow, in panicles to 6 in. long. Pa. to Ga. and Ill.

ohioénsis: *Æ. glabra.*

parviflòra (*Æ. macrostachya*). Bottlebrush B. Dwarf H. Shrub to 12 ft.: lfts. 5–7, nearly sessile: fls. white, in panicles to 1 ft. long. S. C. to Fla. and Ala.

Pàvia (*Pavia Michauxii. Æ.* and *P. rubra*). Red B. Shrub or small tree to 20 ft.: lfts. 5, short-stalked: fls. dark red or purplish, in panicles to 7 in. long. Va. to Fla. and La. Vars. **atrosanguínea,** fls. dark red; **hùmilis** (var. *nana, Æ. humilis*), low, often prostrate; **sublaciniàta,** lfts. deeply toothed.

plantierénsis: *Æ. carnea* var.

rubicúnda: *Æ. carnea.*

rùbra: *Æ. Pavia.*

sinénsis: *Æ. turbinata.*

spléndens. Shrub to 12 ft.: lfts. 5, densely pubescent beneath: fls. bright red, in panicles to 8 in. long. Ala. to La.

turbinàta (*Æ. sinensis*). Japanese H. Tree to 30 ft.: lfts. 5–7, sessile: fls. yellowish-white with red spot, in panicles to 10 in. long. Japan.

Wílsonii. Tree to 80 ft.: lfts. 5–7, stalked: fls. white spotted yellow, in panicles to 1 ft. long. China.

woerlitzénsis. Tree: fls. red, in panicles to 5 in. long. Garden origin. Var. **Ellwángeri** (*Æ. Pavia* var. *Whitleyi*), fls. darker.

ÆTHEOPAPPUS: *Centaurea pulcherrima.*

ÆTHIONÈMA. Stone-Cress. *Cruciferæ.* Dwarf herbs and subshrubs allied to Iberis, mostly with small narrow lvs. and pink, lilac, purplish or rose-colored, sometimes white, fls. in terminal racemes: pod or silicle short and broad, mostly winged. About 50 species of the Medit. region, a few of them grown in the border or rock-garden, blooming mostly in May and June. They may be used also as cut-fls.; one species sometimes cult. is an ann. flower-garden subject, with broad lvs.

If grown in a light sandy soil in dry sunny locations, they will not need replanting or renewal for many years in regions where hardy, as in southern New England or southward. The perennial types are propagated by cuttings in summer or by seeds in the spring, and by division; the annuals and biennials only by seeds.

alpìnum: listed as a plant to 5 in. with glaucous lvs. and pink fls.

amœ̀num. Similar to *Æ. pulchellum* but with longer lvs. and much larger pale pink fls. Armenia.

armènum. Per., 3–4 in.: lvs. linear, short, acute: fls. minute: pod to ⅕ in. long, each cell 1-seeded. Armenia.

Buxbaùmii (*Æ. cappadocicum*). Short-season ann., 3–6 in., with oblong lvs. to 1 in. long and minute lilac fls., grown for its erect racemes of large thin winged overlapping pods. S. E. Eu. and S. W. Asia.

cappadócicum: *Æ. Buxbaumii.*

coridifòlium (*Iberis jucunda*). Lebanon S. Per., 4–10 in.: lvs. crowded, nearly linear, 1 in. or less long: fls. light or rosy-lilac, in short dense racemes: pod with style shorter than narrow sinus. Chalky summits of Mt. Lebanon and Taurus.—See *Æ. pulchellum.*

créticum (*Æ. ovalifolium*). Per., dwarf: lvs. ovate to oblong, very obtuse, glaucous: fls. minute, pale rose, in capitate racemes: pod with style shorter than the narrow sinus. S. Eu.—By some authorities considered to represent a variant of *Æ. saxatile* from which it differs in the lower lvs. ovate-spatulate to orbicular and the petals scarcely twice as long as sepals.

diastròphis. Per. to 6 in., little branched: lvs. oblong-linear: fls. small, rosy-lilac: pod dentate. Asia Minor.

glaùcum: probably *A. grandiflorum* var.

grandiflòrum. Persian S. Per., 1½ ft., with simple branches: lvs. oblong-linear, to 1½ in. long: fls. pink or rose, ¼ in. across, in slender racemes, petals about four times as long as sepals: pod notched at top, each of its 2 cells 1-seeded. Persia. Var. **glaùcum** has lvs. blue-green.

iberídeum. Tufted low per.: lvs. crowded and very narrow: fls. large, showy, white, in short racemes: pod ovate-obcordate, to ¼ in. long, 2-seeded. E. Medit. region, Asia Minor.

jucúnda: *Æ. coridifolium.*

Kótschyi: listed name for a very dwarf plant with rosy-pink fls.

oppositifòlium. Tufted per. to 8 in.: lvs. orbicular, opposite, somewhat fleshy, glabrous: fls. rose, about ⅛ in. across, petals obovate: pod ⅓ in. long and ¼ in. wide. Greece.

ovalifòlium: *Æ. creticum.*

pérsicum: listed name for a foot-high plant with deep rose fls.: probably referable to *Æ. iberideum* or *Æ. saxatile.*

pulchéllum. Per. with branched sts.: lvs. linear-oblong, obtuse: fls. rosy-pink, in heads or racemes: pod dentate, to ½ in. long, stigma sessile. Asia Minor.—Cult. plants passing as *Æ. coridifolium* may belong here.

purpùreum: advertised as a trailer with rose-purple fls.

pyrenàicum. Per. to 16 in.: lvs. oval, obtuse, leathery: fls. pink, small, raceme elongating in fr.: pod usually only 1-seeded. Pyrenees.—By some considered only a variant of *Æ. saxatile.*

saxátile. Per. to 1 ft., simple or branched: lvs. many, oval to linear-lanceolate, usually acute: fls. small, pink, in a close but elongating raceme, petals usually slightly more than twice as long as sepals: pod oblong, to nearly ½ in. long, notched, each cell normally 2-seeded. S. Eu., Algeria. Var. **grácile** (*Æ. Thomasianum*) differs in having a longer style in fr.

schistòsum. Per., sts. many, 2 in. or more high, erect and simple: lvs. narrow-linear, somewhat acute: fls. large, rose-color: pod orbicular or broader than long, 1-seeded, in imbricated raceme. Asia Minor.

stylòsum. Per. to 1 ft. or less: lvs. large, ovate-lanceolate, to ⅝ in. long: fls. rosy-pink, in a head: style of fr. longer than sinus. Lebanon.

Thomasiànum: *Æ. saxatile* var. *gracile.*

trinérvium (*Iberidella trinervia*). Per., woody: lvs. oblong to nearly linear, stiff, more or less 3-nerved, the upper ones somewhat clasping: fls. large, white. Persia.

warleyénse. Said to be a hybrid: compact but spreading, 3–6 in. high: fls. brilliant rose-pink or rose-carmine or one form paler: foliage steel-blue.

AGALINIS: *Gerardia.*

AGAPÁNTHUS (*Abumon*). *Liliaceæ.* African herbs with tuberous rootstocks, one popular as a tub plant or big subject in pots, and out-of-doors in warm regions. It does well in large tubs and will bloom for several years without rehandling if given liquid manure; will also force satisfactorily. Propagated by division of roots or rarely by seeds.

africànus (*A. umbellatus*). African-Lily. Lily-of-the-Nile. To 3 ft.: lvs. basal, linear-lanceolate: fls. funnel-shaped, bright blue, to 2 in. long, 12–30 in terminal umbels. Hort. vars. are **álbidus** with white fls., **Mooreànus** with dark blue fls., more hardy than most other forms, **nànus,** dwarf and compact, and **variegàtus** with striped lvs.

orientàlis. Distinguished from *A. africanus* by its broader softer reflexing lvs., longer peduncle and pedicel with the umbel comprised of 40–100 fls.

péndulus. To 1½ ft.: lvs. deciduous, linear, to 15 in. long and 1½ in. wide: fls. dark purple outside, paler within, to 1½ in. long, tube longer than lobes, on pedicels to 2 in. long, segms. scarcely spreading.

AGARITA: *Mahonia trifoliolata.*

AGÁSTACHE (*Lophanthus*). *Labiatæ.* Per. N. American tall herbs with 4-angled sts., toothed lvs., 2-lipped purplish, blue or yellowish fls. in terminal spikes; sometimes grown in the border. The word has four syllables.

càna: *Brittonastrum canum.*

nepetoìdes. To 5 ft.: lvs. ovate to ovate-oblong, to 6 in. long: fls. greenish-yellow, ⅛ in. long, in dense spikes to 1½ ft. long. Que. to Ga. and Ark.

urticifòlia. To 3 ft.: lvs. cordate, to 4 in. long, coarsely toothed: fls. rose to violet, about ⅝ in. long, in very dense spikes 1–4 in. long, calyx-lobes lanceolate, acuminate, rose-tinged. Mont. to B. C. south to Colo. and Calif.

AGATHÆA CŒLESTIS: *Felicia amelloides.*

ÁGATHIS. Dammar-Pine. *Araucariaceæ.* Tall evergreen trees of about 20 species, not all understood, with broad entire leathery lvs., cylindrical staminate cones, and ovoid or globose pistillate cones; native from the Philippines to Australia and New Zeal. Determination of immature and non-flowering trees is often difficult: the adult foliage of all species varies; juvenile lvs. differ from adult lvs. in form and arrangement and are always larger; different species have closely similar juvenile foliage. For cult. see *Conifers.* They can be grown out-of-doors only in the warmer parts of the country, as in Fla. and Calif.

álba (*A. orientalis*). Lvs. mostly opposite, broadly lanceolate to ovate, petiolate, 2½–5 in. long: staminate cones 2–3 in. long, ¾–1 in. diam., stalked, supra-axillary; ovulate cones subglobose, about 4 in. diam. Malaya.

austràlis. Kauri-Pine. Juvenile lvs. opposite, linear-oblong, somewhat falcate, bronze-green, often spotted and reddish, to 2½ in. long; adult lvs. subopposite, oval to broadly oblong, sessile, ½–1½ in. long, ¼–¾ in. broad, blunt: staminate cones ¾–1¼ in. long, ⅓ in. diam., stalked, axillary; ovulate cones subglobose, 2–3 in. diam. New Zeal.—One of the outstanding trees of the world in size, beauty, and timber value. Rarely cult. because the young tree has sparse yellowish foliage and poor habit; plants so named are usually *A. robusta.*

Brownii: an ambiguous name based on a juvenile plant of unknown identity; material so listed may be *A. alba, A. robusta* or other species.

orientàlis: *A. alba.*

robústa. Queensland Kauri. Juvenile lvs. mostly opposite, oblong-elliptic to ovate, to 4 in. long, subsessile; adult lvs. narrow-elliptic, 2–4 in. long: staminate cones 2–4 in. long, ¼–⅓ in. diam., sessile, axillary; ovulate cones ovoid or subglobose, 4–5 in. long, 3¾–4½ in. diam. Australia.—The most frequently cult. species.

AGATHÓSMA (*Hartogia*). *Rutaceæ.* S. African shrubs with small lvs., small white, red or lilac fls. mostly in terminal umbels or heads and fr. of 2–4 carpels; grown for ornament in warm regions, sometimes in pots under glass. For cult. see *Diosma.*

Ventenatiàna. To 1 ft. or more, much branched: lvs. overlapping, ovate-lanceolate, ¼ in. long: fls. lilac, purple or white, in umbels.

villòsa (*Diosma purpurea*). To 1 ft.: lvs. overlapping, lanceolate, ¼ in. long: fls. light purple, in dense terminal heads.

AGÀTI. *Leguminosæ.* One tree native in trop. Asia but nat. in W. Indies and S. Fla. **A. grandiflòra** (*Sesbania grandiflora*). To 40 ft.: lvs. pinnate, of 10–30 pairs of lfts. to 2 in. long: fls. papilionaceous, red or white, to 4 in. long: pods linear, flat, to 2 ft. long. An ornamental tree for warm regions, with striking fls. and pods.

AGÀVE. *Amaryllidaceæ.* Important economic and decorative plants with usually stiff spiny and often succulent long lvs. in rosettes or basal, fls. in spikes or panicles on long upright scapes or sts. produced in some types every year and in others at long intervals, in some cases the plants even dying after blooming; native in arid and semi-arid warm regions of western hemisphere. Many species are found in collections of succulents or of economic plants, some are grown as ornamentals in warm sections; in Mex. they furnish food, drink, fiber, razor strops and soap. *A. americana* is in common cult. as a porch and tub plant, but most of the species are known in hort. only to fanciers and in large or botanical collections. The name has three syllables.

Agaves need a soil mostly of loam and sand, good drainage and firm potting. Most species can be propagated by seeds, but often the flowers must be artificially hand-pollinated in order to secure them; some kinds are propagated by the suckers around the old plants or by underground stems; others by stem buds and a few by the bulbels which are found in the flower-clusters.

affinis. Plant stemless or nearly so: lvs. to 20 in. long and 2 in. across, glaucous, spine to 2 in. long, light brown to white, grooved toward base, prickles to ¼ in. long and 2 in. apart, nearly straight: fls. in short branched paniculate infl. Lower Calif.

álbicans. St. very short: lvs. to 1 ft. long and 4 in. wide: infl. about 3 ft.; fls. reddish-green, 1½ in. long. Mex.? Var. **mèdio-pícta** is a milk-white striped-lvd. form.

altíssima: *A. americana.*

americàna (*A. altissima. A. spectabilis*). Century Plant. Trunkless: lvs. to 6 ft. long and 8 in. wide, gray, smooth, in rosettes: fls. yellowish-green, 3½ in. long, in a bracted scape or stalk to 40 ft. tall, produced when plant is ten years or more old; suckers are usually produced at base as the plant dies. Trop. Amer. Var. **marginàta** has yellowish-white or deep yellow margins. Var. **mèdio-pícta** has yellow stripe along center of lvs. Var. **striàta,** lvs. lined with yellow or white. Var. **variegàta,** lvs. dark green and yellow, twisted.

angustifòlia (*A. Jacquiniana. A. ixtlioides. A. vivipara. A. Wightii. A. cantula*). Trunk to 1½ ft.: lvs. to 2 ft. long and 3 in. wide, gray-green: infl. to 8 ft. high; fls. greenish, 2 in. long. Cent. Amer.? Var. **marginàta** (*variegata*) has lvs. margined with white.

antillàrum. Trunkless: lvs. about 3 ft. long and 3 in. wide, bright green: infl. 15 ft.; fls. deep orange, 2 in. long. Haiti.

applanàta. Trunkless: lvs. to 4 ft. long and 4 in. wide, gray-green: infl. to 30 ft.; fls. yellow, 3 in. long. Mex.

atróvirens. Pulque A. Trunkless: lvs. to 6 ft. long and 1 ft. wide, dark green: infl. to 30 ft.; fls. greenish-yellow, 4 in. long. S. Mex.—The drink pulque is derived principally from this species.

attenuàta (*A. glaucescens*). Trunk to 5 ft., sometimes prostrate: lvs. unarmed, to 2½ ft. long and 10 in. wide: infl. spike-like, to 10 ft.; fls. greenish-yellow, 2 in. long. Mex.—Occasionally bulbels are produced.

Bérgeri. Plant a stemless rosette to about 3½ ft. high and 5 ft. across: lvs. to 3 ft. long and 3¼ in. across at middle, linear-lanceolate, tipped with black spine to 1 in. long, margins with black strongly recurved spines nearly ¼ in. long: infl. to nearly 12 ft. high. Mex.?

brachýstachys: *Manfreda brachystachys.*

Brándegeei. Lvs. to 2 ft. long and 4 in. across, grayish yellow-green, spine to 2 in. long, recurved, glossy red-brown, brown prickles ⅛ in. long or less and to ⅜ in. apart: fls. yellow, to 1¾ in. long. Lower Calif.

cæruléscens: *A. lophantha* var.

cantùla: *A. angustifolia.*

carchariodónta. Trunkless: lvs. to 1 ft. or more long and 3½ in. wide, prickly: infl. a spike to 12 ft. high; fls. greenish or brownish. Habitat unknown.

cerulàta. Lvs. to 14 in. long and 1½ in. across, deeply concave, gray-brown, spine to 1¼ in. long and almost straight, brown prickles about ⅛ in. long and to 1 in. apart: fls. yellow, 1½ in. long, on slender paniculate infl. to 14 ft. high. Lower Calif.

chiapénsis: *A. polyacantha.*

chrysacántha: listed name of unknown botanical standing.

connochǽtodon. Stemless, cespitose: lvs. to 1 ft. long and 2¼ in. across, oblanceolate, grayish-red spine to 2 in. long, reddish-brown, prickles to ⅝ in. long and ¾ in. apart, terminal prickles upcurved, basal ones downcurved; fls. on branched infl. to 10 ft. high. Lower Calif.

Considerántii: *A. Victoriæ-Reginæ.*

datỳlio. Trunkless: lvs. to 4 ft. long and 1½ in. wide, yellow- or gray-green, with purplish or blackish spine and shining chestnut teeth. Lower Calif.

decípiens (*A. spiralis*). Trunk to 8 ft.: lvs. to 4 ft. long and 4 in. wide, prickly: infl. a panicle, to 20 ft.; fls. greenish-yellow, 3 in. long. S. Fla.

desérti. Trunkless lvs. in dense rosettes, 1 ft. long and 2 in. wide, gray-green, with triangular prickles: infl. a panicle, 6 ft. high; fls. yellow, 1¼ in. long. Colo. Desert, Calif.

Eìchlamii. Trunkless: lvs. in rosettes, the edges with brown spines. Guatemala.

élegans: *A. potatorum.*

Ferdinándi-Règis. Trunkless: lvs. triangular to lanceolate-ovate, about 5 in. long, sharp pointed, deeply concave above, both sides with converging white lines, terminal spine about ⅝ in. long, black. Mex.

fèrox. Trunkless: lvs. to 4 ft. long and 1 ft. wide, fleshy: infl. to 30 ft.; fls. yellow, 3½ in. long. Mex.

filífera. Trunkless: lvs. in dense rosette, to 1½ in. broad and 1 or 2 ft. long, entire, spine-tipped, margins with filaments: fls. maroon-purple, 2 in. or more long including the long stamens, the scape to 15 ft. (shorter under glass). Mex. Var. **compácta** (*A. perplexans*), very compact, with lvs. 4 in. long.

fourcroỳdes (*A. Ixtli. A. longifolia. A. minima. A. rigida*). HENEQUEN. Trunk to 6 ft.: lvs. to 7½ ft. long and 4 in. wide, grayish-green: infl. to 20 ft.; fls. greenish, to 3 in. across, ill-smelling. Yucatan.—Furnishes fiber.

Franceschiàna. Trunk very short: lvs. to 3 ft. long and 4 in. wide, dark or blue-green: infl. to 15 ft.; fls. green, 2½ in. long, ill-smelling. Mex.?

Franzosìnii. Trunkless: lvs. to 8 ft. long and 1 ft. wide, whitish-green: infl. to 40 ft.; fls. yellowish, 3½ in. long. Mex.?

Ghiesbréchtii (*A. Ghiesbreghtii*). Trunkless: lvs. to 2½ ft. long and 4 in. wide, sometimes striped: infl. to 9 ft.; fls. greenish or brownish, 2 in. long. Mex.

glaucéscens: *A. attenuata.*

Hártmanii. Similar to *A. parriflora* but with sickle-shaped lvs., grooved spine, and finer marginal threads. Mex., New Mex.

heteracántha. Nearly trunkless: lvs. to 2½ ft. long and 2½ in. wide, slightly striped: infl. to 15 ft. Mex.—Similar to *A. lophantha*, differing in lvs. somewhat wavy and prickles closer together, median band usually prominent. Material in the trade very likely to be *A. lophantha* var. *Poselgeri.*

hórrida: *A. noli-tangere.*

Houlletiàna or **Hoúllettii:** *A. sisalana.*

huachucénsis. Lvs. to 1 ft. long and 7 in. across, erect-spreading, reddish to gray spine to 1 in. long, prickles to ¼ in. long and ⅝ in. apart, mostly reflexed: fls. yellow, to 3 in. long, on infl. to 18 ft. high. Ariz.

hýstrix: *A. stricta.*

imperiàlis: trade name for a glaucous-lvd. form.

ìngens. Nearly trunkless: lvs. to 6 ft. long and 14 in. wide, dark green or grayish-green: infl. to 30 ft.; fls. yellowish-green, 3½ in. long. Mex. Var. **pícta,** lvs. yellow-margined.

Íxtli: *A. fourcroydes.*

ixtlioìdes: *A. angustifolia.*

Jacquiniàna: *A. angustifolia.*

Kerchòvei. Trunkless or short-trunked: lvs. to 1½ ft. long and 2½ in. wide, gray-green, triangular, fibrous: infl. to 18 ft.; fls. 1½ in. long. Mex.

læ̀vis: *A. sisalana.*

latifòlia: *A. potatorum.*

Lecheguílla: *A. lophantha* var. *Poselgeri.*

longifòlia: *A. fourcroydes.*

lophántha. CRESTED A. Short-trunked: lvs. to 3 ft. long and 3 in. wide, green, glossy, striped beneath: infl. spike-like, to 15 ft.; fls. greenish-yellow, 1½ in. long. Mex. Var. **cæruléscens** (*A. cærulescens*) is a glaucous form without stripes. Var. **Posélgeri** (*A. Lecheguilla*) has smaller lvs. with a pale central band, bluish-green and striped beneath. Var. **univittàta,** lvs. with prominent pale band above.

lùrida (*A. mexicana*). Trunkless or nearly so: lvs. to 3 ft. long and 6 in. wide, with small teeth, glaucous: infl. a panicle, to 20 ft.; fls. greenish, 3 in. long. Mex.

macrántha. Trunkless: lvs. long and narrow, 5½ in. wide: infl. to 5 ft.; fls. yellowish, 3 in. long. Mex.

maculòsa: *Manfreda maculosa.*

margarìtæ. Stemless, cespitose: lvs. to 10 in. long and 4 in. across, obovate-oblanceolate, dull green with transverse bands, chestnut-gray spine to 1 in. long, prickles to ¼ in. long and ⅜ in. apart, mostly downcurved on lower half and upcurved above: fls. light yellow, to 2 in. long, in paniculate infl. to 14 ft. high. Santa Margarita Isls., Lower Calif.

marginàta: forms of *A. americana* and *A. angustifolia.*

marmoràta (*A. Todaroi*). Trunkless: lvs. to 6 ft. long and 1 ft. wide, very rough, gray and green-banded: infl. 10 ft. high; fls. golden, 1½ in. long. Mex.

mesotíllo. Similar to *A. lophantha* var. *Poselgeri* with broader lvs. and heavier prickles. Mex.

mexicàna: *A. lurida.*

micracántha. Trunkless: lvs. to 1½ ft. long and 5 in. wide, bright green, paler beneath: infl. about 10 ft.; fls. brownish-green, 1½ in. long. Mex.?

mínima: *A. fourcroydes.*

miradorénsis. DWARF CENTURY PLANT. Trunkless: lvs. to 3 ft. long and 5 in. wide: infl. to 9 ft.; fls. greenish, 2 in. long, fetid. Mex.

mìtis. Trunk very short: lvs. to 15 in. long and 4 in. wide, with small teeth: infl. 6 ft. high; fls. brown, 2 in. long, in racemes. Mex.

mitræfórmis. Nearly trunkless: lvs. to 2½ ft. long and 1 ft. wide, zoned with gray and with chestnut-tipped prickles: infl. to 20 ft.; fls. 2½ in. long. S. Mex.

negléeta. BLUE CENTURY PLANT. Trunkless: lvs. to 3 ft. long and 6 in. wide, gray: infl. to 40 ft.; fls. yellowish-green, 2 in. long, fetid. Fla.

Nélsonii. Lvs. to 1 ft. long and 3 in. wide, glaucous, with blackish spine and brown or whitish teeth. Lower Calif.

Níckelsii. Differs from *A. Victoriæ-Reginæ* in more open rosettes of fewer lvs.

nòli-tángere (*A. horrida*). Lvs. to 1½ ft. long and 3 in. wide, the margins toothed: infl. to 8 ft.; fls. green, 1½ in. long, in spikes. Mex.

oblongàta. Stemless: lvs. to 2 ft. long and 4 in. wide, gray-green with chestnut teeth: infl. to 4 ft.; fls. 1½ in. long. Perhaps Mex.

Orcuttiàna. Cespitose plant with reclining st. to 10 ft. long: lvs. to 1 ft. long and 4 in. across, flexuous gray spine to 1 in. long, prickles to ⅝ in. long and ⅜ in. apart, usually curved or hooked; fls. to 3 in. long, in paniculate infl. Lower Calif.

Pálmeri. Lvs. to 30 in. long and 4 in. across, lanceolate, ascending, terminal spine long, open-grooved and slender, marginal spines hooked: fls. yellow, to 2¼ in. long. Ariz. and New Mex.

Párryi. Trunkless: lvs. to 1 ft. long and 4 in. wide, glaucous, prickly-margined: infl. to 16 ft.; fls. creamy-yellow, 2¼ in. long, in panicles. Ariz., New Mex., Mex.

parviflòra. Small: lvs. 4 in. long and ¼ in. wide: infl. to 5 ft.; fls. greenish-white, ½ in. long. S. Ariz.

perpléxans: *A. filifera* var. *compacta.*

pícta. Similar to *A. americana* but with darker green lvs. to 10 ft. long with marginal yellow band. Trop. Amer.

polyacántha (*A. chiapensis*). Nearly trunkless: lvs. to 3 ft. long and 6 in. wide: infl. to 15 ft.; fls. 2 in. long. Mex.

potatòrum (*A. elegans. A. latifolia. A. pulchra*). Trunkless: lvs. to 1 ft. long and 4 in. wide: infl. 12 ft.; fls. yellowish-green, 2½ in. long. Mex.

púlchra: *A. potatorum.*

rígida: *A. fourcroydes.*

Roezliàna. Lvs. to 16 in. long and 4 in. across, ovate-lanceolate, rigid, with broad pale-green stripe above, terminal spine grooved, margin with rather large teeth. S. Mex. Var. **Gílbeyi** a dwarf form of var. **Ínghamii** which has broader and uniformly colored lvs.

Roseàna. Stemless, somewhat cespitose: lvs. to 20 in. long and 6 in. across, stiffly ascending, purplish to gray spine to 2¾ in. long and twisted-wavy, brown prickles to 1 in. long and 1¼ in. apart, broadly triangular and somewhat recurved: fls. to 2 in. long, in narrowly paniculate infl. to 10 ft. high. Lower Calif.

Salmiàna. Trunkless: rosettes very large, lvs. to 7 ft. long and 1½ ft. wide, prickly-margined: infl. 30 ft.; fls. yellow, in panicles. Mex.

scàbra (*A. Wislizenii*). Trunkless: lvs. to 10 in. long and 6 in. wide, gray, prickly-margined: infl. 12 ft.; fls. yellow, 2½ in. long. Mex.

schidígera. Trunkless: lvs. to 1½ ft. long and ½ in. wide, with marginal threads: infl. 10 ft.; fls. 2 in. long, in racemes. Mex.

Schóttii. Lvs. to 12 in. long and ¼ in. wide, linear-triangular, spine scarcely grooved, toothless or with minute prickles at base, margin shreddy: fls. yellow, to 1½ in. long. S. Ariz.

Sebastiàna. Nearly trunkless: lvs. to 1 ft. long and 4 in. wide, gray-green: infl. 6 ft.; fls. yellow, 3½ in. long. Lower Calif.

Shàwii. Nearly trunkless: lvs. 1½ ft. long and 5 in. wide, prickly-margined: infl. to 10 ft. high; fls. greenish-yellow, 3½ in. long, in panicles. Calif.

sisàla: *A. sisalana.*

sisalàna (*A. Houlletiana* or *Houllettii. A. lævis. A. sisala*). SISAL HEMP. Trunk to 3 ft.: lvs. to 5 ft. long and 4 in. wide, green or grayish: infl. to 20 ft.; fls. greenish, 2½ in. long, ill-smelling. Habitat unknown.

spectábilis: *A. americana.*

spiràlis: *A. decipiens.*

striàta. Trunkless: lvs. 1½ ft. long and 1 in. or more wide, gray striped with dark green: infl. to 12 ft.; fls. greenish, in spikes. Mex.

stricta (*A. hystrix. Bonapartea, Littæa* and *Yucca hystrix*). HEDGEHOG A. Trunkless: lvs. to 14 in. long and ¼ in. wide, often pale or purplish: infl. to 12 ft.; fls. 1¼ in. long. Mex. Var. **glaùca** has glaucous lvs.

tequilàna. TEQUILA A. Trunkless: lvs. to 3 ft. long and 3 in. wide, gray-green: infl. 20 ft.; fls. 2½ in. long. Mex.

Todaròi: *A. marmorata.*

Toumeyàna. Trunkless: lvs. to 4 in. long and ½ in. wide, ascending and recurved or lax, terminal spine brown, to ¼ in. long, margins translucently denticulate below middle: fls. about ⅝ in. long. S. Ariz.

utahénsis. Trunkless: lvs. to 1 ft. long and 1 in. wide, glaucous, with white teeth: infl. 5 ft. or more; fls. yellow, 1 in. long, in clusters. Utah, Calif., Ariz. Var. **nevadénsis** has wavy terminal spine and is listed as a dwarf form.

variegàta: *Manfreda variegata.*

Verschafféltii. Nearly trunkless: lvs. to 7 in. long and 3 in. wide, with twisted light brown spine and long rusty teeth on fleshy prominences: fls. about 2 in. long. Mex.

Victòriæ-Regìnæ (*A. Considerantii*). Trunkless: lvs. to 6 in. long and 2 in. wide, dark green with gray margin: infl. 12 ft.; fls. greenish, 1¼ in. long. Mex.

virgínica: *Manfreda virginica.*

vivípara: *A. angustifolia.*

Wéberi. Trunkless: lvs. to 2½ ft. long and 8 in. wide, margins entire: infl. a panicle. Mex.

Weingártii. Trunkless: lvs. variable, apple-green. Guatemala.

Wìghtii: *A. angustifolia.*

Wislizènii: *A. scabra.*

xylonacántha. Trunkless or nearly so: lvs. to 3 ft. long and 2 in. wide, dark striped beneath, with horny prickly margins: infl. to 7 ft.; fls. 1½ in. long, in spike-like racemes. Mex.

Zapùpe. Trunkless: lvs. to 6½ ft. long and 4 in. wide, with red-brown spine and small teeth. Mex.

AGDÉSTIS. *Phytolaccaceæ.* One woody or herbaceous vine from a very large gray tuberous root, grown out-of-doors in S. U. S. and thriving in rich soil. Propagated by offsets. **A. clematídea.** Climbing to 50 ft.: lvs. alternate, cordate-ovate, to 3 in. or more across: fls. white, star-shaped, to ½ in. across, without petals, in panicled racemes. Mex., Guatemala.

AGÉRATUM. *Compositæ.* Herbaceous annuals with tassel-like clustered heads, usually blue or white, and mostly opposite lvs.: florets all tubular; pappus of scales. Ageratums require the usual cult. for annuals; the dwarfer kinds are excellent for edgings.

cœlestìnum: *A. corymbosum.*

conspícuum: *Eupatorium glechonophyllum.*

conyzoìdes. To 2 ft.: lvs. ovate, toothed, blunt or rounded at base: fls. blue or white, in heads to ¼ in. across, all summer; involucral bracts oblong, slightly hairy. Tropics.

corymbòsum (*A. cœlestinum*). To 1½ ft.: lvs. lanceolate, often broadly so, to 3½ in. long, somewhat villous beneath, margin entire or serrate, tapering at base: fls. blue, in heads to ¼ in. across, involucral bracts linear-lanceolate, ciliate. Mex.

Fràseri: see *Eupatorium rugosum.*

Houstoniànum (*A. mexicanum*). Differs from *A. conyzoides* in lvs. usually heart-shaped at base, blue fls. in larger heads, and involucral bracts linear-lanceolate and densely hairy. Mex. Listed vars. include **álbum, cærùleum, nànum** and **pùmilum.**

Lasseaùxii: *Eupatorium Lasseauxii.*

mexicànum: *A. Houstonianum.*

purpuráscens: hort. name.

Wìlsonii: a catalogue name for a form with clear blue fls. in large clusters.

AGLAONÈMA. *Araceæ.* Trop. Asian and African rhizomatous or stoloniferous herbs with oblong or oblong-lanceolate lvs. having thick midribs and sheathed petioles, and unisexual fls. borne on a spadix subtended by a spathe.

Glasshouse subjects grown for the attractive often variegated foliage; succeed in fibrous loam with rotted manure, sand and charcoal added. Propagated by division and cuttings.

commutàtum. To 2 ft.: lvs. to 6 in. long and 2 in. across, deep green marked on veins with pale green. Malaya.

costàtum. Sts. short, branching at base: lvs. to 8 in. long and 4 in. across, variously spotted with white. Malaya.

modéstum. Sts. to 18 in.: lvs. to 18 in. long and 5 in. across, ovate-acuminate, 4–5 lateral ascending veins. Philippines.

nítidum: *A. oblongifolium.*

oblongifòlium (*A. nitidum*). Sts. to 3 ft. or more: lvs. to 20 in. long, with long petioles, to 3½ in. across, elongate-elliptical, apex cuspidate, 7–8 lateral ascending veins: spathe to 3 in. long, yellowish-green. Malaya.

píctum (*A. versicolor*). Sts. to 10 ft. long: lvs. to 6 in. long and 2 in. across, clouded or spotted with white. Malaya. Var. **trícolor,** lf.-blade marked with golden-yellow and yellowish-green spots.

Robelínii. Very robust: lvs. to 10 in. long and 5 in. wide, obscurely marked with pale green. Malaya.

siaménse. Sts. to 1½ ft. long: lvs. to 10 in. long and broad, the petioles about 6 in. long. Siam.

símplex. Erect to 3 ft., rooting below: lvs. lance-oblong or somewhat broader, acuminate, to 12 in. long at maturity, green: spathe greenish or whitish inside, to 2 in. long. Borneo, Celebes.—Grown in water as "Chinese evergreen," thriving in poorly lighted places, infrequently blooming.

sinénsis: listed name of uncertain botanical standing.

versícolor: *A. pictum.*

AGNIRÍCTUS. *Aizoaceæ.* A Mesembryanthemum segregate with lvs. having encrusted warts; formerly included in Stomatium but differing in calyx characters.

agnìnus (*M.* and *Stomatium agninum*). Sts. very short and branched: lvs. oblong, to 2 in. long and ½ in. broad, canescent, wrinkled, dotted and with pustule at base, entire or toothed: fls. solitary, yellow, 1 in. across, with many linear petals.

AGÒNIS. *Myrtaceæ.* Australian shrubs or trees with alternate simple lvs., fls. in dense sessile heads, and fr. a leathery caps.; grown for ornament in S. Calif. For cult. see *Leptospermum.*

flexuòsa (*Leptospermum flexuosum*). To 40 ft.: lvs. willow-like, to 6 in. long: fls. white, the axillary heads ½ in. across; stamens usually 20. W. Australia.

linearifòlia. To 12 ft. or more: lvs. linear or linear-lanceolate, to 1 in. long: fls. white, in small axillary heads; stamens 10. W. Australia.

marginàta. Tall shrub: lvs. obovate-oblong, to 1 in. long: fls. white, in terminal or axillary heads; stamens 10. W. Australia.

AGÓSERIS. *Compositæ.* Ann. and per. herbs related to Crepis with lvs. in a basal tuft and yellow fls. in large heads terminating scapes; pappus of bristles.

cuspidàta (*Nothocalais cuspidata*). Per. to 1 ft.: lvs. linear-lanceolate, wavy-margined: fls. Apr.–June. Wis. to Colo.

glaùca. Per. to 15 in.: lvs. linear-oblanceolate, to 8 in. long, usually entire, rarely pinnatifid, glaucous: fls. light yellow becoming pinkish. June–Aug. Colo. to Wash. and Man.

màjor. Ann. to 1½ ft.: lvs. often pinnatifid: fls. deep yellow. Apr.–May. Calif.

AGRIMÒNIA. AGRIMONY. *Rosaceæ.* Per. erect herbs mostly of the north temp. zone, with alternate pinnate lvs., small yellow fls. in racemes, and fr. a bristly burr; sometimes grown in shady or rear places for interest but not particularly ornamental; also medicinal. There are several N. American species, but apparently not planted. Propagated by root-division in spring and by seeds.

Eupatòria. To 3 ft.: lfts. oblong-ovate, gray-hairy beneath: fr. obconical, bristles slightly spreading. Eu.

odoràta. To 3 ft.: lfts. lanceolate, sharply serrate, finely pubescent: fr. nearly hemispherical, bristles nearly at right angles to side of fr. Eu., W. Asia, N. Afr.

pilòsa. To 5 ft.: lfts. with stiff hairs on veins beneath: bristles of fr. incurved. Eu.

AGRIMONY: *Agrimonia.* **Hemp:** *Eupatorium cannabinum.*

AGRITO: *Mahonia trifoliolata.*

AGROPỲRON. *Gramineæ.* Mostly per. grasses, usually of Eurasian origin and grown here primarily for forage purposes. The spikelets are several-fld., solitary and are arranged flatwise at each joint of an unbranched rachis. Quack-grass or Dog-grass (*A. repens*), a common weed in E. U. S., belongs to this genus and may be distinguished from the species below by the presence of creeping rhizomes.

cristàtum. Crested Wheat-Grass. Per., erect culms to 3½ ft., usually without creeping rhizomes: spikelets much compressed, closely imbricated on spike to 2½ in. long. Eurasia.—Adapted for hay and pasture uses in the northern Great Plains, spreading by reseeding.

pauciflòrum (*A. tenerum*). Slender W. Per. to 3½ ft., without creeping rhizomes, glabrous: lvs. flat, to ⅙ in. wide: spikelets remote to imbricate on spike to 10 in. long. Lab. to Alaska south to W. Va., Calif. and N. W. Mex.—Of poor forage value.

ténerum: *A. pauciflorum.*

AGROSTÉMMA. Corn Cockle. *Caryophyllaceæ.* As now defined, a genus of 2 species of ann. or bien. herbs, Eu. and Asia, one of them a showy weed and sometimes known as a cult. plant, **A. Githàgo** (*Lychnis Githago. L. segitalis*). Grayish erect branching silky-hairy plant to 3 ft., with long-linear erect lvs.: fls. purplish-red and more or less spotted, 1 in. or more across, petals obcordate and exceeded by the very long leaf-like calyx-lobes (which are deciduous in fr.). Common in wheat-fields. See *Lychnis.*

AGRÓSTIS. Bent-Grass. *Gramineæ.* Tufted annuals and perennials of small or medium size and many narrow lvs., the small spikelets borne in open diffuse panicles; of world-wide distribution and furnishing familiar hay, pasture, and lawn grasses as well as flower-garden subjects. See *Grasses.*

álba. Redtop. Fiorin. Per. to 3½ ft., erect or base slightly decumbent, vigorous creeping rhizomes: lvs. flat, to 8 in. long and ¼ in. wide: panicles to 1 ft. long, green or reddish, open with ascending branches. Eu.; nat. in N. Amer.—Used for pastures and lawns. Distinguished from *A. stolonifera* by its stronger and usually erect culms. Often confused with *A. palustris* from which it differs in its open panicle and absence of stolons.

canìna. Brown Bent. Velvet Bent. Per. to 2 ft.: lvs. to 2 in. long and $\frac{1}{12}$ in. wide: panicles to 7 in. long, branches very slender. Newf. to Alaska, Pa. and Tenn.—Used for lawns.

capillàris: a confused name whose botanical identity is not clearly understood. Var. **astoriàna** is a hort. name for a form of *A. tenuis.*

hiemàlis (*A. laxiflora*). Hair-Grass. Silk-Grass. Per. to 2 ft.: lvs. to 5 in. long and $\frac{1}{12}$ in. wide: panicles often purplish, to 2 ft. long, branches hair-like and bearing spikelets only toward tips. N. Amer.—Ornamental.

laxiflòra: *A. hiemalis.*

marítima: *A. palustris.*

nebulòsa. Cloud-Grass. Ann. to 1 ft.: lvs. short and very narrow: panicles to 6 in. long, with many very fine branches bearing spikelets near tips. Spain.—Ornamental.

palústris (*A. maritima. A. stolonifera* var. *compacta*). Creeping Bent. Creeping per. to 1½ ft., sts. often decumbent and stoloniferous: lvs. to 3½ in. long and $\frac{1}{12}$ in. wide, rough: panicles dense, to 4 in. long, branches erect. Shores Eu., E. N. Amer.—Used in lawns. Hort. forms are known in trade as Cocoos bent and Washington or Metropolitan bent; the former are propagated by seed and the latter by stolons.

pulchélla: *Aira capillaris* var. *pulchella.*

retrofrácta. Ann. to 2 ft.: lvs. to 8 in. long and ⅛ in. wide, rough above: panicles to 1 ft. long, branches hair-like and bearing prominently awned spikelets toward tips. New Zeal., Australia, Hawaii; intro. into U. S.—Ornamental.

stolonífera. To 1½ ft., culms decumbent at base and ascending, often rooting along decumbent portion but true rhizomes wanting: lvs. to 6 in. long and less than ¼ in. wide: panicles to 6 in. long, more or less open with the branches bearing spikelets from near the base. Newf. to Alaska, N. J. and Ore.; Eu.—The identity of plants in the trade under this name is much confused. Several varieties of it are listed, among them: var. **màjor** is probably *A. alba;* vars. **compácta** and **marítima** are referable to *A. palustris.*

ténuis (*A. vulgaris*). Colonial Bent. Rhode Island Bent. Similar to *A. alba* but smaller and with shorter redder panicles; may further be distinguished from *A. alba* by its ligule being one-half as long or less. Eu.; nat. in N. Amer.—Used for pasture and lawn. Creeping forms are known as Astoria and Colonial bent, and certain non-creeping ones as New Zealand and Prince Edward Island bent.

vulgàris: *A. tenuis.*

AICHRỲSON. *Crassulaceæ.* Succulents of the Canary Isls., intermediate between Sedum and Sempervivum (see the latter), with cup-shaped calyx 5–12-lobed, scales ciliate, carpels partially immersed in calyx-tube.

dichótomum. Ann. or bien.: sts. erect and forked, hairy: lvs. obovate or spatulate: fls. yellow, in loose corymbs, petals 8 or 9.

domésticum (*Sempervivum tortuosum* of DeCandolle) is an old garden hybrid: erect slightly shrubby free-flowering somewhat hairy plant: lvs. spatulate, to 1 in. long: fls. yellow.

tortuòsum. Dense downy subshrub, 1–6 in. high: lvs. obovate-spatulate, very fleshy, ½ in. long, ¼ in. broad, $\frac{1}{16}$–⅛ in. thick: fls. golden-yellow, in small corymbs.

villòsum. Ann. to 4 in. and more, sticky-hairy: lvs. spatulate, to ¾ in. long: fls. golden-yellow, ½ in. across, in loose corymbs, petals 6–9. Madeira, Azores.

AILÁNTHUS (*Pongelion*). *Simarubaceæ.* Large deciduous trees of Asia and N. Australia, one planted widely as a street and yard tree as it is smoke-resistant and free from insects: lvs. pinnately compound, ill-scented when bruised: fls. small, green, in large terminal panicles, polygamous: fr. a samara with the seed in the middle.

The ailanthus grows on any upland soil and tends to spread as seedlings; propagated by seed sown soon after ripening and by root-cuttings.

altíssima (*A. glandulosa. A. japonica*). Tree-of-Heaven. To 60 ft. or more, rapid growing: lvs. of 13–25 lfts. to 5 in. long, glabrous beneath, with large gland-bearing or callous teeth at base: fr. 1½ in. long. China; nat. in E. N. Amer.—Only the fertile-fld. types should be planted as the staminate fls. exhale a sweetish or to some persons a disagreeable odor. Var. **erythrocárpa** (*A. rubra*), fr. bright red. Var. **pendulifòlia,** lvs. large and drooping. Var. **sutchuenénsis,** petioles purplish, frs. larger.

glandulòsa: *A. altissima.*

imberbiflòra. To 100 ft.: lvs. of 15–20 glabrous lfts. to 3 in. long: fr. 2 in. long. Australia.

japónica: *A. altissima.*

rùbra: *A. altissima* var. *erythrocarpa.*

Vilmoriniàna. To 50 ft.: lvs. of 17–35 lfts. to 6 in. long, pubescent beneath: fr. 2 in. long. China.

AÍPHANES. *Palmaceæ.* A few trop. American more or less cespitose or soboliferous pinnate-lvd. monœcious palms of low to medium height, one of which is frequently planted in our warmest parts: lf.-sheaths, petioles and rachis, and sometimes the pinnæ themselves, bearing sharp dark spines: pinnæ often cuneate or broad, apex erose or variously jagged: spacides long, among the foliage, mostly only once-branched: fr. size of cherry, globose or obovoid, 1-seeded. The generic name may be pronounced in four syllables: a-íf-an-ees.

caryotæfòlia (*Martinezia caryotæfolia*). Trunk solitary, to 30 ft. and more, 4–6 in. thick, ringed and with long black spines: lvs. 3–6 ft. and more long; pinnæ 6–14 in. long, most of them 3–6 in. broad and suddenly expanded near apex and narrower below, the end obscurely somewhat 3-lobed and variously toothed; spathe to 18 in. long, spiny toward the base: fr. about ¾ in. long, yellow. S. Amer.

AÌRA. *Gramineæ.* Small mostly ann. grasses of the Medit. region, with narrow lvs. and spikelets borne in loose panicles; one species is planted for ornament and use in dry bouquets. See *Grasses.*

cærùlea: *Molinia cærulea.*

capillàris (*Aspris capillaris*). Ann. to 1½ ft.: lvs. hair-like: panicles with many spreading thread-like branches. Var. **pulchélla** (*Aspris pulchella, Agrostis pulchella*) has awned florets.

flexuòsa: *Deschampsia flexuosa.*

pulchélla: *A. capillaris* var.

AIR-PLANT: *Kalanchoë pinnata.*

AISTOCAÙLON. *Aizoaceæ.* A segregate from the genus Mesembryanthemum, one species from S. Afr. **A. rosulàtum** (*M. rosulatum. Nananthus rosulatus. Acaulon rosulatum*). Roots long and fleshy: lvs. 6–8, spatulate, to 1½ in. long and 1 in. wide near tip, rough with many whitish wart-like dots: fls. yellow with red line in center of petals; stamens yellow with white anthers, 1½ in. across.

AIZOÀCEÆ. Carpet-Weed Family. Widely distributed low mostly succulent herbs or subshrubs, of about 20 formerly listed genera but now of much greater number with the segregations from Mesembryanthemum, with regular bisexual fls. having many or no petals, 4–5-parted calyx, 4–5 or many stamens, superior or inferior 2- or more-celled ovary, and fr. a caps. The plant-body is sometimes reduced to nearly or quite globular proportions, particularly in the dry and desert regions of S. Afr. Known to hort. in the plants of the Mesembryanthemum group grown for ornament and fancy, and in the New Zealand spinach grown as a pot-herb: Acrodon, Agnirictus, Aistocaulon, Aptenia, Argyroderma, Aridaria, Astridia, Bergeranthus, Bijlia, Carpanthea, Carpobrotus, Carruanthus, Cephalophyllum, Cerochlamys, Chasmatophyllum, Cheiridopsis, Conicosia, Conophyllum, Conophytum, Corpuscularia, Cryophytum, Cylindrophyllum, Dactylopsis, Delosperma, Didymaotus, Dinteranthus, Diplosoma, Disphyma, Dorotheanthus, Dracophilus, Drosanthemum, Eberlanzia, Ebracteola, Echinus, Erepsia, Faucaria, Fenestraria, Gibbæum, Glottiphyllum, Hereroa, Herreanthus, Hymenocyclus, Juttadinteria, Lampranthus, Lapidaria, Lithops, Machairophyllum, Mesembryanthemum, Meyerophytum, Mitrophyllum, Monilaria, Nananthus, Odontophorus, Oophytum, Ophthalmophyllum, Oscularia, Peersia, Pleiospilos, Prenia, Psammophora, Psilocaulon, Rabiea, Rhinephyllum, Rhombophyllum, Ruschia, Sceletium, Schwantesia, Semnanthe, Sphalmanthus, Stomatium, Tetragonia, Titanopsis, Trichodiadema, Vanheerdia.

AJÙGA. Bugle-Weed. *Labiatæ.* Herbaceous annuals and perennials, grown in the rock-garden and the border, with numerous blue, white, or rose fls. in whorls in terminal spikes in early summer. Propagated by seeds and division; of simple cult.

alpìna: *A. genevensis.*

Bróckbankii: probably *A. reptans* var. *Brockbankii*, although referred by some to *A. genevensis.*

chìa. Per. to 1 ft., somewhat stoloniferous, sts. villous above: lvs. entire and linear-lanceolate to palmately 3-fid. with linear-spatulate segms. to 1 in. long: fls. yellow, purple, or yellow with purple stripes, about ¾ in. long. E. Eu.

genevénsis (*A. alpina. A. rugosa*). Per. 8–14 in., erect, not stoloniferous: lvs. oblong or obovate, toothed: fls. blue. Eu., Orient. Var. **álba,** fls. white. Var. **ròsea,** fls. rose-pink. Var. **variegàta** is listed.

metállica var. **críspa:** hort. name for a form to 5 in. high with curled metallic glossy blue fls. in a pyramidal spike.

purpùrea: hort. name, probably for form of *A. metallica* var. *crispa;* also a form of *A. reptans.*

rèpens: *A. reptans.*

réptans (*A. repens*). Carpet B. Per. 3–12 in., st. more or less prostrate: lvs. oblong or obovate, entire or wavy: fls. white or in some vars. blue or purplish. Eu. Var. **álba,** fls. white. Var. **atropurpùrea** has blue fls. and bronze lvs. Var. **Bróckbankii,** fls. blue. Var. **multícolor,** foliage spotted and variegated with yellow, brown and red. Var. **purpùrea** is listed as having fls. purple. Var. **rùbra,** lvs. dark purple. Var. **variegàta,** lvs. splashed and edged creamy-yellow.

rugòsa: *A. genevensis.*

Tóttenhamii: a garden form about 6 in. high, with bronze foliage and purplish fls.

variegàta: *A. reptans* var.

AKÈBIA. *Lardizabalaceæ.* Hardy twining shrubs with half-evergreen digitately compound lvs., odd purplish unisexual fls. in axillary racemes in spring, and fr. a purple berry; 2 species from China and Japan.

Akebias are neat vines where heavy shade is not needed; they are also used in cool greenhouses for covering walls and pillars. They need sun and well-drained soil. Propagated by seeds, by hardwood and greenwood cuttings, and by root-division.

lobàta: *A. trifoliata.*

quinàta. Five-leaf A. Lfts. 5, entire: fls. fragrant. China, Japan, Korea.

trifoliàta (*A. lobata*). Three-leaf A. Lfts. 3, coarsely toothed or entire. Japan, China. Var. **austràlis** has leathery entire lfts. China. Var. **clematifòlia** has thin entire lfts. Japan.

AKEE: *Blighia sapida.*

ALBÍZZIA. *Leguminosæ.* Small trees or shrubs with deciduous bipinnate lvs., fls. more or less plume-like or tassel-like due to exserted stamens, in heads or spikes, white, yellow, pink, blooming in summer, and pods strap-shaped and flat without partitions; native in trop. and subtrop. Asia, Afr. and Australia, and 1 in Mex. Cult. as for *Acacia. A. Julibrissin* may be grown as far north as Washington and hardy races much farther, and the others only in S. Fla. and S. Calif.

Julibríssin (*Acacia Julibrissin. A.* and *Mimosa Nemu*). Silk-Tree. Tree 30–40 ft.: lfts. ¼ in. long: fls. pink, in heads crowded on the upper ends of branches: pods to 6 in. long. Persia to Japan. Var. **ròsea,** smaller bright pink fls., hardier.

Kalkòra. Differs from *A. Lebbek* primarily in lfts. oblong, fls. yellowish-white with pink stamens and pod to 6 in. long on a long stalk. India.—Intro. in test grounds but not in general cult.

Lébbek (*Acacia Lebbek*). Lebbek-Tree. Siris-Tree. Womans-Tongue-Tree. Tree to 50 ft.: lfts. to 1½ in. long: fls. greenish-yellow, in axillary heads: pods to 1 ft. long on pedicels 2–3 in. long. Trop. Asia, N. Australia; nat. in W. Indies.

lebbekoìdes. Tree to 50 ft.: lvs. of 8–12 pinnæ, lfts. 50–60, oblong, to ⅓ in. long, obtuse: heads small, few-fld., numerous, corolla narrowly tubular: pods 6–8 in. long, 8–12-seeded. Burma.

lophántha (*Acacia lophantha*). Plume A. Shrub or tree to 20 ft.: lfts. ⅓ in. long: fls. yellow, in spikes 2 in. long: pods 3 in. long. Australia.

procèra. Tall tree: lfts. to 1 in. long: fls. greenish-white, in heads: pods to 7 in. long. Trop. Asia, Australia.

ALBÙCA. *Liliaceæ.* Bulbous herbs of the Scilla tribe with flat basal lvs. and large yellow or white fls. in racemes; the two following from S. Afr. have been intro. in Calif.

màjor. To 3 ft.: lvs. to 1½ ft. long: fls. pale yellow with broad green band, 1 in. long.

mìnor. To 1½ ft.: lvs. 1 ft. long: fls. pale yellow with broad green band, ¾ in. long.

ALCEA: *Althæa Hohenackeri.*

ALCHEMÍLLA. Ladys-Mantle. *Rosaceæ.* Ann. or per. herbs with palmately-lobed or -divided lvs., small greenish or yellowish fls. in corymbs, and fr. an achene; native in the north temp. zone and sometimes cult. Some of the species make good mats or low clumps of attractive foliage; fls. not showy. Propagated by seeds or division.

alpìna. Per. to 8 in.: lvs. divided into 5–7 oblong lfts. toothed at tip and shining silvery-hairy beneath. Mts. of Eu.

arvénsis: see *A. microcarpa.*

chirophýlla. Per. to 8 in.: lvs. divided into 5–7 oblong-obovate lfts. toothed at tip, silky-hairy on both sides. Eu.

mìcans. A form of *A. vulgaris*, very dark green turning red in autumn. Eu.

microcárpa. Ann. to 6 in.: lvs. deeply 3-parted into cut segms., pubescent, about ¼ in. long. Eu.; nat. in E. N. Amer.—Long confused with *A. arvensis*, from which it differs in its smaller lvs. and fls.

praténsis. Tall per.: lvs. orbicular, with 5–9 shallow-toothed lobes, pubescent beneath. Eu.; nat. in N. Amer.—By some considered a form of *A. vulgaris.*

pubéscens. Per. to 8 in.: lvs. with 7–11 shallow coarsely toothed lobes, silky-hairy. Eu.

sylvéstris. A form of *A. vulgaris*, bluish-green turning red-brown in autumn. Eu.

vulgàris. Per. to 1½ ft.: lvs. orbicular, to 6 in. across, with 7–9 shallow toothed lobes, grayish-pubescent. Eu.

ALCICORNIUM: *Platycerium.*

ALDER: *Alnus.* **Black-:** *Ilex verticillata.* **White-:** *Clethra.*

ALÉCTRYON. *Sapindaceæ.* Evergreen trees with alternate pinnate lvs., bisexual or unisexual fls. in many-fld. panicles, without petals, and fr. a leathery caps.; variable; grown in S.

excélsum. Titoki. To 60 ft.: lvs. of 4–6 pairs of ovate-lanceolate nearly entire lfts. to 4 in. long: panicles to 1 ft. long: caps. ½ in. long. New Zeal.

subcinèreum. Smooth Rambutan. Tree to 30 ft.: lfts. oblong-elliptic to lanceolate, 3–5 in. long, glabrous, usually 2–6: fls. in loose panicles: fr. subsessile, lobes globose, to ⅓ in. across. Australia.

ÁLETRIS. Star-Grass. *Liliaceæ.* Per. fibrous-rooted herbs with a basal cluster of narrow or grass-like lvs. and small white or yellow fls. in erect spikes or spike-like racemes terminating a slender scape.

Star-grass does well in moist sunny positions; useful for colonizing. Propagated by seed or division.

aùrea. Yellow Colic-Root. To 2½ ft.: lvs. pale yellowish-green, to 3 in. long: fls. yellow, oblong, erect: fr. an ovoid caps. nearly as long as perianth. June–Aug. S. E. U. S.

cordàta: listed name of unknown botanical status.

farinòsa. To 3 ft.: lvs. pale yellowish-green, to 6 in. long: fls. white, elongate bell-shaped, erect: fr. an ovoid caps. usually shorter than perianth. May–July. Me. to Fla. and Ark.

ALEURÌTES. *Euphorbiaceæ.* Trees native in the eastern tropics, with milky juice, large alternate simple often lobed lvs., monœcious fls. in terminal panicled cymes, and rather large æsculus-like frs.; grown far S. for shade and for the seeds which yield valuable oil. The generic name is pronounced in four syllables

Propagated by seed sown where plants are to stand or seedlings transplanted when about 1 foot high. Also propagated by hardwood cuttings. Trees begin to bear nuts in three to six years.

cordàta. Japan Wood-Oil-Tree. To 30 ft.: lvs. broadly ovate-cordate, 3–5-lobed or toothed: fls. ¾ in. long, ovary 3–4-celled: fr. warty. S. E. Asia.

Fórdii. China Wood-Oil- or Tung-Oil-Tree. To 25 ft.: lvs. ovate, sometimes 3-lobed, to 5 in. long: fls. reddish-white, ovary 3–5-celled: fr. 2–3 in. across, smooth. Cent. Asia.

moluccàna. Candlenut. Candle-Berry-Tree. Varnish-Tree. To 60 ft.: lvs. ovate, often with 3–5 triangular lobes, to 8 in. long: fls. white, ovary 2-celled: fr. 2 in. or more across. Malaya; nat. in tropics.

ALFALFA: *Medicago.*

ALFILARIA: *Erodium cicutarium.*

ALGERITA: *Mahonia trifoliolata.*

ALÍSMA. Water-Plantain. *Alismaceæ.* Aquatic mostly per. herbs with erect or floating basal lvs. and fls. in panicles, having 3 white or rose-tinged petals; a widely distributed genus. Sometimes grown about ponds and in bogs for the foliage and many small white fls. Propagated by division or seeds.

Plantàgo-aquática. Lvs. oblong to ovate: fls. to ½ in. across, in whorls on panicles to 3 ft. high. Northern hemisphere; in N. Amer. as far north as Mass. and Minn.

subcordàtum: the common N. American plant, by some authors considered to be distinct from the Old World *A. Plantago-aquatica.*

ALISMÀCEÆ. Water-Plantain Family. About 13 genera in swamps and streams around the world. Herbs with basal long-stalked lvs., regular bisexual or unisexual fls. borne in whorls on racemes or panicles, having 3 sepals, 3 deciduous petals, 6 or more stamens, many 1-celled ovaries becoming achenes in fr. Alisma and Sagittaria are grown in outdoor ponds and bogs. Lophotocarpus is grown in pools in Calif.

ALKANET: *Anchusa.*

ALKEKENGI: *Physalis Alkekengii.*

ALLAMÁNDA. *Apocynaceæ.* Trop. shrubs, erect or clambering climbers, grown in conservatories and in the open far S., with opposite or whorled lvs. and large funnel-shaped yellow or purplish showy fls., essential organs deep in the tube, and fr. a large prickly caps., which is not to be expected under glass.

The cultivation of Allamandas is simple, but they need extra feeding during the whole growing season. The plants should be kept nearly dry after growth ceases in late autumn till February or March; they should then be cut back and started in a moist position; all repotting should be done before the new growth is 6 inches long. Propagated from old and new wood cuttings. In warm countries they thrive profusely on walls and fences.

cathártica. Common A. Tall climbing: lvs. usually in 4's, obovate, to 6 in. long: fls. golden-yellow, to 3 in. across. Brazil. Vars. are: **grandiflòra,** fls. to 4½ in. across; **Héndersonii** (*A. Hendersonii*), lvs. leathery, fls. to 5 in. across; **nóbilis** (*A. nobilis*), fls. to 5 in. across, with magnolia-like fragrance; **Schóttii** (*A. Schottii*), fls. with dark striped throat; **Wìlliamsii,** fls. with reddish-brown throat.

grandiflòra: *A. cathartica* var.

Héndersonii: *A. cathartica* var.

neriifòlia. Oleander A. Half climbing or erect shrub to 3 ft.: lvs. in whorls of 2–5, oval or oblong, to 5 in. long: fls. golden-yellow, 1½ in. across, swollen at base. Brazil.

nóbilis: *A. cathartica* var.

purpùrea: hort. name.

Schóttii: *A. cathartica* var.

violàcea. Slender climber: lvs. usually in 4's, oval, to 6 in. long: fls. reddish-purple, 2½ in. across. Brazil.—Thrives best if grafted on *A. cathartica* var. *Hendersonii* or *Schottii.*

Wìlliamsii: *A. cathartica* var.

ALLEGHENY-VINE: *Adlumia fungosa.*

ALLIÒNIA (*Oxybaphus*). Umbrella-wort. *Nyctaginaceæ.* Mostly American herbs with opposite lvs. and fls. in terminal panicles or solitary in the axils, without petals and subtended by involucres; occasionally transplanted from the wild.

nyctagínea. Per. to 3 ft.: lvs. broad-ovate to oblong, to 4 in. long: fls. red, longer than involucre, in panicles. Ill. to Colo. and Tex.

ÁLLIUM. *Liliaceæ.* Bulbous herbs with mostly strong odor, narrow basal lvs. and sometimes a few cauline lvs. and small fls. borne in umbels or heads subtended by bracts and terminating slender scapes; perianth-segms. 6; ovary 3-celled. In some species the lvs. are terete and fistular (hollow), and in others broad and flat. The roots are sometimes more rhizomatous than strictly bulbous. A large genus native mostly in the northern hemisphere and the species still much confused in cult.

Several species are grown for food and others for ornament, the latter mostly for colonizing or in wild-gardens and recently very popular in the rock-garden. The flower-garden alliums require no special treatment and bloom in spring and summer; *A. neapolitanum* is useful for cut-flowers when grown in boxes or beds under glass. Propagated by seeds sown in early spring, by offsets and bulbels in autumn or spring. Most of the species are hardy North. See *Chive, Garlic, Leek, Onion.*

acuminàtum. To 1 ft., bulbs with membranous reticulated coats: lvs. ⅛ in. wide, shorter than scape: fls. deep rose-purple; segms. about length of pedicels; stamens shorter than segms. B. C. to Ida. and Calif. Var. **cuspidàtum** has more slender scapes and cuspidate segms.

acutángulum: *A. angulosum.*

álbidum: *A. denudatum.*

albopilòsum. To 3 ft., bulbs with membranous coats: lvs. to 1¾ in. wide, white-hairy beneath: fls. lilac, in umbels 8 in. across; pedicels 2–3 times longer than segms.; stamens shorter than segms. Persia to Asia Minor.

álbo-purpùreum: listed name.

álbum: not in cult., the plants so grown being *A. tuberosum.*

alleghaniénse. To 2 ft., bulbs with membranous coats: lvs. narrow-linear, shorter than scape: fls. purple, in nodding umbels; pedicels filiform, many times longer than segms.; stamens exserted. Va. to Tenn. and Ga.

altàicum: *A. fistulosum.*

ammóphilum. Often united with *A. angulosum* but lower, with smaller lvs. and golden-yellow fls. Eu.

Ampelóprasum. Differs from *A. Porrum* in the bulbs breaking up into numerous bulbels, and in the exserted rather than included style. Medit. region.—Material grown as *A. Ampeloprasum* is likely to be *A. Porrum.*

ampléctens. To 1½ ft., bulbs with membranous reticulated coats: lvs. filiform, shorter than scape: fls. white, in head-like umbels 1 in. across; pedicels nearly twice length of segms.; stamens about equalling segms. Wash. to Calif.

angulòsum (*A. acutangulum*). To 2 ft., bulbs with membranous coats: lvs. to ¼ in. wide, shorter than scape: fls. lilac or purple, rarely white; pedicels 2–3 times longer than segms.; stamens included. Eu. to Siberia.

angustóprasum: listed name; plants so grown have been *A. Schœnoprasum.*

ascalónicum. Shallot. To 1½ ft., clustered bulbs with membranous coats: lvs. terete and hollow, awl-shaped, shorter than scape: fls. white or violet, in globose umbels, rarely produced; pedicels longer than segms.; stamens included. Probably a cultigen.—Plants so advertised have turned out to be *A. pulchellum.*

Aschersoniànum. To 1½ ft., bulbs with membranous fringed coats: lvs. to ½ in. wide, shorter than scape: fls. pink, in dense umbels; pedicels 3–4 times longer than segms.; stamens slightly exserted. Asia Minor to Egypt.—Plants grown under this name have proved to be *A. carinatum.*

atrórubens. To 5 in., bulbs with membranous coats: lf. solitary, terete: fls. reddish-purple; pedicels equalling segms.; stamens included. Nev., Calif.

azùreum: *A. cæruleum.*

Beesiànum. To 1½ ft., clustered bulbs having fibrous coats: lvs. to ⅓ in. wide, shorter than scape: fls. deep blue edged with white, in nodding umbels; pedicels equalling segms.; stamens included. China.

Bídwelliæ: *A. campanulatum.*

biscéptrum. To 8 in., bulbs with membranous reticulated coats: lvs. ⅙ in. wide, about length of scape: fls. rose to whitish; pedicels 2–3 times longer than segms.; stamens included. Calif., Utah.

Bolánderi. To 8 in., bulbs with membranous reticulated coats: lvs. 1/12 in. wide, shorter than scape: fls. rose to white; pedicels slightly longer than segms.; stamens included. Ore., Calif. Var. **stenánthum** (*A. stenanthum*) is taller, fls. nearly white.

brevístylum. To 2 ft., bulbs with fibrous coats: lvs. to ¼ in. wide, shorter than scape: fls. deep rose, in loose umbels; pedicels twice as long as segms.; stamens included. Mont. to Colo.

Brèweri. To 3 in., bulbs with membranous coats: lvs. ¼ in. wide, much longer than winged scape: fls. rose-purple, in dense umbels; pedicels equalling segms.; stamens included. Calif.

bulgáricum: plants cult. under this name are probably *A. sphærocephalum.*

Búrbankii: listed name; probably referable to *A. Schœnoprasum.*

cærùleum (*A. azureum*). To 4 ft., bulbs with membranous coats: lvs. linear, 3-angled, shorter than scape: fls. deep blue, in dense globose umbels to 2 in. across; pedicels much longer than segms.; stamens included or only slightly exserted. Siberia, Turkestan.

campanulàtum (*A. Bidwelliæ*). To 1 ft., bulbs with membranous reticulated coats: lvs. ⅛ in. wide, shorter than scape: fls. pink, in many-fld. umbels; pedicels twice length of segms.; stamens included. Calif.

canadénse. Wild Garlic. To 2 ft., bulbs with fibrous reticulated coats: lvs. 1/12 in. wide, shorter than scape: fls. pink or white, often replaced by bulblets; pedicels much longer than segms.; stamens included. N. B. to Tex.

carinàtum. To 2 ft., bulbs with membranous coats: lvs. ⅙ in. across, borne half way up st.: umbels bearing bulbels, subtended by 2 very long unequal bracts; fls. few, violet to rose; pedicels much longer than segms.; stamens exserted. Eu.; escaped in N. J. and Pa.—Material cult. as *A. carinatum* may be *A. pulchellum.*

Cèpa. Onion (which see). To 4 ft., large bulbs with membranous coats: lvs. cylindrical and hollow, much shorter than hollow swollen scape: fls. lilac to white, in large umbels; pedicels many times longer than segms.; stamens exserted. W. Asia. Var. **solanìnum** (var. *multiplicans*), Potato and Multiplier Onion, propagates by natural divisions of the bulb. Var. **vivíparum** (var. *bulbelliferum*), Top Onion, is propagated by bulbels borne in the umbels.

cérnuum (*A. recurvatum*). To 2 ft., clustered bulbs with membranous coats: lvs. ⅙ in. wide, shorter than scape: fls. rose or white (var. **álbum**), in many-fld. nodding umbels; pedicels much longer than segms.; stamens exserted. N. Amer.

ciliàtum: *A. subhirsutum.*

cinèreum: indefinite name botanically; plants so cult. are *A. cernuum.*

controvérsum: *A. pyrenaicum.*

crenulàtum (*A. vancouverense*). To 3 in., bulbs with membranous coats: lvs. to ¼ in. wide, longer than scapes which have winged crenate margins: fls. deep rose-purple; pedicels about equalling segms.; stamens included. B. C., Wash.

críspum: *A. peninsulare* var.

cuspidàtum: *A. acuminatum* var.

cyàneum (*A. Purdomii*). To 10 in., clustered bulbs with fibrous coats: lvs. linear or filiform, 1/25 in. wide, longer than scape: fls. blue, in slightly nodding umbels; pedicels about length of segms.; stamens much exserted, blue. China.

Cýrillii. Allied to *A. nigrum* but a smaller plant with narrower lvs. and perianth-segms. and fleshy stamens. Italy to Asia Minor.

darwásicum. To 1 ft., bulbs with membranous coats: lvs. to ½ in. wide, as long as or longer than scape: fls. white, in many-fld. umbels; pedicels about length of segms.; stamens included. Bokkara.—Apparently not in cult., plants so labelled being other species.

denudàtum (*A. albidum*). To 1 ft., bulbs with membranous coats: lvs. semi-terete, 1/25 in. wide, half as long as scape: fls. white or pale yellow; pedicels much longer than segms.; stamens about length of segms. Siberia to China.

desertícola: *A. Geyeri.*

dichlamýdeum. Similar to *A. peninsulare* but with broader obtuse perianth-segms. Calif., near coast.

Doúglasii. To 10 in., bulbs with membranous coats: lvs. to ⅓ in. wide, much shorter than scape: fls. rose, in many-fld. umbels; pedicels twice as long as segms.; stamens included. Wash., Ida.

falcifòlium. To 4 in., bulbs with membranous coats: lvs. ¼ in. wide, falcate, much longer than scape: fls. deep rose, with very narrow segms.; pedicels about length of segms.; stamens included. Ore., Calif.

fállax: *A. senescens.*

Fárreri. To 1 ft., bulbs with fibrous coats: lvs. narrow-linear, about length of scape: fls. reddish-purple, campanulate, in loose umbels; pedicels equalling segms.; stamens included. China.

fibríllum. To 4 in., bulbs with membranous reticulated coats: lvs. ⅙ in. wide, as long as scape: fls. white or pink, in loose umbels; pedicels equalling segms.; stamens included. Ida., Ore.

fibròsum: *A. rubrum;* the true species is not in cult.

fimbriàtum. To 4 in., bulbs with membranous coats: lf. solitary, 1/12 in. wide, longer than scape: fls. rose-purple, in loose umbels; pedicels twice as long as segms.; stamens included. S. Calif.

fistulòsum (*A. altaicum*). WELSH OR SPÀNISH ONION. To 1½ ft., clustered bulbs with membranous coats: lvs. hollow and cylindrical, about length of hollow swollen scape: fls. white, in head-like umbels; pedicels equalling segms.; stamens exserted. Asia.

flavéscens: confused name; perhaps *A. flavum* is meant.

flàvum. To 2 ft., bulbs with membranous coats: lvs. linear, terete, as long as scape: fls. yellow, in loose umbels subtended by 2 very long bracts; pedicels 2–3 times as long as segms.; stamens exserted. S. Eu. to W. Asia. Vars. **màjor** and **minor** are listed.

frígidum. To 6 in., bulbs with membranous coats: lvs. semi-terete, borne on st., about length of scape: fls. whitish veined with rose, in loose umbels subtended by 2 long bracts; pedicels equalling segms.; stamens included. Greece.

galánthum. To 1½ ft., clustered bulbs with membranous coats: lvs. few, hollow and terete, shorter than swollen scape: fls. whitish, in many-fld. umbels; pedicels twice as long as segms.; stamens included. Siberia.—Some of the material grown under this name belongs to *A. fistulosum.*

Geỳeri (*A. deserticola*). To 14 in., bulbs with fibrous coats: lvs. 1/12 in. wide, shorter than scape: fls. rose, with broad segms.; pedicels twice as long as segms.; stamens included. B. C. to Ore. and Wyo.

giganteùm. To 4 ft., bulbs with membranous coats: lvs. 2 in. wide and 1½ ft. long, glaucous: fls. bright lilac, in dense globose umbels 4 in. across; pedicels many times longer than fls.; stamens exserted. Cent. Asia.

glaùcum: *A. senescens* var.

globòsum. To 2 ft., clustered bulbs with membranous coats: lvs. terete, filiform, shorter than scape: fls. rose with deeper midrib, in globose umbels; pedicels much longer than segms.; stamens exserted. Caucasus.

hæmatochìton. To 16 in., clustered bulbs with membranous coats: lvs. to ⅙ in. wide, somewhat shorter than scape: fls. purple or rose with darker midrib; pedicels twice as long as segms.; stamens included. S. Calif., N. Mex.

Hélleri: *A. Nuttallii.*

Hùteri: listed name.

hyálinum. To 1 ft., bulbs with membranous reticulated coats: lvs. ⅕ in. wide, somewhat shorter than scape: fls. white or pinkish, becoming translucent; pedicels 3 times longer than segms.; stamens included. Calif.

hymenorrhìzum. To 3 ft., bulbs with membranous coats: lvs. to ¼ in. wide, shorter than scape: fls. rose, in globose umbels; pedicels longer than segms.; stamens exserted. W. Asia.

insùbricum: *A. narcissiflorum.*

japónicum: *A. Thunbergii.*

kansuénse. Distinguished from *A. cyaneum* by its wider linear lvs., larger tubular-campanulate fls., and included stamens. W. China, Tibet.

karataviénse. To 10 in., with membranous bulbs: lvs. 2, to 5 in. across, longer than scape: fls. whitish with purple midrib, in globose umbels 3 in. across; pedicels 3 times as long as segms.; stamens slightly exserted. Turkestan.

Kòchii: name of no botanical standing; plants so labelled have been *A. fistulosum.*

lacunòsum. To 1 ft., bulbs with membranous reticulated coats: lvs. about length of scape: fls. pink, in loose umbels; pedicels twice length of segms.; stamens about equalling segms. Calif.

Ledebouriànum. To 2 ft., bulbs with membranous coats: lvs. terete and hollow, shorter than scape: fls. rose, shining, in many-fld. umbels; pedicels 2–3 times longer than segms.; stamens included. Siberia.

Lémmonii. To 6 in., bulbs with membranous reticulated coats: lvs. ⅙ in. wide, about length of scape: fls. pink, in loose many-fld. umbels; pedicels about equalling segms.; stamens length of segms. Calif.

libàni. To 5 in., bulbs with membranous coats: lvs. to ½ in. wide, glaucous, longer than scape: fls. white, in many-fld. umbels; pedicels twice length of segms.; stamens included. Asia Minor.—Apparently not in cult., plants so named belonging to other species.

lineàre. To 1½ ft., bulbs with fibrous reticulated coats: lvs. to ⅕ in. wide, shorter than scape: fls. rose-purple, in many-fld. umbels; pedicels 4 times longer than segms.; stamens exserted. Russia, Siberia.

macránthum. To 2 ft., bulbs with membranous coats: lvs. ⅙ in. wide, shorter than scape: fls. deep purple, nodding, in loose umbels; pedicels much longer than segms.; stamens included. Himalayas.

Màirei (*A. yunnanense*). To 16 in., clustered bulbs with fibrous coats: lvs. filiform, terete, shorter than scape: fls. whitish or rose, campanulate, in loose umbels; pedicels longer than segms.; stamens included. China.

margaritàceum. To 3 ft., bulbs with fibrous coats: lvs. filiform, semi-terete, shorter than scape: fls. whitish with green midrib, in dense globose umbels; pedicels 2–3 times as long as segms.; stamens exserted. S. E. Eu., Asia Minor.

marítimum: *Muilla maritima.*

Mòly. To 1½ ft., clustered bulbs with membranous coats: lvs. to 1 in. wide, about length of scape: fls. bright yellow, star-like, in many-fld. umbels to 3 in. across; pedicels longer than segms.; stamens included. S. Eu. Var. **lùteum** is listed.

monadélphum. To 1½ ft., clustered bulbs with slightly fibrous coats: lvs. linear, hollow, longer than hollow scape: fls. rose-purple, in many-fld. umbels; pedicels about length of segms.; stamens included. Siberia, Turkestan.

montànum: *A. senescens.*

moschàtum. To 1 ft., bulbs with fibrous reticulated coats: lvs. terete, filiform, shorter than scape: fls. rose to whitish, in few-fld. umbels; pedicels longer than segms.; stamens included. S. Eu., W. Asia.

mutábile. To 2 ft., bulbs with fibrous reticulated coats: lvs. ⅙ in. wide, shorter than scape: fls. pink or white, in many-fld. umbels; pedicels longer than segms.; stamens included. N. C. to Fla. and Tex.

nanhoénse: listed name.

narcissiflòrum (*A. pedemontanum. A. insubricum*). To 1 ft., bulbs with fibrous reticulated coats: lvs. ⅙ in. wide, shorter than scape: fls. rose, large, in few-fld. nodding umbels; pedicels shorter than segms.; stamens included. Italy.

neapolitànum. To 1 ft., bulbs with membranous coats: lvs. to 1 in. wide, shorter than scape: fls. white, becoming papery, large, in few-fld. umbels to 3 in. across; pedicels 2–3 times longer than segms.; stamens included. S. Eu. Var. **grandiflòrum** is listed.

Nèvii. To 10 in., bulbs with membranous reticulated coats: lvs. ⅙ in. wide, shorter than scape: fls. pink, in loose umbels; pedicels about equalling segms.; stamens length of segms. Wash., Ore., Ida.

nìgrum (*A. speciosum*). To 2 ft., bulbs with membranous coats: lvs. to ¾ in. wide, shorter than scape: fls. violet or whitish, in dense umbels which sometimes bear bulbels; pedicels twice as long as lanceolate segms. which become reflexed; stamens included. S. Eu., W. Asia, N. Afr.

nùtans. To 2½ ft., bulbs with membranous coats: lvs. to ½ in. wide, shorter than scape: fls. white or pinkish, in many-fld. globose umbels; pedicels twice length of segms.; stamens exserted. Siberia.

Núttallii (*A. Helleri*). To 8 in., bulbs with fibrous reticulated coats: lvs. 1/12 in. wide, shorter than scape: fls. rose or white, in loose umbels; pedicels twice length of segms.; stamens included. S. D. to Tex. and Ariz.

oblìquum. To 3 ft., bulbs with membranous coats: lvs. to 1 in. wide, shorter than scape: fls. yellow, in many-fld. globose umbels; pedicels twice length of segms.; stamens exserted. Siberia.

odòrum: *A. ramosum;* see also *A. tuberosum.*

oleràceum. To 2 ft., bulbs with membranous coats: lvs. ⅛ in. wide, shorter than scapes: fls. rose, whitish or greenish, often replaced by bulbels, in loose umbels; pedicels twice length of segms.; stamens equalling segms. Eu.

oreóphilum. To 4 in., bulbs with membranous coats: lvs. to ⅙ in. wide, glaucous, longer than scape: fls. purple, in many-fld. umbels; pedicels longer than segms.; stamens included. Caucasus.

Ostrowskiànum. By some regarded as a var. of *A. oreophilum,* differing in the maroon-colored fls. Turkestan.

pállens: a confused name botanically, probably referable to *A. paniculatum.*

paniculàtum. To 2 ft., bulbs with membranous coats: lvs. 1/12 in. wide, shorter than scape: fls. white or rose, in loose umbels subtended by 2 very long bracts; pedicels longer than segms.; stamens equalling segms. Medit. region.

párvum. To 2 in., bulbs with membranous coats: lvs. 1/12 in. wide, longer than scape: fls. rose-purple with darker midrib; pedicels equalling segms.; stamens included. Nev., Calif.

pedemontànum: *A. narcissiflorum.*

peltàtum: listed name.

peninsulàre. To 1 ft., bulbs with membranous reticulated coats: lvs. ⅒ in. wide, about length of scape: fls. rose-purple, in loose umbels; pedicels twice as long as segms.;

stamens included. Calif., Lower Calif. Var. **críspum** (*A. crispum*) has inner segms. of fl. undulate or crisped.

Pikeànum. Distinguished from *A. Geyeri* by the darker red-purple fls. and small reflexed bracts. Colo.

platycaùle. To 6 in., bulbs with membranous coats: lvs. to ⅘ in. wide, longer than flattened scape: fls. rose, in dense umbels; pedicels about length of segms.; stamens equalling segms. Calif.

Pórrum. Leek. To 3 ft., bulbs with membranous coats: lvs. to 2 in. wide, as long as scape: fls. pinkish, in dense umbels subtended by a very long deciduous bract; pedicels much longer than segms.; stamens exserted. Cultigen.

prairiénsis: listed name.

Przewalskiànum. To 10 in., clustered bulbs with fibrous reticulated coats: lvs. filiform, longer than scape: fls. rose-purple, in many-fld. umbels; pedicels 2–3 times longer than segms.; stamens exserted. China.

pulchéllum. To 2 ft., bulbs with membranous coats: lvs. 1/25 in. wide, equalling scape: fls. violet or rose, nodding, in loose umbels subtended by 2 very long bracts; pedicels longer than segms.; stamens exserted. S. Eu., W. Asia.

Púrdomii: *A. cyaneum.*

Púrdyi. To 1 ft., bulbs with membranous faintly reticulated coats: lf. 1, shorter than scape: fls. pink with darker midrib, in many-fld. umbels; pedicels about twice as long as segms.; stamens included. Calif.

pyrenàicum (*A. controversum*). To 3 ft., bulbs globose: lvs. lanceolate-linear, borne to middle of st.: fls. white with green midrib, in many-fld. globose umbels subtended by 1 long bract; stamens included. Pyrenees.

ramòsum (*A. odorum. A. umbellatum. A. tataricum*). To 20 in., clustered bulbs with fibrous reticulated coats: lvs. to ¼ in. wide, hollow, shorter than scape: fls. white with reddish midrib, fragrant, in many-fld. umbels; pedicels 2–4 times as long as segms.; stamens included. Siberia.

recurvàtum: *A. cernuum.*

reticulàtum: *A. textile.*

Rosenbachiànum. To 2 ft., bulbs with membranous coats: lvs. to ¾ in. wide, shorter than scape: fls. purple, in large globose umbels; pedicels much longer than segms.; stamens equalling segms. Turkestan. Var. **álbum** is listed.

ròseum. To 1½ ft., bulbs with membranous coats, the outer regularly pitted: lvs. to ½ in. wide, shorter than scape: fls. rose, in loose umbels to 3 in. across which often bear bulbels; pedicels 2–3 times as long as segms.; stamens included. S. Eu., N. Afr. Var. **grandiflòrum** is listed.

rotúndum. To 3 ft., bulbs with membranous coats: lvs. ⅓ in. wide, about equalling scape: fls. purple varying to whitish, in globose heads 1 in. across; pedicels much longer than segms.; stamens included. Eu., N. Afr., W. Asia.

rùbrum (*A. fibrosum. A. Rydbergii*). To 1 ft., bulbs with fibrous reticulated coats: lvs. to ¼ in. wide, shorter than scape: fls. mostly replaced by reddish bulbels; pedicels about length of segms.; stamens included. Rocky Mts.

Rýdbergii: *A. rubrum.*

satìvum. Garlic. To 2 ft., bulbs of several parts in a membranous coat: lvs. to 1 in. wide, shorter than scape: fls. pinkish, partly replaced by bulbels, in small umbels subtended by a very long bract; pedicels longer than segms.; stamens included. Eu.

scapòsum. To 1 ft., bulbs with membranous reticulated coats: lvs. terete, linear, shorter than scape: fls. white with red midrib, in loose umbels; pedicels 2–3 times longer than segms.; stamens about length of segms. Tex. to Mex.

Schœnóprasum. Chive. To 2 ft., tufted, clustered bulbs with membranous coats: lvs. terete and hollow, equalling or exceeding scape: fls. rose-purple, in many-fld. umbels; pedicels shorter than segms.; stamens included. Eu., Asia. Var. **sibíricum** (*A. sibiricum*) differs chiefly in lvs. being shorter than scapes. Siberia, N. N. Amer.—Plants grown in the garden under many names turn out to be chives, as *darwasicum, frigidum, Ledebourianum, libani.*

Schùbertii. To 2½ ft., bulbs with membranous coats: lvs. to 1 in. wide, longer than hollow scape: fls. pink or violet with darker midrib, in large globose umbels; pedicels much longer than segms., those of sterile fls. to 9 in. long; stamens included. Asia Minor.—Apparently not in cult., plants so named belonging to other species.

Scorodóprasum. Rocambole. Giant Garlic. To 3 ft., bulbs with membranous coats: lvs. ⅓ in. or more wide, borne below middle of st.: fls. deep purple, often replaced by bulbels, in large umbels; pedicels twice length of segms.; stamens included. Eu., Asia Minor.

senéscens (*A. montanum. A. fallax*). To 2 ft., bulbs with membranous coats: lvs. ⅓ in. wide, shorter than scape: fls. lilac, in many-fld. umbels; pedicels longer than segms.; stamens exserted. Eu., W. Asia. Var. **glaùcum** has more narrowly campanulate fls. in denser umbels.—Common in cult. and grown under many names.

serràtum. To 1 ft., bulbs with membranous reticulated coats: lvs. 1/12 in. wide, shorter than scape: fls. rose, in dense umbels; pedicels about length of segms.; stamens included. Calif.

sibíricum: *A. Schœnoprasum* var.

sikkiménse. To 6 in., bulbs with outer coats having parallel fibers: fls. purplish-blue, in dense umbels; pedicels shorter than segms.; stamens included. Sikkim.

speciòsum: *A. nigrum.*

sphærocéphalum. To 3 ft., bulbs with membranous coats: lvs. ⅓ in. wide, semi-terete, borne to about middle of st., shorter than scape: fls. reddish-purple, in dense globose umbels; pedicels of inner fls. much longer than segms.; stamens exserted. Eu., W. Asia, N. Afr.

stellàtum. To 1½ ft., bulbs with membranous coats: lvs. 1/12 in. wide, shorter than scape: fls. rose, in many-fld. umbels; pedicels 2–3 times longer than segms.; stamens exserted. Ill. to Neb. and Kans.

Stelleriànum. To 1 ft., clustered bulbs with membranous coats: lvs. 1/12 in. wide, semi-terete, shorter than scapes: fls. pink, in loose umbels; pedicels 3 times longer than segms.; stamens equalling segms. Siberia.

stenánthum: *A. Bolanderi* var.

striàtum: *Nothoscordum bivalve.*

stríctum. To 1½ ft., bulbs with fibrous reticulated coats: lvs. to ⅕ in. wide, about length of scape: fls. purple or rose, in dense globose umbels; pedicels equalling segms.; stamens exserted. Eu., W. Asia.

subangulàtum. To 1 ft., bulbs with fibrous reticulated coats: lvs. filiform, shorter than scape: fls. rose-purple, in many-fld. umbels; pedicels equalling segms.; stamens included. Cent. Asia.

subhirsùtum (*A. ciliatum*). To 20 in., bulbs with membranous coats: lvs. to ¼ in. wide, equalling scape: fls. white with lavender midrib, fragrant, in loose umbels; pedicels much longer than segms.; stamens included. Medit. region.

tangùticum. To 16 in., bulbs with membranous coats: lvs. to ⅛ in. wide, shorter than scape: fls. bluish-lilac with darker midrib, in dense umbels; pedicels twice or more as long as segms.; stamens exserted. W. China.

tatáricum: *A. ramosum.*

téxtile (*A. reticulatum*). To 1 ft., bulbs with fibrous coats: lvs. ⅙ in. wide, shorter than scape: fls. white or pale pink, in many-fld. umbels; pedicels twice length of segms.; stamens included. Sask. to Ariz.

Thúnbergii (*A. japonicum*). To 2 ft., bulbs with membranous coats: lvs. ⅙ in. wide, about as long as scape: fls. purple, fragrant, in loose umbels; pedicels about length of segms.; stamens exserted. Japan.

tibéticum. Differs from *A. sikkimense* in smaller less campanulate deep blue fls. Tibet.—Doubtfully in cult., plants grown under this name belonging to other species.

tricóccum. Wild Leek. To 1 ft., bulbs with fibrous reticulated coats: lvs. to 2 in. wide, withering before flowering: fls. white; pedicels 2–3 times longer than segms.; stamens included. N. B. to Minn. and N. C.

triquètrum. To 1½ ft., bulbs with membranous coats: lvs. to ¼ in. wide, about equalling scape: fls. white, large, in loose umbels; pedicels about length of segms.; stamens included. Medit. region.

tuberòsum. Differs from *A. ramosum* in lvs. not being hollow, fls. expanded instead of funnel-shaped, segms. somewhat reflexed with greenish inconspicuous midrib, flowering season later July–Sept. Asia.—Some of the material grown as *A. odorum* belongs here.

umbellàtum: *A. ramosum.*

unifòlium. To 1½ ft., bulbs produced from lateral bulblets, with membranous reticulated coats: lvs. to ⅓ in. wide, shorter than scape: fls. bright rose, in many-fld. umbels; pedicels twice length of segms.; stamens included. Calif., Lower Calif.

urceolàtum. To 2 ft., bulbs with membranous coats: lvs. terete, hollow, shorter than scape: fls. pale blue or whitish, in many-fld. umbels; pedicels much longer than segms.; stamens equalling segms. Turkestan.

válidum. To 2 ft., bulbs with membranous reticulated coats: lvs. to ⅗ in. wide, about equalling scape: fls. rose or nearly white, in many-fld. umbels; pedicels about length of segms.; stamens exserted. Wash., Calif., Nev.

vancouverénse: *A. crenulatum.*

victoriàlis. To 2 ft., bulbs with fibrous reticulated coats: lvs. to 3 in. wide, shorter than scape: fls. white or yellowish, in many-fld. umbels to 1½ in. across; pedicels longer than segms.; stamens exserted. S. Eu., Asia.

Víllarsii: name of no botanical standing.

vivíparum. To 3 ft., bulbs with membranous coats: lvs. linear, shorter than scape: fls. blue, often replaced by bulbels; pedicels much longer than segms.; stamens equalling segms. Siberia, Turkestan.

Wallichiànum. To 1½ ft., clustered bulbs with membranous coats: lvs. to ⅔ in. wide, longer than scape: fls. purple, in loose umbels to 3 in. across; pedicels much longer than segms.; stamens included. Himalayas.

Winkleriànum. To 1½ ft., bulbs with membranous coats: lvs. ½ in. wide, shorter than scape: fls. whitish veined with green, in many-fld. umbels; pedicels shorter than segms.; stamens included. Turkestan.

yunnanénse: *A. Mairei.*

zebdanénse. To 2 ft., bulbs with membranous coats: lvs. ½ in. wide, shorter than scape: fls. white, in loose umbels; pedicels about equalling segms.; stamens included. Asia Minor.

ALLOPHỲTON. *Scrophulariaceæ.* Three somewhat woody small per. herbs of Mex. and Guatemala: lvs. simple, crowded, opposite, tapering to a sessile or clasping base: fls. bell-shaped, purple and spotted, in close long-peduncled clusters; lobes of corolla shorter than tube. **A. mexicànum** (*Tetranema mexicanum, Penstemon mexicanus*) is sometimes grown under glass for its attractive bloom: lvs. near the ground at the top of a very short st., oblong-obovate, to 6 in. long, nearly entire, glaucous underneath: fls. nearly ½ in. long, many in a cluster on peduncles to 8 in. long.

ALLOPLÉCTUS (*Crantzia*). *Gesneriaceæ.* Trop. shrubs with opposite lvs., fls. clustered or solitary in the axils having straight or curved tube and 5-lobed limb, and fr. a berry; grown in the greenhouse.

Schlímii. Lvs. ovate or ovate-oblong, to 4 in. long, toothed, violet or purple beneath: fls. yellow and red, 1 in. long, urn-shaped, the calyx red. Trop. S. Amer.

ALLOSURUS: *Pellæa rotundifolia.*

ALLSPICE: *Pimenta officinalis.* **Carolina:** *Calycanthus floridus.*

ALMOND. Two kinds of plants are known as almonds. The one grown in orchards as a fruit-tree is *Prunus Amygdalus*, native probably in western Asia. It is grown for the "nut," which is the kernel in the pit or stone. The fruit is a hard dryish drupe, the flesh more or less splitting at maturity and disclosing the stone; the thin flesh is inedible. The bitter almond is employed in certain manufacture. The sweet almond, in which the kernel is edible, is the kind grown pomologically; it may be either soft-shell or hard-shell, the former including most of the commercial kinds. The almond tree is much like the peach and the culture is in general the same. Although nearly as hardy as the peach, it blooms earlier and is more subject to damage from spring frosts. Commercially the almond is little grown in North America outside California. Propagation of named varieties is by budding on seedlings grown from either the soft-shell or hard-shell kinds.

Other almonds are grown for the ornamental bloom. There are showy and double-flowered forms of the common almond, *Prunus Amygdalus*. The usual "flowering almonds," however, are little bushes of other species, prized for the spring bloom, single and double, in pink, blush, rose and white. Two species are common, *Prunus triloba* and *P. glandulosa*, and *P. japonica* is sometimes seen. The true dwarf almond is *P. tenella*, not much grown: flowers single, pink or white. These various small ornamental almonds are commonly grown on plum stock, and the grower should be diligent to keep down the sprouts from the plum root.

ALMOND, EARTH-: *Cyperus esculentus.* **Indian-:** *Terminalia Catappa.* **Tropical-:** *Terminalia Catappa.*

ALNIPHÝLLUM. *Styracaceæ.* Small genus of W. Asiatic trees and shrubs allied to Halesia, but differing in having indehiscent fr. with few non-winged seeds; one species is cult.

Fórtunei. Shrub or small tree to 30 ft., branches brownish-tomentose when young becoming glabrous and striated with age: lvs. broadly ovate to obovate, to 5 in. long, alternate, petioled, somewhat toothed toward acute or obtuse apex: fls. white, to 1 in. long, in 15–16-fld. panicles or racemes. China.

ÁLNUS. ALDER. *Betulaceæ.* Deciduous monœcious trees and shrubs with alternate toothed lvs., staminate fls. in long catkins and the pistillate in short catkins becoming woody cones with 5-lobed scales; native in the northern hemisphere and the Andes of S. Amer. The bloom is not showy but interesting because it appears in advance of foliage in many species.

Alders are best adapted to moist soils and cool or cold climates. Propagated by seeds dried in the autumn and sown in spring under a light covering; also by cuttings, suckers, and rarer kinds by grafting on potted seedling stocks under glass.

Alnobétula: *A. viridis.*

barbàta: *A. glutinosa* var.

califórnica: *A. rhombifolia.*

commùnis: *A. glutinosa.*

cordàta (*A. tiliacea. A. cordifolia*). ITALIAN A. Tree to 75 ft.: lvs. broad-ovate, to 4 in. long, heart-shaped at base: cones 1–3. Italy, Corsica.

cordifòlia: *A. cordata.*

críspa (*A. Mitchelliana*). AMERICAN GREEN A. Shrub to 10 ft.: lvs. ovate, to 3 in. long, rounded at base, aromatic when young: cones 3–6. Lab. to N. C. Var. **móllis** has young lvs. and branchlets pubescent beneath; lvs. to 3¾ in. long.

fírma. Shrub or tree to 10 ft.: lvs. ovate-oblong, to 5 in. long, rounded at base. Japan. Var. **hirtélla** grows to 30 ft.

fruticòsa. Tree to 40 ft.: lvs. ovate, to 4½ in. long, lobed or somewhat so, with 5–10 pairs of veins, glabrous beneath: pistillate catkins terminal: winter buds not stalked. N. E. Asia.

glutinòsa (*A. rotundifolia. A. vulgaris. A. communis*). BLACK A. Tree to 80 ft., the young growth very sticky: lvs. oval or nearly orbicular, to 4 in. long, broad at base: cones 3–5. Eu., N. Afr., Asia; somewhat escaped in E. N. Amer. Several vars. are in cult., as: **aùrea** with yellow lvs.; **barbàta** (*A. barbata*), lvs. pubescent beneath; **denticulàta,** lvs. finely toothed; **imperiàlis,** lvs. small, deeply lobed into linear lobes; **incìsa** (var. *oxyacanthifolia*), lvs. small, deeply lobed into broad lobes; **laciniàta,** lvs. regularly lobed to about middle; **pyramidàlis** (var. *pyramidalis Birkiana*), of narrow pyramidal habit; **quercifòlia,** lvs. with deep irregular lobes; **rubrinérvia,** lvs. shining dark green with red veins and petioles; **sorbifòlia,** lvs. small, with broad deep lobes.

hirsùta. MANCHURIAN A. Tree to 60 ft.: lvs. broad-ovate, to 6 in. long, rounded at base, glaucous and reddish-pubescent below: cones 3–4. N. E. Asia, N. Japan. Var. **sibírica,** lvs. densely pubescent beneath on midrib only and sparingly so on veins.

hýbrida: hybrid between *A. glutinosa* and *A. incana.*

imperiàlis: *A. glutinosa* var.

incàna. SPECKLED A. Shrub or tree to 60 ft.: lvs. ovate, to 4 in. long, rounded at base, glaucous or grayish-green beneath: cones 4–8. Eu., Asia, N. Amer. Var. **acuminàta** (var. *laciniata*) has lvs. lobed about half way. Var. **monstròsa** has much flattened branches. Var. **péndula,** branches drooping. Var. **pinnatífida** has small deeply lobed lvs.

incìsa: *A. glutinosa* var.

japónica. Tree to 80 ft.: lvs. narrow-elliptic, to 5 in. long, wedge-shaped at base, light green beneath: cones 2–6. N. E. Asia, Japan.

latifòlia: *A. rugosa.*

macrophýlla: *A. subcordata.*

marítima. SEASIDE A. Shrub or tree to 30 ft.: lvs. oblong, to 4 in. long, wedge-shaped at base, glossy above, light green beneath: cones 2–4. Del., Md., Okla., on banks of streams and ponds.

Mitchelliàna: *A. crispa.*

móllis: *A. crispa* var.

multinérvis: *A. pendula.*

nepalénsis. Tree: lvs. elliptic-lanceolate, to 7 in. long: cones in lateral panicles. Himalayas.

oregàna: *A. rubra.*

péndula (*A. multinervis*. *A. firma* var. *multinervis*). Shrub or tree to 30 ft.: lvs. oblong-lanceolate, to 5 in. long: cones in nodding racemes. Japan.

pubéscens: probably *A. hybrida*.

purpùrea: probably a form of *A. glutinosa*.

rhombifòlia (*A. californica*). WHITE A. To 100 ft. or more: lvs. ovate to nearly orbicular, to 4 in. long, tapering at base. Wash. to Calif.

rotundifòlia: *A. glutinosa*.

rùbra (*A. oregana*). RED A. Tree to 70 ft.: lvs. ovate, to 5 in. long, truncate at base, grayish-green or glaucous beneath: cones 6–8. Alaska to Ida. and Calif.

rugòsa (*A. serrulata*. *A. latifolia*). HAZEL or SMOOTH A. Shrub or tree to 25 ft.: lvs. elliptic or obovate, to 4 in. long, wedge-shaped at base: cones 4–10. Me. to Fla. and Tex.

serrulàta: *A. rugosa*.

sinuàta (*A. sitchensis*). Shrub or tree to 50 ft.: lvs. ovate, to 4½ in. long, bright green, rounded or cuneate at base, lobed or nearly so, with 5–10 pairs of veins, serrate, usually glabrous but may be somewhat pubescent beneath along midrib: pistillate catkins terminal on slender pedicels to ¾ in. long. Alaska to N. Calif.—This species is closely related to *A. fruticosa*, and the two are not considered distinct entities by some authors.

sitchénsis: *A. sinuata*.

subcordàta (*A. macrophylla*). Tree to 50 ft.: lvs. ovate or oblong-ovate, to 6 in. long, rounded at base, light green and pubescent on veins beneath: cones 1–4. Caucasus, Persia.

tenuifòlia. MOUNTAIN A. Tree to 30 ft.: lvs. ovate or ovate-oblong, to 4 in. long, mostly rounded at base, usually yellowish-green. B. C. to Lower Calif. and New Mex.

tiliàcea: *A. cordata*.

víridis (*A. Alnobetula*). EUROPEAN GREEN A. Shrub to 6 ft.: lvs. ovate, to 2½ in. long, broad at base, pale green beneath: cones in racemes. Mts. of Eu.

vulgàris: *A. glutinosa*.

ALOCÀSIA. *Araceæ*. Trop. Asian herbs with thick short sts., mostly large arrow- or heart-shaped lvs. which are always peltate when young, sheathed petioles, and unisexual fls. borne on a spadix which is shorter than the spathe; grown in greenhouses for the ornamental often variegated foliage.

In the growing season plants should be given an abundance of water, protected from direct sunlight, and a night temperature of 70°; the latter should never fall below 60° even in winter. Propagated by suckers or cuttings of the roots placed in pots and plunged in sand over bottom heat; also by seed sown in pots and kept in a temperature of about 75°.

arboréscens: listed name of unknown botanical standing.

argyræ̀a. Lvs. to 1½ ft. long, dark green with silvery sheen, the basal lobes ovate. Trop. Asia.

cùprea. Lvs. to 1½ ft. long and 1 ft. across, purple beneath, above dark metallic shining green, the basal lobes ovate: spathes purple and green. Malaya.

illústris: *Colocasia antiquorum*.

índica (*Colocasia odorata*). To 6 ft.: lvs. to 15 in. long and 6 in. wide, green, arrow-shaped, margins slightly wavy, the basal lobes ovate: spathes yellowish-green or purplish inside. Malaya. Var. **metállica** (*A. plumbea*) has deep purple lvs. and petioles with a metallic sheen. Var. **variegàta** has lvs. and petioles lined or mottled with grayish-white.

Korthálsii (*A. Thibautiana*). St. short: lvs. to 14 in. long and 6 in. wide, olive-green above veined with white and purple beneath: spathes pale green. Malaya.

Lòwii. St. short: lvs. to 1½ ft. long and 6 in. wide, olive-green above with pale nerves, dark purple beneath, the basal lobes oblong-triangular; petioles rose-color: spathes whitish-green. Malaya. Var. **Veìtchii** (*A. Veitchii*) has lvs. broadly margined with white and white nerves. Java.

macrorhìza. To 15 ft. or more high: lvs. 2 ft. or more long, green, arrow-shaped, the margins wavy: spathes glaucous-green or yellowish. Malaya. Var. **variegàta** has lvs. blotched and mottled with white.

megarrhìza: hort. name; perhaps *A. macrorhiza*.

metállica: *A. indica* var.

mortenfontanénsis. Hybrid between *A. Sanderiana* and *A. Lowii* with green lvs. margined and veined with white and purple beneath.

odòra. St. to 2½ ft.: lvs. to 3 ft. long and 2½ ft. wide, arrow-shaped, the margins wavy: spathes glaucous-green or yellowish. Asia.

plúmbea: *A. indica* var. *metallica*.

porphyroneùra (*A. princeps*). Nearly stemless: lvs. pale green with purplish veins, arrow-shaped, the margins wavy, basal lobes triangular; petioles spotted white and yellow: spathes pale yellow. Malaya.—Another *A. porphyroneura* is a form of *Caladium picturatum*.

prínceps: *A. porphyroneura*.

Rodigasiàna. Hybrid between *A. regina* and *A. Korthalsii* with grayish-green lvs. purple beneath and with paler veins.

Sanderiàna. Lvs. 1½ ft. long and 6 in. wide, shining metallic green above veined with white or pale yellow, purplish beneath, arrow-shaped, the margins deeply sinuate-lobed, basal lobes narrowly triangular; petioles striped with brown: spathes green. Philippines.

Sèdenii. Hybrid between *A. cuprea* and *A. Lowii*, having lvs. purple beneath and veined white above.

Thibautiàna: *A. Korthalsii*.

Van Houtteàna. Hybrid of uncertain parentage, having deep green shining lvs. margined with white.

Veìtchii: *A. Lowii* var.

violàcea: probably *Colocasia antiquorum*.

Watsoniàna. Lvs. to 2 ft. long and 14 in. wide, green above and purplish beneath margined with white, the basal lobes ovate. Malaya.

zebrìna. St. short: lvs. 1½ ft. long, green, arrow-shaped, margins slightly wavy, the basal lobes oblong-triangular; petioles banded with green and white: spathes green and white. Philippines.

ÁLOE. *Liliaceæ*. Per. succulent herbs with stiff spiny-toothed lvs. and showy red or yellow fls. in mostly elevated racemes or spikes on a stout scape-like st.; sometimes grown in the greenhouse or out-of-doors in the S. for their unusual stiff and fleshy aspect. Not to be confused with agaves which are American but aloes are from the Old World, mostly Afr. As a Latin generic name, Aloe has three syllables; as a vernacular or "common" name it has two syllables.

Aloes are well-known pot subjects and are likely to be conspicuous about public buildings and parks in countries not subject to killing frost. They commonly thrive in the same pot for some years when not grown for bloom. Propagated by suckers; sometimes by cuttings of new growths and by seeds when available.

abyssínica. Stemless: loose rosette of about 25 sword-shaped lvs., usually 2½–3 ft. long, ascending, slightly recurved, to 6 in. wide at base, marginal teeth fleshy, ¼ in. long and about 1 in. apart: fls. yellow to red, about 1½ in. long, on erect branched racemes to 3 ft. high. Ethiopia.

affìnis. Stemless: lvs. to 10 in. long and 3 in. wide, with horny teeth: fls. 1½ in. long, in many-fld. cylindrical racemes to 10 in. high. S. Afr.

africàna. St. to 20 ft. below dense rosette of lvs.: lvs. sword-shaped, 1½–2 ft. long and 2½–3 in. broad near base, very glaucous, margins with brown prickles: fls. bright yellow tipped with green, much recurved, 1½ in. long, in dense racemes about 1 ft. long. S. Afr.

arbòrea: *A. arborescens*.

arboréscens (*A. arborea*). To 15 ft.: lvs. to 2 ft. long and 2 in. wide, at top of trunk: fls. red, 1½ in. long, in dense racemes. S. Afr. Var. **frutéscens** is a shrubby form with glaucous lvs. Var. **natalénsis**, lvs. glaucous, fls. 1½ in. long, in conical racemes. Var. **pachythýrsa**, lvs. bluish, fls. 2 in. long, in ovate-cylindrical racemes.

aristàta (*A. longiaristata*). Stemless: lvs. to 4 in. long and ¾ in. wide, with whip-like apical thread and white marginal teeth, white-warty on back: fls. reddish-yellow, 1¼ in. long, infl. to 1½ ft. S. Afr.

attenuàta: *Haworthia attenuata*.

ausàna: name of a plant reported to be similar to *A. variegata*.

Bàinesii. Tree to 60 ft. with st. diam. to 5 ft. and leafy head diam. to 20 ft.: lvs. sword-shaped, 2–3 ft. long in young plants, shorter in mature plants, margins with scattered small prickles: fls. campanulate, salmon-pink fading into whitish, tipped with green, 1½ in. long, in dense racemes 3–4 in. long. S. Afr.

Barbertòniæ. Stemless or nearly so: rosette of 20–23 lvs. 12–15 in. long, lanceolate, erect-spreading, greenish-red above with distinct white spots in irregular transverse bands, margins armed with stout brown spines: fls. red, to 1½ in. long, cylindrical, inflated at base, in a 5–7-branched raceme to 3 ft. tall. S. Afr.

Bedinghaùsii. A hybrid with triangular lvs. to 2 in. long and ¾ in. across.

Beguìnii. Lvs. in dense rosettes, to 3 in. long and 1 in. wide. Hybrid.

brevifòlia. St. a few in. high below dense rosette: lvs. to 3 in. long and 1 in. wide, glaucous, with white horny teeth: fls. pale red, 1½ in. long, in dense racemes to 9 in. high. S. Afr.

Brunnthàleri. Botanical standing not determined: listed as probably hybrid of unknown parentage and said to be a large plant with bright red fls.

cæ̀sia. To 12 ft.: lvs. to 1½ ft. long and 3 in. wide, very glaucous, with reddish teeth: fls. bright red, 1¼ in. long, in dense racemes to 1½ ft. high. S. Afr.

Camerònii. Shrubby plant to 8½ ft. with st. branched: sword-shaped lvs. to 12 in. long and 1 in. wide, flat on top, convex beneath, bright green frequently reddish, margins coarsely and remotely dentate: fls. to 2 in. long, in dense racemes 6 in. long on erect scapes 12 in. tall. Cent. Afr.

candelàbrum. To 20 ft.: lvs. to 2 ft. long and 3 in. wide: fls. red, 1½ in. long, in racemes borne in a candelabrum-like branching panicle to 2 ft. high. S. Afr.

chinénsis: *A. vera* var.

ciliàris. St. weak and decumbent, with more or less climbing habit, bearing linear-lanceolate lvs. to 6 in. long and 1¼ in. wide, and bright red fls. with greenish tips about 1¼ in. long, in stalked racemes about 8 in. high. S. Afr.—Rather frequent in greenhouses and in S. Calif.

commutàta. Stemless: lvs. to 6 in. long and 2 in. wide, spotted, with red teeth: fls. pale red, 1¼ in. long, in loose racemes to 6 in. high, in a branching infl. S. Afr.?

confùsa. St. slender, much branched, decumbent: lvs. spreading, linear-lanceolate, apex recurved, to 10 in. long and ¾ in. wide: fls. tubular, reddish-orange, ½ in. long, in lax racemes 4–6 in. long. E. Afr.

Coòperi: *A. Johnstonii.*

Davyàna. Stemless: lvs. in dense rosettes, triangular-lanceolate, spotted above, glaucous beneath, with red teeth: fls. pale pink, yellow inside, 1¼ in. long, in pyramidal racemes to 8 in. high. Transvaal.

dichótoma. Tree with much branched trunk 20–30 ft. high, 3–4 ft. diam.: lvs. lanceolate, 6–8 in. long, 1¼ in. wide near base, very glaucous, unspotted, margins with small white teeth: fls. bright yellow, about 1 in. long, in lax racemes 2–4 in. long. S. Afr.

dístans. St. procumbent, to 9 in. long: lvs. to 4 in. long and 2 in. wide, glaucous, yellow-spined: fls. red tipped with green, 1¾ in. long, in infl. to 1½ ft. high. S. Afr.

Dỳeri. St. short, unbranched: lvs. in dense rosette, sword-shaped, to 20 in. long, 4–5 in. wide near base, white-margined, marginal spines nearly ¼ in. long, incurved and about ¾ in. apart: fls. red, yellow within tube, to 1¼ in. long, in lax racemes to 1½ in. long. Transvaal.

echinàta: *A. humilis* var.

Èru. St. 1½ ft. high: lvs. to 2½ ft. long and 3 in. wide, usually spotted, very fleshy, with red teeth: fls. yellow or orange, to 1½ in. long, in racemes to 6 in. high. E. Afr. Var. **cornùta** is listed. Var. **maculàta** has smaller spotted lvs.

fèrox. To 9 ft.: lvs. to 2½ ft. long and 6 in. wide, purplish at margins with yellow-brown teeth: fls. greenish-yellow, 1½ in. long, in infl. to 4 ft. high. S. Afr.

frutéscens: *A. arborescens* var.

globuligémma. Stemless: lvs. in dense rosette, to 1½ ft. long and 3½ in. wide, toothed, glaucous: fls. sulfur-yellow tinged red at base with brown or black stamens, 1 in. long, in panicles. S. Afr.

grandidentàta. St. short: lvs. to 1½ ft. long and 3 in. wide, striped and spotted, with large distant teeth: fls. rose, to 1¼ in. long, in loose racemes to 7 in. high, in a branching infl. S. Afr.

Greènii. St. short, unbranched: rosette of 12–15 lanceolate lvs. 15–18 in. long, 2½–3 in. wide, bright green with irregular wavy bands of confluent oblong whitish spots ¼–¾ in. across, margins with small brown prickles: fls. pale red, to 1¼ in. long, in panicles. S. Afr.

Hanburiàna: *A. striata* var. *rhodocincta.*

Héleniæ. Tree, with st. to 14 ft. tall crowned with rosette of linear-lanceolate lvs. 1½–3½ ft. long, concave above, margins with flat triangular teeth: fls. green at base, red at apex, to 1 in. long, on erect scapes to 2½ ft. tall. Madagascar.

hereroénsis. Stemless or nearly so: lvs. in dense rosette, triangular-lanceolate, 10–12 in. long, to 8 in. wide at base, margins with fleshy horn-like teeth about ⅛ in. long: fls. yellowish-orange, tubular, about 1 in. long, clustered at end of erect corymbs 2½ ft. tall. S. W. Afr.

heteracántha. St. short: lvs. to 1 ft. long and 2½ in. wide, margins entire or with few teeth: fls. red, in dense head-like racemes to 4 in. high. Nativity uncertain.

hùmilis. Tufted: lvs. to 4 in. long and ¾ in. wide, with white marginal teeth, tuberculate: fls. red tipped with green, 1½ in. long, in racemes to 1½ ft. high. S. Afr. Var. **echinàta.** Lvs. thinner and more concave than in the type. Var. **incúrva.** Plant larger, the lvs. broader near base than type: lvs. glaucous-green, with an acuminate incurved tip: perianth tubular not inflated.

incurvàta: listed name of unknown botanical standing, probably *A. humilis* var. *incurva.*

Jóhnstonii (*A. Cooperi*). Stemless or nearly so: rosette of 8–12 linear lvs., white-spotted, margins minutely spined: fls. dull red, small, cylindrical, on simple scapes. S. Afr.

Júttiæ. Cespitose plant of 2–8 rosettes each with about 25 lanceolate lvs. to 12 in. long, glaucous, with a few white spots on each side: fls. bright orange-yellow to orange-red tipped with green, 1¼ in. long, cylindrical, on scapes to 3 ft. S. W. Afr.

Krapohliàna. Stemless, basal rosette to 4 in. across and as high: lvs. linear-oblong, to 3 in. long, acuminate, tuberculed on reverse side with spines on upper side, marginal teeth ⅓ in. apart, minute: scapes to 10 in. high; fls. orange-red, tipped yellow and green, to 1½ in. long. Little Namaqualand, Afr.

latifòlia. St. to 2 ft.: lvs. to 1 ft. long and 3½ in. wide, spotted white, with brown horny teeth: fls. reddish-yellow, to 1½ in. long, in racemes to 5 in. high. S. Afr.

lineàta. St. to 2 ft.: lvs. 1 ft. long and 2 in. wide, glaucous, with green vertical lines and reddish-brown horny prickles: fls. bright red tipped green, in dense racemes 6 in. high. S. Afr.

longiaristàta: *A. aristata.*

longístyla. Stemless: lvs. in dense rosettes, to 6 in. long and 1 in. wide, with horny tip and prickles: fls. salmon-red, 2 in. long, in dense racemes to 5 in. long, the style exserted. S. Afr.

macrocárpa. Stemless, to 2 ft.: lvs. in a basal tuft, to 14 in. long and 2 in. wide, lined and mottled in cross bands: fls. pale red, 1 in. long, in racemes to 6 in. high. Trop. Afr.

macroclàda. Tree: lvs. to 4 in. across, with brown teeth: fls. ¾ in. long, in dense racemes in a candelabrum-like infl. to 10 ft. high. Madagascar.

Márlothii. Tree-like, with simple stout st.: lvs. to 2½ ft. long and 7 in. wide, very spiny: fls. red, 1¼ in. long, in one-sided horizontal racemes in a branching infl. S. Afr.

microdónta. Lvs. lanceolate, to 15 in. long and 3 in. wide, strongly recurved, apex acute, margins yellow with short brownish triangular spines about ⅝ in. apart: fls. red, in lax racemes to 1 ft. long on peduncles to 15 in. long. Ethiopia.

microstígma. St. short: lvs. to 1 ft. long and 1½ in. wide, glaucous, spotted white, with small brown teeth: fls. greenish-yellow, in dense racemes to 20 in. high. S. Afr.

mitrifórmis. St. 3–4 ft., procumbent: lvs. to 6 in. long and 3 in. wide, with pale horny teeth: fls. bright red, 2 in. long, in dense corymbose racemes 6 in. high and broad. S. Afr.

nóbilis. St. prostrate: lvs. to 6 in. long and 2 in. wide, with white marginal teeth: fls. red, 1½ in. long, infl. 2 ft. S. Afr.

obscùra (*A. picta*). Short-stemmed: lvs. to 8 in. long and 3 in. wide, lined and spotted with pale green, with spiny cartilaginous margins: fls. red, 1¼ in. long, in infl. to 3 ft. high. S. Afr.

parvibracteàta. Stemless: lvs. to 1 ft. long and 3 in. wide, spotted and striped, with small teeth: fls. deep red, 1 in. long, in many-fld. loose racemes to 8 in. high. E. Afr.

parvispìna. Tree: lvs. ovate-lanceolate, 10–12 in. long and 3½ in. wide at base, margins irregularly toothed with one small tooth usually between two larger ones: fls. rarely exceeding ¾ in. length, on an erect branched infl. S. Afr.

Páxii. Stemless or nearly so: dense rosette of 12–18 oblong-lanceolate lvs. to 2–3 in. long, acuminate, margins of fleshy teeth: fls. yellow suffused with pink, to 1½ in. long, in panicles to 3 ft. S. Afr.—Reported to be a hybrid (*A. striata* × *A. commutata*).

Pégleræ. Stemless or nearly so: lvs. to 6 in. long and 1¾ in. wide, with distant brown teeth: fls. pale pink, 1 in. long, in dense racemes about 1 ft. high. Transvaal.

penthaménsis: listed name of plant in trade.

percrássa. Stemless or nearly so: dense rosette of 30–40 elongate-triangular lvs., narrowly attenuate at apex, somewhat recurved, to 2 ft. long and 8 in. wide, upper surface deeply concave, glaucous, margins with short fleshy teeth: fls. pale red, to 1¼ in. long, in elongate cylindrical racemes. S. Afr.

Pérryi. Small plant on stalk about 10 in. high terminated by rosette of 12–20 lanceolate lvs. 10–12 in. long and 2–2½ in. wide at base, acuminate and deeply concave, glaucous, obscurely lined, frequently reddish, margins with abundant sharp brown spines: fls. red, 1 in. long, in racemes on branched or simple scapes to 2 ft. S. Afr.

pícta: *A. obscura.*

Pienaàri. Stemless or nearly so: rosette of 35–60 sword-shaped lvs., erect, recurved, reddish-green to bluish, to 3 ft. long, margins armed with small brown spines: fls. scarlet tipped with green, changing to citron-yellow, to 1½ in. long, in 2–3 much branched panicles to 4 ft. tall. Transvaal, S. Afr.

Pilnàri: listed name, probably *A. Pienaari.*

plicátilis. To 10 ft., much branched: lvs. to 16 in. long and 1½ in. wide, glaucous, margins horny: fls. red, to 2 in. long, in loose racemes to 1 ft. high. S. Afr.

preciòsa: listed name of unknown botanical standing.

pretoriénsis. St. to 3 ft.: lvs. to 2 ft. long and 3 in. wide, with red horny teeth: fls. red, in racemes 1½ ft. long, in a branching infl. to 10 ft. high. Pretoria.

Róbertii. Stemless or nearly so: lvs. to 2½ ft. long and 8 in. wide, with brown teeth: fls. yellow, in a much branched infl. Perhaps a hybrid.

robústa: listed name of unknown botanical standing.

rubrolùtea. Trunk 10–12 ft., covered with deflexed dry lvs. and crowned by rosette of lvs. to 2 ft. long and 4 in. wide: fls. red, 1¼ in. long, in racemes 1 ft. long in a branched infl. Trop. Afr.

runcinàta. Plant cespitose on short st. with rosette of 15–30 linear-lanceolate lvs. 15–18 in. long, to 3 in. wide at base, broadly concave on top, green to purplish, margins with stout recurved spines at irregular intervals: fls. bright red, 1½ in. long, on strongly branched scapes to 4 ft. high. S. Afr.

Sálm-Dyckiàna. To 6 ft., branching: lvs. tufted, to 2½ ft. long and 3½ in. wide, yellowish-margined: fls. light red, 1½ in. long, in panicled racemes to 3 ft. high. S. Afr.

saponària (*A. umbellata*). Densely tufted, stemless, to 2½ ft.: lvs. 8 in. long and 2½ in. wide, blotched with pale green: fls. red, to 1¾ in. long, in dense many-fld. heads. S. Afr. Var. **variegàta** is listed.

Schímperi. Stemless or nearly so: lvs. broadly linear-lanceolate, flat, fleshy, glaucous, margin with red minute spines: fls. bright red, 1½ in. long, in short dense racemes on scapes to 3½ ft. tall. Ethiopia.—Probably a hybrid.

Schléchteri. Stemless or nearly so: dense rosette of 30–40 ovate-lanceolate lvs. about 15 in. long, glaucous, papillate, margins with short blunt reddish-brown spines: fls. red, to 1½ in. long, in dense racemes 10 in. long. S. Afr.

soccotrìna: *A. succotrina.*

speciòsa. Two plants are known by this name: one a hybrid with a very short branched st. and bright red fls.; the other a tree form growing to a height of 25 ft. with pink fls. on scapes to 3½ ft. long.

spinosíssima. Hybrid with lvs. to 1 ft. long and 2 in. wide, purple fls. in dense cylindrical racemes to 1 ft. high.

spùria. Stemless or nearly so: rosette of 10–12 lanceolate lvs. 12–15 in. long, to 2½ in. wide, bright green suffused with dull purple, margins with short brown spines: fls. pale red, to 1½ in. long, on slender 2–3-branched scapes to nearly 4 ft. high. Probably of hybrid origin.

Straùssii. Stemless: lvs. to 8 in. long and 2½ in. wide, spotted: fls. yellow, 1¼ in. long, in short loose racemes on stalks 1½ ft. high. E. Afr.

striàta. Nearly stemless, to 3 ft.: lvs. 20 in. long and 6 in. wide, with entire white cartilaginous margins: fls. red or yellowish, 1¼ in. long, in panicled umbels. S. Afr. Var. **rhodocíncta** (*A. Hanburiana*) has lvs. blotched with white.

striátula. Similar to *A. ciliaris* but with longer lvs., reddish to yellow or orange fls. having long-protruding stamens. S. Afr.

succotrìna (*A. soccotrina*). To 4 ft., branching: lvs. 20 in. long and 2 in. wide, with white marginal prickles: fls. light red, 1¼ in. long, in racemes. S. Afr.

supralǽvis. Unbranched, to 6 ft.: lvs. to 2½ ft. long and 6 in. wide, spiny below and with red-brown marginal spines: fls. reddish-yellow, to 1 in. or more long, in racemes about 1 ft. long in a branching infl. S. Afr.

ténuior. St. often branched: lvs. to 6 in. long and ½ in. wide, glaucous, minutely toothed: fls. yellow, ½ in. long, in racemes to 1 ft. high. S. Afr.

Thráskii. St. to 8½ ft.: lvs. sword-shaped, to 3½ ft. long and about 6 in. wide at base, leathery and slightly fleshy, glaucous, deeply concave on top, marginal teeth small and brown: fls. red, to 1 in. long, in dense cylindrical racemes on erect slender branched peduncles. Rhodesia.

Thórncroftii. Stemless or with very short st.: rosette of 25–30 broadly lanceolate lvs. to 12 in. long, erect, spreading, dark green, margins with pale brown teeth: fls. rose-red, to 2 in. long, cylindrical on erect scapes to 5 ft. tall. Transvaal, S. Afr.

umbellàta: *A. saponaria.*

variegàta. St. to 9 in.: lvs. densely imbricated, to 5 in. long and 1 in. wide, with white spotted bands and minute teeth: fls. red, to 1½ in. long, the loose racemes on stalks to 1 ft. high. S. Afr.

vèra. True A. Barbados A. To 3 ft.: lvs. thick, to 2 ft. long, in a basal rosette: fls. yellow, nodding, in dense racemes terminating the scapes. Medit. region. Var. **chinénsis** is a smaller plant, with red-tinged fls. India.

vìrens. Strongly cespitose: lvs. narrowly lanceolate, ascending from rosette, about 8 in. long and 1 in. wide at base, margins with fleshy deltoid teeth: fls. to 1½ in. long, in short racemes on tall slender scapes to 2 ft. S. Afr.

Wíckensii. Stemless or nearly so: rosette of 40–50 lvs. to 2½ ft. long, sword-shaped, pale green, incurved, flat on top, margins armed with small sharp black spines: fls. morocco-red turning greenish-yellow to bright lemon-yellow, cylindrical, to 1¼ in. long, in short conical racemes on slightly branched panicles to 5 ft. tall. S. Afr.

zebrìna. Stemless or nearly so: rosette of 15–25 linear-lanceolate lvs. about 6–12 in. long and 2–3 in. wide, often purplish, blotched with whitish, edged with large red- or brown-tipped teeth, spine brown: fls. dull red, to 1½ in. long, in 12–15 in. racemes on a much branched scape 3½–4½ ft. tall. S. W. Afr.

ALOINOPSIS: *Nananthus.*

ALONSÒA. Mask-Flower. *Scrophulariaceæ.* Herbs and small shrubs grown as annuals in the garden, or indoors for the attractive winter bloom: fls. red, 2-lipped, in terminal racemes, the corolla with very short tube, turned upside down by the twisting of the st.: lvs. opposite or in whorls of 3: native in trop. Amer.

Propagated from seed, and by cuttings for winter plants. They are all of simple cultural requirements in warm open exposures.

acutifòlia (*A. myrtifolia*). Bushy, to 3 ft.: lvs. broad-lanceolate, sharp-toothed: fls. cinnabar-red, upper lip 3–4 times longer than calyx. Peru. Var. **cándida** (*A. albiflora*), fls. white.

albiflòra: *A. acutifolia* var. *candida.*

caulialàta. To 1 ft. or more, with 4-angled sts.: lvs. ovate or ovate-lanceolate, toothed: fls. scarlet, upper lip twice as long as calyx. Peru.

compácta: *A. Warscewiczii.*

grandiflòra: *A. Warscewiczii.*

incisifòlia. To 2 ft.: lvs. oval or ovate-lanceolate, deeply cut-toothed: fls. scarlet, purple-black in throat, upper lip 2–4 times longer than calyx. Peru.

lineàris (*A. liniflora*). Bushy, much branched, to 1½ ft.: lvs. linear, fine-toothed or entire: fls. numerous, scarlet. Peru. Var. **grácilis** (*A. pumila*), smaller and graceful.

liniflòra: *A. linearis.*

linifòlia. To 1½ ft.: lvs. linear, entire: fls. scarlet, large. Peru.

meridionàlis (*A. Mutisii*). Similar to *A. caulialata* but with uniformly dull orange fls. about ¼ in. long. Colombia.

Mutísii: *A. meridionalis.*

myrtifòlia: *A. acutifolia.*

pùmila: *A. linearis* var. *gracilis.*

Warscewíczii (*A. compacta. A. grandiflora*). Very bushy, to 3 ft.: lvs. ovate-lanceolate, toothed: fls. cinnabar- or scarlet-red, upper lip 4–5 times longer than calyx. Peru.

ALOPECÙRUS. *Gramineæ.* Ann. and per. grasses resembling timothy and grown in meadows, the spikelets crowded into dense narrow spikes; native mostly in the north temp. zone. See *Grasses.*

praténsis. Meadow Foxtail. Per. to 3 ft.: lvs. to 6 in. long and ¼ in. wide, rough: spikes to 3 in. long, above the foliage, florets awned. Eu.; nat. in E. N. Amer.—Grown in meadows: lower grass than timothy, with shorter spikes and many awns.

ALOYSIA: *Lippia.*

ALPHITÒNIA. *Rhamnaceæ.* Probably a single species, a tall tree with alternate lvs., fls. ¼ in. or less across, in forking cymes, and fr. a dry drupe-like body the outer part of which often falls and leaves the 2 or 3 seeds standing on the torus. **A. excélsa.** Lvs. ovate to lanceolate, to 6 in. long, entire, leathery, white-tomentose beneath. Australia. Occasionally planted in S. Calif. for ornament.

ALPINES. The word *alpine* denotes narrowly pertaining to the Alps, but usage allows its application to any very high mountain regions. Alpine plants are particularly those that grow above the tree-line, but in common writing and speech the term is too frequently employed for mountain plants in general, and alpine-gardening is likely to mean only rock-gardening. The real alpine-gardening attempts to make an approximate imitation of alpine conditions; it is possible in cool places, with good supply of cold water, and soils something like those of alpine places. The selection of plants requires experience and the handling of them demands skill. The growing season is short. True alpine-gardening is little attempted in North America outside mountainous regions.

ALPÍNIA. *Zingiberaceæ.* Per. herbs with leafy sts. and often showy fls. in terminal spikes or panicles, having 1 petal-like staminode or lip.

Grown for ornamental foliage and habit in the tropics and subtropics or in a moist greenhouse with a temperature of 60°. They require abundant watering. Propagated by division in spring; the plants make large clumps. Some of the kinds have striped leaves. See *Zingiberaceæ.*

calcaràta. To 5 ft.: lvs. to 1 ft. long and 2 in. wide: fls. greenish-white, the lip variegated with red and yellow, in dense panicles to 4 in. long. India.

formosàna. Lvs. to 16 in. long and 3 in. wide: fls. with crinkled lip 1 in. long, in panicles to 6 in. long. Formosa.

mùtica. To 6 ft.: lvs. to 16 in. long and 1¾ in. wide: fls. white, the lip yellow marked with red, in panicles to 7 in. long. Malay Peninsula.—The material cult. under this name may not be this species.

nùtans: *A. speciosa.*

Sánderæ (*A. vittata*). Lvs. to 8 in. long and 1 in. wide, striped and marked with clear white. Botanical position uncertain; plant sterile; frequent in cult.

speciòsa (*A. nutans. Renealmia nutans. Languas speciosa*). SHELL-FLOWER. To 12 ft.: lvs. to 2 ft. long and 5 in. wide: fls. white tinged with purple, the lip crinkled and yellow variegated with red and brown, fragrant, in pubescent racemes which become nodding. E. Asia.—Commonly planted in warm regions.

trícolor. Like *A. Sanderæ* except that the lf.-markings are yellowish-white.

vitellìna (*Amomum vitellinum*). To 3 ft.: lvs. to 16 in. long and 3 in. wide: fls. yellow, the lip crisped and marked with red, in panicles to 3½ in. long. Malacca.

vittàta: *A. Sanderæ.*

ALSEUÓSMIA. *Caprifoliaceæ.* New Zealand evergreen shrubs with alternate lvs., tubular or funnelform fragrant fls. solitary or clustered in the axils, and crimson berries; one species may be planted in S. Calif.

macrophýlla. To 8 ft., glabrous: lvs. obovate to linear-oblong, to 7 in. long: fls. crimson, to 1½ in. long: berries ½ in. long.

ALSINE: see *Arenaria* and *Stellaria.*

ALSINOPSIS: *Arenaria.*

ALSÓPHILA. TREE-FERN. *Cyatheaceæ.* Tree-ferns with large finely divided lvs. light green in color, the stipes covered with scales, spiny or smooth, with naked sori on back of segms.; mostly tropical. See *Ferns.*

austràlis. To 20 ft., trunk straight bearing a spreading head of 2–3-pinnate lvs. to 12 ft. long; segms. to 6 in. long and 1 in. wide. Australia.—Rather common under glass.

dealbàta: *A. glauca;* sometimes *Cyathea dealbata.*

glaùca (*A. dealbata*). Very tall, prickly: lvs. glaucous beneath, segms. to 5 in. long and 1 in. wide. Trop. Asia.

ALSTÒNIA. *Apocynaceæ.* Trees or shrubs with mostly whorled lvs., salver-shaped fls. in corymbose cymes, and fr. of 2 linear follicles; native Malaya to Pacific Isls.

scholàris. DEVIL-TREE. PALI-MARA. To 60 ft. and more: lvs. narrow-oblong to oblanceolate, verticillate, to 8 in. long, with many parallel side-veins: fls. pubescent, white, in thyrses: pods very long and slender. India.

venenàta. To 8 ft. or more, glabrous: lvs. oblong-lanceolate, to 8 in. long: fls. white, 1 in. across: frs. to 5 in. long. India.

ALSTRŒMÈRIA. *Amaryllidaceæ.* S. American herbs with thick fibrous roots, leafy sts., and showy red, yellow or purple fls. in terminal umbels, the perianth-segms. distinct.

Alstrœmerias are probably not hardy in the North except *A. aurantiaca*, but may be planted out in spring, lifted after blooming, and stored over winter. They should be set in shady positions in rich moist soil. Also may be grown as pot-plants in the greenhouse but should be lifted and shaken out annually. Propagated by division of roots and by seeds.

aurantìaca (*A. aurea*). To 3 ft.: lvs. lanceolate, to 4 in. long: fls. bright yellow spotted with brown, 1½ in. long. Chile.—Several color forms are listed, as **flàva, lùtea, rùbra.**

aùrea: *A. aurantiaca.*

brasiliénsis. To 4 ft.: lvs. oblong-lanceolate, 2 in. long: fls. reddish-yellow spotted with brown, 1¼ in. long. Brazil.

chilénsis. To 4 ft.: lvs. obovate to lanceolate, fringed: fls. rose or red. Chile.

hæmántha. To 3 ft.: lvs. lanceolate to linear, to 4 in. long, glaucous beneath: fls. reddish-yellow spotted purple and tipped green, to 2 in. long. Chile. Var. **ròsea** has rose fls.

Lígtu. To 2 ft.: lvs. of fl.-sts. linear, usually 20–30, to 3 in. long, lowest ones lanceolate: fls. whitish, lilac or pinkish, streaked purple, inner segms. often obtuse. Chile. Var. **púlchra** has longer narrower lvs.

lùtea: *A. aurantiaca* var.

Pelegrìna. To 2 ft.: lvs. lanceolate, to 2 in. long: fls. lilac spotted with red-purple, to 2 in. long. Chile. Var. **álba** has white fls.

peruviàna: *A. versicolor.*

pulchélla. To 3 ft.: lvs. lanceolate, to 3 in. long: fls. dark red tipped with green and spotted with brown. Brazil.

revolùta. To 1 ft.: lvs. linear, to 1½ in. long: fls. purplish, yellowish and spotted within, to ¾ in. long. Chile.

Sálteri: listed name for forms with colors ranging from pale pink to brick-red.

versícolor (*A. peruviana*). To 1 ft.: lvs. linear, 1 in. long: fls. yellow spotted with purple, 1 in. long. Chile.

ALTAMIRANOA: *Villadia.*

ALTERNANTHÈRA. *Amaranthaceæ.* Probably nearly 100 herbs or shrubs of warm or trop. countries, a few of which are grown as carpet-bedding subjects. The species in cult. are placed in the genus Achyranthes by some authors and in Telanthera by others. In gardens the plants are commonly known as Alternantheras. The hort. kinds are low compact herbs of the New World tropics with small opposite entire variously colored and variegated lvs.: fls. minute, in small dense axillary clusters, but in cult. the plants are not often allowed to reach the blooming stage.

Alternantheras are usually kept only 6 inches high by shearing. They grow best in warm sunny situations. The plants are propagated by division or by cuttings; the latter are usually made from strong plants in the garden in August, wintered over in hotbeds or the greenhouse and potted off in March or April. Division requires less time; the plants, after the first frost, are lifted and cut back to 3 or 4 inches; in early spring they are divided, the rooted shoots potted or placed in flats with plenty of room; in four to six weeks they should be ready for bedding-out.

amœ̀na. Very dwarf: lvs. lanceolate to elliptic, green veined and blotched with red and orange. Brazil. Here belong the garden forms **amábilis, spectábilis, ròsea.**

Bettzickiàna (*Achyranthes Bettzickiana*). Erect ann. or per. to 15 in., many ascending stout branches usually swollen at nodes: lvs. narrow-spatulate, blotched and colored in many shades cream-yellow to red. Brazil. Most of the cult. forms belong here, as **aùrea**; **aùrea nàna compácta**; **Bésteri mosàica,** a light yellow variation mottled with red; **Blárdii,** purplish-crimson foliage; **brilliantíssima,** a bright red form; **Gíbsonii,** light yellow variation; **magnífica,** more vigorous habit; **Séyboldii,** listed name for a yellow form. Var. **týpica** is 2–3 in. tall, lvs. olive-colored, upper ones red at apex. Var. **spathulàta,** to 8 in. with red lvs. and sts.

paronychioìdes of hort.: *A. Bettzickiana.*

philoxeroìdes. Usually decumbent: lvs. obovate to lanceolate, very short-stalked. Brazil.

versícolor. Copper A. Lvs. round-spatulate, copper- or blood-red. Brazil.

ALTHǼA. *Malvaceæ.* Tall straight leafy-stemmed pubescent or tomentose annuals, biennials and perennials with fls. in terminal erect racemes or spikes, grown in gardens for their showy bloom; native in the temp. regions of the Old World.

The perennials are given the usual cultivation. The biennials, especially *A. rosea*, are planted most often in July and transplanted to their permanent quarters the following spring. A new strain, sold as "annual hollyhocks," produces bloom the first summer by sowing the seed indoors in February.

álba: hort. name.

anemonæflòra: *Hibiscus syriacus* var.

árdens: *Hibiscus syriacus* var.

armenìaca (*A. multiflora*). Per. to 3½ ft., finely tomentose: lvs. 3–5-palmately divided, segms. linear-lanceolate to obovate, often toothed: peduncles as long as lvs. or longer and several-fld.; fls. pink, to 1½ in. across. E. Medit. region.

cannabìna. Per. to 6 ft., branched, scabrous: lvs. 3–5-palmately divided, lobes narrowly lanceolate, serrate: fls. purplish, 1–2 on peduncles 2–5 times as long as lvs. Eu. Var. **narbonénsis** (*A. narbonensis*) has lvs. bluntly toothed and sepals ovate, acute.

chinénsis: *A. rosea.*

cœléstis: *Hibiscus syriacus* var.

ficifòlia. Figleaf or Antwerp Hollyhock. Bien. to 6 ft.: lvs. deeply 7-lobed and toothed: fls. lemon-yellow or orange, in terminal spikes, single or double, to 3 in. and more across. Eu.

frùtex: *Hibiscus syriacus.*

Heldreìchii. Sts. slender, stellate-hairy: lvs. cordate to suborbicular, lobes 5, obtuse: fls. rose-pink, short-peduncled, solitary or in 2's or 3's, petals 2-lobed, calyx-lobes triangular and acute. Greece.

Hohenáckeri (*Alcea Hohenackeri*). Probably bien., 3–6 ft. high: lvs. cordate-orbicular to ovate, mostly deeply 5–7-lobed, margins crenate: fls. white with deep yellow throat or center. Asia Minor and Caucasus.

kragujevacénsis. Per. about 4 ft. high: lvs. triangular-ovate, slightly lobed, serrate, densely stellate-hairy: fls. rose-lilac, axillary, anthers purple. Serbia.

multiflòra: *A. armeniaca.*

narbonénsis: *A. cannabina* var.

nudiflòra. Bien. to 6 ft., hispid: lvs. rounded cordate, to 6 in. across, often 3-lobed, margin crenate: fls. white, to 4 in. across, subtending bracts absent, petals wedge-shaped and emarginate. Altai Mts., S. Siberia.

officinàlis. Marsh-Mallow. Per. to 4 ft.: lvs. 3-lobed or unlobed, the upper ones rarely lobed, tomentose: fls. 1 in. across, blush or rose, in axillary clusters. E. Eu.; escaped in coast marshes in N. Amer.

pæoniflòra: *Hibiscus syriacus* var.

pállida. Bien. or per. to 7 ft. high, hispidulous, not much branched: lvs. suborbicular, shallowly lobed, soft-hairy: fls. rose, to 3 in. across, nearly sessile. Cent. to E. Eu.

póntica. To 3 ft.: lvs. orbicular to peltate, 3-lobed, crenate, densely tomentose beneath and slightly so above, long-petioled: fls. violet, to 3 in. across, petals retuse, sepals ovate-triangular. N. E. Medit. region.

ròsea (*A. chinensis*). Hollyhock. Hairy bien. or semi-per. to 9 ft.: lvs. 5–7-lobed or -angled: fls. in long spike or wand-like raceme, red, rose, pink, yellow, white, to 3 in. and more across. China.—There are double vars. See *Hollyhock.*

semperflòrens: hort. name, perhaps for a double-fld. form of *A. rosea.*

sulphùrea. Lvs. ovate to ovate-orbicular, simple or lobed, margin often obtusely crenate, densely floccose to woolly beneath: fls. pale yellow, petals 2-lobed, calyx-lobes laciniate-lanceolate. Persia.—A form with violet fls. is known in the wild and may be expected in cult.

syrìacus: *Hibiscus syriacus.*

taurinénsis: a confused name in the trade; the plants may usually be referred to *A. armeniaca* or *A. officinalis.* The true *A. taurinensis* of Eu. differs from *A. officinalis* in having the upper lvs. distinctly 3-lobed with the middle lobe elongate-lanceolate.

Tournefortiàna. Erect per. to 5 ft.: lvs. 3–5-lobed, softly brown-villous, base cordate: fls. rose-pink, in terminal racemes, calyx hairy: fr. about one-half as large as in *A. rosea.* Crete.

ALTHEA, SHRUB-: *Hibiscus syriacus.*

ALUM-ROOT: *Heuchera.*

ALYOGYNE: *Cienfuegosia.*

ALYSICÁRPUS. *Leguminosæ.* Alyce Clover. Bien. or ann. herbs distributed throughout Old World tropics and nat. in those of New World. One species, **A. vaginàlis,** is grown in the S. as a forage plant. Ann., sts. ascending, to 3 ft. long: lvs. simple, oblong to oblong-lanceolate, usually ½–2 in. long, glabrous, short-petioled, base subcordate, apex obtuse or emarginate to acute: fls. about ¼ in. long, papilionaceous, in racemes of 4–12, to 3 in. long: pod terete, to ¾ in. long, nearly straight.—Propagated by seed, and when grown for forage seed is sown at rate of 5 lbs. to the acre for permanent pasture and double the quantity for a hay crop. Hay crops are harvested after fruit has set and a sufficient amount of seed shells out to re-seed the area for the next year. Alyce clover will grow on a more acid soil than most leguminous forage plants and is reported to have a nutritive value equivalent to that of alfalfa.

ALÝSSUM. Madwort. *Cruciferæ.* Ann. and per. mostly gray herbs and subshrubs: lvs. small, alternate on the st., sometimes making rosettes at base: fls. small, yellow or white, in terminal short racemes or clusters: pods or silicles short, nearly or quite orbicular in outline. Species about 100, in Eu. and W. Asia.

A few are grown in rock-gardens and borders, in open or sunny situations. They require the usual culture for perennials and are propagated by seed or by division of the roots.

alpéstre. Variable gray tufted per. 3 or 4 in. high: lvs. obovate or oblong to linear, about ¼ in. long: fls. yellow, in short racemes. Eu.—Some of the plants known as *A. serpyllifolium* probably belong here.

alyssoìdes (*A. calycinum*). Ann., mostly branching at base, to 10 in. high: lvs. narrow-oblong to spatulate, usually under 1 in. long, grayish-canescent: fls. yellowish-white, in narrow terminal racemes, sepals persistent. Eu.; nat. in N. Amer.

amàmum: catalogue name for a creeping plant with silvery lvs. and heads of yellow fls. in spring; see *A. sphacioticum.*

argénteum. Yellow-Tuft. Per., dwarf, dense, woody at base, 15 in. high: lvs. oblanceolate to spatulate, silvery-tomentose underneath: fls. deep yellow, in clustered heads, all summer. Eu.—Incorrectly known also as *A. rostratum.*

atlánticum. Per. to 1 ft., woody at base: lvs. lanceolate, hoary: fls. yellow, in simple racemes. S. Eu.—Probably a variant of *A. montanum.*

Bénthamii: *Lobularia maritima.*

Bornmùlleri: a confused name whose botanical position is not well understood.

Borzæànum. Per. to 8 in. with woody roots and many stiff erect sts.: lvs. obovate or sometimes nearly orbicular, white- or gray-pubescent: fls. yellow, in corymbs or racemes. Rumania.

calýcinum: *A. alyssoides.*

chalcídicum. Similar to *A. Markgraffii*, differing in larger petals to ⅛ in. long and hairy ovary. S. E. Eu.

compáctum: botanically this is a synonym for *A. minutum*, but plants in the trade may be *A. saxatile* var. or *Lobularia maritima* var.

condensàtum. Per. to 5 in., sts. ascending, woody at base: lvs. obovate-oblong, obtuse, base attenuate, canescent-hairy: fls. lemon-yellow, in racemes: pod narrowly elliptic-cuneate, ⅙ in. long. Syria.

córsicum. Much branched per. to 1½ ft., woody at base: lvs. obovate, silvery: fls. yellow, small: pod convex with compressed margins, orbicular, glabrous, 2-seeded. Corsica.

corymbòsum. Per.: lvs. spatulate or lanceolate, usually dentate: petals notched: pod globose, glabrous, to ¼ in. long, usually 4 seeds in each cell. S. E. Eu.

créticum. Woody per., 1 ft. or less: lvs. obovate-oblong and obtuse, silvery: fls. rather large, yellow, in short racemes. Crete.—Sometimes confused with *A. corymbosum* from which it differs in its stellate-pilose pods.

desertòrum. Ann. to 4 in.: lvs. oblong, gray-hairy or silvery: fls. pale yellow: pod orbicular, to ⅙ in. long, glabrous, in elongated racemes. N. E. Medit. region and Balkans.—Sometimes distributed as *A. minimum*, a name usually referable to *Lobularia maritima*.

diffùsum: name of uncertain application; some of the material in the trade is *A. montanum*.

edéntulum: *A. petræum* var.

gemonénse: *A. petræum*.

gigantèum: *Lobularia maritima*.

halimifòlium. Much branched per. to 1 ft., woody at base: lvs. oblong, silvery: fls. white, large, in dense corymbs: pod orbicular, compressed, glabrous. S. Eu.

idæum. Silvery-green per. with short simple sts.: lvs. ovate-oblong, basal ones about ½ in. long: fls. whitish, in short panicle: pod compressed-convex, to ¼ in. long, orbicular. Crete.

incànum: *Berteroa incana*.

leucadèum. Per. to 15 in., rhizome distinctly woody, leafy, silvery-gray: lvs. broad-linear, obtuse, entire, to 3 in. long: fls. yellow, to ⅓ in. long, in racemes: pod orbicular and flattish, to ⅝ in. long. Italy.

lutéscens: yellowish form of *Lobularia maritima*.

marítimum: *Lobularia maritima*.

Markgráffii. Per. to 1 ft., sts. stellate-pilose: lvs. narrowly linear-spatulate, to ¾ in. long: fls. bright yellow, to ⅕ in. across, in dense panicles, petals narrow, nearly twice as long as calyx, style short. Albania.—By some authors considered a variety of *A. chalcidicum*.

Mildeànum. Densely tufted per., shrubby, the flowering sts. ascending: lvs. hairy, silvery: fls. yellow, to ⅕ in. long: pod orbicular, usually longer than the pedicels. Rocks, Bulgaria.

mínimum: *Lobularia maritima* var., or possibly *A. desertorum*.

Moellendorfiànum. Per., silvery: lower lvs. more or less spatulate, the upper ones ovate, all obtuse and ½ in. or so long: fls. yellow, in an umbel-like head. Bosnia.—Distinguished from *A. montanum* by its silvery fr. pedicels.

montànum. Per. to 10 in., but commonly low and compact: lvs. obovate-oblong to linear, grayish-canescent: fls. yellow, fragrant, in short clusters elongating in fr. Cent. and S. Eu., Caucasus.—Distinguished from *A. repens* by the absence of simple hairs among the stellate hairs of the pedicels.

odoràtum: hort. name for *Lobularia maritima*.

oviránse. Per. to 5 in., rarely to 1 ft. high, sts. ascending, base woody: lvs. broadly obovate tapering abruptly at base, the upper ones lanceolate, all sparsely stellate-hairy and green: fls. golden-yellow, petals hairy: pod hairy, in umbellate racemes. Cent. Eu.

petræum (*A. gemonense*). Whitish per. woody at base, 1 ft. or less, not much branched: lvs. oblong-oblanceolate to spatulate, to ½ in. broad: fls. yellow, in short clusters, the petals notched: pod somewhat inflated, glabrous, suborbicular. S. Eu. Var. **edéntulum** (*A. edentulum*) is more diffusely branched with smaller pods and larger seeds.

podólicum: *Schivereckia podolica*.

procúmbens: listed name, probably *Lobularia maritima*.

prostràtum: listed name.

pyrenàicum. Dwarf shrublet without spines: lvs. obovate, white-tomentose: fls. white, anthers dark, petals orbicular: pod rhombic. Pyrenees.

rèpens. Low per. much like *A. montanum* but with larger orange fls. and the pedicels stellate-hairy with long simple hairs intermixed. S. E. Eu. Var. **Wièrzbickii** (*A. Wierzbickii*) has erect sts. with densely hispid pedicel only ¼ as long as pod and not equalling it.

Rochèlii: *A. Wulfenianum*.

rostràtum: see *A. argenteum:* the *A. rostratum* of botanists is an ann. and not known to be cult.

saxátile. Golden-Tuft. Gold-Dust. Basket-of-Gold. Rock M. Spring-flowering per. forming a spreading mat, woody at bottom: lvs. oblanceolate to somewhat spatulate, mostly with few obscure teeth, grayish, the greater part basal and 2–4 in. long: fls. golden-yellow, in racemes on branching sts.: pod orbicular, compressed, glabrous. Cent. and S. Eu. Several vars. are in cult.: **compáctum,** Dwarf G.; **compáctum flòre-plèno; lùteum** (*citrinum, sulphureum*); Silver Queen, palest yellow; **variegàtum.**—Some of the material grown under this name is *A. petræum*.

serpyllifòlium: see *A. alpestre*.

sinuàtum (*Vesicaria sinuata*). Per. to 20 in.: lvs. spatulate to lanceolate, lower ones sinuate-dentate, upper entire: fls. sulfur-yellow, in simple racemes: pod inflated, globose to ellipsoid, usually 4–6-seeded. June. Macedonia.

sphaciòticum. Densely tufted per. to 1 ft., sts. often creeping: lvs. obovate to oblong-linear, gray-hairy: fls. sulfur-yellow: pod compressed orbicular, to ¼ in. across, stellate-pubescent, on pedicels to ½ in. long. Crete.—Not listed as cult. but some of the material grown as *A. amamum* belongs here.

spinòsum. Woody and spiny, to 1 ft., silvery: lvs. long-lanceolate, to 2 in. long: fls. white or pinkish, in short racemes. S. Eu., N. Afr. Var. **ròseum** is listed.

stylòsum: advertised as having bright yellow fls. in spring.

Troòdii. Per. to 6 in., base woody, sts. erect, glandular-hairy: lvs. obovate-cuneate, to ½ in. long, obtuse: fls. pale yellow, large: pod flat, elliptical, usually long-acuminate at distal end. Cyprus.

Wièrzbickii: *A. repens* var.

Wulfeniànum (*A. Rochelii*). Gray-canescent per. differing from *A. montanum* mainly in the smooth pod twice as large. S. Eu.

ALÝXIA (*Gynopogon*). *Apocynaceæ.* Trop. evergreen woody plants in many countries with mostly fragrant fls. and glossy whorled or opposite lvs.: corolla salverform, the cylindrical tube swollen above the middle or contracted at throat: fr. a drupe. Propagated by seeds and cuttings.

olivæfórmis. Maile. Somewhat twining glabrous shrub: lvs. ovate to oblong, to 2 in. or more long, entire: fls. yellowish, mostly 4-lobed, to 2½ in. long, very fragrant. Hawaii, where it is much prized in garlands or leis.

AMARANTH: *Amaranthus.* **Globe:** *Gomphrena globosa.*

AMARANTHÀCEÆ. Amaranth Family. Mostly herbs of wide distribution, with opposite or alternate lvs., small unisexual or bisexual fls. subtended by dry scales, usually showy in mass, having small 2–5-parted perianth, 1–5 stamens, superior ovary, and fr. a utricle, achene or berry-like. Many of the genera are weedy, but some species are grown for ornament and potherbs, as Ærva, Alternanthera, Amaranthus, Bosea, Celosia, Deeringia, Frœlichia, Gomphrena, Iresine, Nototrichium, Trichinium. All are of simple cult., grown from seeds and from soft cuttings, and prefer open sunny positions.

AMARÁNTHUS. Amaranth. *Amaranthaceæ.* About 50 coarse annuals native in mild and trop. climates in many parts of the world, some of them widely distributed as weeds of tilled lands and waste places; a few of them are cult. for the colored foliage and the heavy red spikes, and in some countries grown for greens: fls. minute and unshowy, in chaffy often colored heads or spikes: lvs. alternate, in ours broadly ovate or oval unless otherwise noted.

The species grow readily from seeds; sunny positions are best; the leaf colors are likely to be less brilliant in very fertile soils. Some of the weedy kinds may be grown in collections for general interest.

abyssínicus: *A. caudatus.*

amábilis: *A. tricolor.*

atropurpùreus: *A. caudatus.*

bícolor: *A. tricolor.*

caudàtus (*A. cruentus. A. paniculatus*). Love-Lies-Bleeding. Tassel-Flower. Stout, branching, upright, 3–5 ft., with large colored showy coarse erect or somewhat nodding panicle which may be open and graceful or thick and clumpy. Tropics; commonly cult. and sometimes spontaneous.—Variable; the effort to distinguish two species, *A. caudatus* and *A. cruentus*, does not hold. Garden plants known as *A. abyssinicus*, *atropurpureus*, *Dussii*, *elegantissimus*, *Margaritæ*, *monstrosus*, *sanguineus*, *superbus*, belong here.

chloróstachys: *A. hybridus.*

coleifòlius: *A. tricolor.*

cruéntus: *A. caudatus.*

Dùssii: *A. caudatus.*

elegantíssimus: *A. caudatus.*

gangéticus: *A. tricolor.*

Hénderi: *A. tricolor* var. *angustior.*

hýbridus (*A. chlorostachys*). Common tall weed, usually with green herbage, but sometimes reddish but plants not showy. Var. **hypochondrìacus.** PRINCES-FEATHER. The cult. form, with many-branched showy panicles, red or brownish-red, the branches slender and graceful, short and erect or only somewhat spreading, terminal one erect or curving from the middle: bracts very sharp, about twice exceeding calyx: herbage usually reddish. Tropics.

hypochondrìacus: *A. hybridus* var.

Margarìtæ: *A. caudatus.*

melanchólicus: *A. tricolor.*

monstròsus: *A. caudatus.*

paniculàtus: *A. caudatus.*

retrofléxus. RED ROOT. To 10 ft., with green fls. in stout terminal or axillary spikes. Trop. Amer.; nat. in N. Amer. and Eu.

salicifòlius: *A. tricolor* vars.

sanguíneus: *A. caudatus.*

speciòsus aúreus is listed as a yellow-lvd. form.

spléndens: *A. tricolor* var.

supérbus: *A. caudatus.*

trícolor (*A. gangeticus. A. melancholicus. A. amabilis*). Erect, mostly much branched, 1–4 ft.: fl.-clusters small, globular, sessile in axils of lvs. or the upper ones 1 or 2 in. long and interrupted and contiguous in a narrow panicle-like infl.: lvs. oval or ovate, the main ones 2½–4 in. broad, often blotched and colored and the plants then sometimes known as JOSEPHS-COAT (*A. bicolor, A. coleifolius*) and brilliant forms as "Combustion," "Molten Fire," "Sunshine" etc. Tropics; grown in the Orient for greens. Var. **angústior** (*A. salicifolius* partly. *A. Henderi*). Plant usually slender: lvs. mostly 1–1½ in. broad. Var. **angustíssimus** (*A. salicifolius* partly). Lvs. long-linear or nearly so, usually not surpassing ½ in. in width, often drooping. Var. **spléndens** (*A. splendens*) is rich red with brilliant light red foliage at top of plant.

AMARCRÌNUM. *Amaryllidaceæ.* As the name indicates, a hybrid between the genera Amaryllis and Crinum. **A. Howardii,** recorded as *A. Belladonna* crossed with pollen of *C. Moorei:* fls. soft pink, somewhat fragrant, open funnelform with recurving segms. and declinate style, borne in very large clusters on sts. to 4 ft. long, of lasting quality. Produced in Calif. where it blooms in the open in summer and autumn; suitable also for pot cult. An earlier hybrid in Eu. of similar parentage has been called *Crinodonna.*

AMARELLA: *Gentiana.*

AMARYLLIDÀCEÆ. AMARYLLIS FAMILY. Over 70 widely distributed genera of per. herbs having bulbous or fibrous roots or rhizomes, usually bisexual fls. with 6-parted perianth, 6 stamens and inferior 3-celled ovary; fr. a caps. or berry. The family furnishes many choice ornamental subjects as well as medicinal products and fiber. Those treated herein are: Agave, Alstrœmeria, Amarcrinum, Amaryllis, Ammocharis, Anigozanthos, Beschorneria, Bomarea, Bravoa, Brunsvigia, Chlidanthus, Clivia, Cooperia, Crinodonna, Crinum, Curculigo, Cyrtanthus, Doryanthes, Elisena, Eucharis, Furcræa, Galanthus, Habranthus, Hæmanthus, Hippeastrum, Hyline, Hymenocallis, Hypoxis, Ixiolirion, Leucojum, Lycoris, Manfreda, Narcissus, Nerine, Pancratium, Phædranassa, Polianthes, Pyrolirion, Rhodohypoxis, Sprekelia, Sternbergia, Vallota, Zephyranthes. Many of these plants bear lily-like fls., but the family differs from the Liliaceæ in having inferior rather than superior ovary.

AMARÝLLIS. *Amaryllidaceæ.* One S. African bulbous herb with large lily-like fls., grown in pots or planted out in warm climates: peduncle or scape solid (not hollow). Most of the plants known as amaryllis in cult. are hippeastrums and other genera.

The bulbs should be stored in a dry cool place during the winter in cold climates, then repotted in a mixture of fibrous loam, leaf-mold and sand and placed in a warm position. Liquid manure should be applied when the fls. develop.

Atamásco: *Zephyranthes Atamasco.*

aùrea: *Lycoris aurea.*

Belladónna (*Callicore rosea*). BELLADONNA-LILY. Lvs. strap-shaped, appearing before or after the fls. which bloom in summer or autumn: fls. rose-red, to 3½ in. long, fragrant, in umbels at top of solid scape to 2 ft. high.—There are many color forms from purple to white, and among the listed vars. are **màjor, mìnor** and **ròsea.**

equéstris: *Hippeastrum puniceum.*

formosíssima: *Sprekelia formosissima.*

Hállii: *Lycoris squamigera.*

Jóhnsonii: *Hippeastrum Johnsonii.*

Josephìnæ: *Brunsvigia Josephinæ.*

longifòlia: *Crinum longifolium.*

lùtea: *Sternbergia lutea.*

praténsis: *Hippeastrum pratense.*

purpùrea: *Vallota speciosa.*

radiàta: *Lycoris radiata.*

Regìnæ: *Hippeastrum Reginæ.*

reticulàta: *Hippeastrum reticulatum.*

sarniénsis: *Nerine sarniensis.*

vittàta: *Hippeastrum vittatum.*

AMASÒNIA. *Verbenaceæ.* Trop. American subshrubs with scattered lvs. and yellow fls. in clusters which are racemed or panicled; grown in the greenhouse the same as Clerodendrum, but little known to gardeners.

calýcina. Lvs. to 1 ft. long, irregularly toothed: fls. drooping, to 2 in. long. British Guiana.

punícea. The plant known to hort. under this name is probably *A. calycina.*

AMATUNGULA: *Carissa grandiflora.*

AMBARELLA: *Spondias cytherea.*

AMBERBÒA (*Volutaria* and *Volutarella*). *Compositæ.* Herbaceous annuals sometimes grown in flower-garden, with alternate jagged-toothed or pinnately-cut lvs. and purple, violet or blue heads: fls. all tubular, outer row sterile; pappus of scales. Native in Medit. region, W. Asia and India.

maroccàna. Ann. to 30 in.: lvs. lanceolate to ovate-oblong, entire to dentate or pinnatifid: fls. white, to ½ in. long, in dense panicles. W. Morocco.

muricàta (*Centaurea muricata*). To 2 ft.: lvs. lanceolate: heads pink or purple. Spain, Morocco. Var. **ròsea** is listed.

AMBROSIA MEXICANA: *Chenopodium Botrys.*

AMELÁNCHIER. SERVICE-BERRY. JUNE-BERRY. SHADBUSH. *Rosaceæ.* Deciduous showy shrubs or small trees of the north temp. zone, with alternate toothed lvs., white fls. mostly in terminal racemes and fr. a small dark blue or black pome, sometimes edible. Desirable because of the abundant bloom in early spring, mostly preceding the foliage; also plants of good habit and attractive fr.

Amelanchiers are hardy in the North and thrive on a variety of soils. Propagated by seeds sown when ripe or stratified, by suckers when produced, or rare kinds by budding. See also *Juneberry*.

alnifòlia. To 7 ft., stoloniferous: lvs. obtuse, densely pubescent beneath when young: racemes erect, to 1½ in. long. Sask. to Colo.—Some of the material so listed is *A. florida*.

amábilis (*A. sanguinea* var. *grandiflora*). To S ft.: lvs. elliptic-ovate, to 2½ in. long, glabrescent: fls. in loose infl., petals ⅝–⅞ in. long. N. Y.

asiática. To 40 ft.: lvs. acute, densely white-tomentose beneath when young: racemes nodding. Japan, Korea; hardy N.

Botryàpium: *A. oblongifolia*.

canadénsis. To 30 ft.: lvs. acute or acuminate, tomentose on both sides when young: racemes nodding, to 2 in. long, fls. before lvs. Me. to Ga. and La.

flórida. To 15 ft.: lvs. obtuse, becoming glabrous beneath: racemes erect, to 3 in. long. Mich. to Wash.

grandiflòra. Hybrid between *A. canadensis* and *A. lævis*: lvs. becoming glabrous, purplish when unfolding: fls. white, large, with obtuse petals. A pink-fld. form is known.

hùmilis. Shrub to 5 ft., spreading by stolons: lvs. elliptic to oblong, to 2 in. long, acute, densely woolly beneath when young, serrate to below the middle: fls. in erect dense racemes. Vt. to Alta., south to N. Y. and Ia.—Differs from *A. stolonifera* in lvs. more coarsely serrate.

lævis. To 40 ft.: lvs. short-acuminate, quite glabrous, purplish when young: racemes nodding. Newf. to Ga. and Ala. Var. **ròsea** is listed as a color form.

oblongifòlia (*A. Botryapium*). To 25 ft.: lvs. oblong, obtuse or acute, white-tomentose beneath when young: racemes erect, short. Me. to S. C.

ovàlis (*A. rotundifolia*. *A. vulgaris*). To 8 ft.: lvs. obtuse, tomentose beneath when young: racemes erect. Eu.—Differs from other species in the styles free and very short.

rotundifòlia: *A. ovalis*.

sanguínea. To 10 ft.: lvs. ovate to ovate-oblong, to 3 in. long, acute, coarsely toothed: fls. large and showy, in drooping racemes. Ont. to Mich., south to Ala. Var. **grandiflòra** is *A. amabilis*.

spicàta. Hybrid, probably between *A. oblongifolia* and *A. stolonifera*: shrub to 18 ft.: lvs. elliptic to obovate, to 2½ in. long, white-tomentose beneath when young, finely serrate to base.

stolonífera. To 4 ft., spreading by underground stolons and forming patches or colonies: lvs. elliptic to nearly orbicular, serrate toward apex, at first white-pubescent beneath: fr. purplish, with bloom, sweet, sepals mostly recurved. Newf. to Mich. and Va.—Cult. as Dwarf Juneberry.

vulgàris: *A. ovalis*.

AMÉLLUS. *Compositæ*. S. African herbs with oblong lvs. and blue-rayed fls. in many-fld. solitary heads; disk-fls. with double pappus of scales and bristles; one species sometimes planted in the flower-garden.

ánnuus (*A. strigosus* var. *Willdenovii*). Ann., diffuse or prostrate: lvs. to 2 in. long, usually with 1 tooth on each side.

AMESIA: a name once applied to the orchids treated as *Epipactis* or *Serapias*, which see.

AMETHÝSTIA. *Labiatæ*. One species, an ann. herb allied to Teucrium and Ajuga, but differing in the 2 posterior stamens reduced to small staminodia. **A. cærùlea.** To 2 ft., fragrant, glabrous, sts. purplish: lvs. trifoliate, lfts. ovate-lanceolate, to 3 in. long, coarsely serrate, petiole channelled above: fls. sky-blue, to ⅛ in. long, in terminal and axillary corymbs whose pedicels are longer than petioles of subtending lvs., style blue and longer than stamens. Siberia.

AMHÉRSTIA. *Leguminosæ*. One showy Indian tree, **A. nóbilis,** reaching 40 ft. in height, with large pinnate lvs., the lfts. to 1 ft. long, long pendulous racemes of bright red and yellow fls. with 2 red petal-like bracts at base of calyx-tube, upper petal 2 in. broad, staminal column prominent; pods woody, to 7 in. long and 2 in. wide. It requires rich well-drained soil and a trop. moist climate; propagated by layering or cuttings of half-ripened wood over bottom heat.

AMIÁNTHIUM. *Liliaceæ*. Per. bulbous herbs having linear lvs. and small white fls. in terminal racemes, the perianth-segms. distinct; sometimes grown in the wild-garden. Propagated by division or rarely by seeds.

angustifòlium: *Zigadenus angustifolius*.

muscætóxicum (*Zigadenus muscætoxicus*. *Chrosperma muscætoxicum*). Fly-Poison. To 4 ft. high: lvs. to 2 ft. long and 1 in. wide: racemes to 5 in. long. N. Y. to Fla. and Ark.

AMÍCIA. *Leguminosæ*. Shrubs or subshrubs with alternate pinnate lvs., yellow papilionaceous fls. mostly in racemes, and fr. a narrow flat pod; native Mex. to Bolivia. One species is sometimes planted in S. Calif.

Zygómeris. To 8 ft.: lfts. 4 or 6, wedge-shaped, to 2½ in. long, glandular-dotted: fls. to 1½ in. long, subtended by large bracts. Mex.

ÁMMI. *Umbelliferæ*. Per. glabrous herbs of the Medit. region, Chile and Brazil, having pinnatisect lvs. whose segms. have sharply serrate cartilaginous margins, small white fls. in compound bracted umbels, and fr. ovoid-oblong, only slightly compressed, with primary ridges prominent and blunt. One species, **A. màjus,** may be in cult. To 1½ ft.: umbels to 6 in. or more across, petals shorter than stamens with lobes often unequal, involucral bracts to 1 in. long, those of involucels linear and acute, others 3-divided: fr. about $\frac{1}{10}$ in. long. N. E. Afr.

AMMÒBIUM. *Compositæ*. Australian per. herbs grown as everlastings or immortelles, with yellow fls. in solitary heads surrounded by involucre of silvery-white bracts; pappus of few teeth.

Of easy cultivation, sometimes treated as a biennial when the seed is sown in September, but may be grown as an annual with seeds sown in spring. Flowers remain white if cut before full bloom and hung in shady airy place to dry.

alàtum. Winged Everlasting. To 3 ft., white-woolly, the branches winged: lvs. mostly basal: heads to 2 in. across. Var. **grandiflòrum** has larger heads.

AMMOCALLIS: *Vinca rosea*.

AMMÓCHARIS. *Amaryllidaceæ*. Two S. African bulbs, one of which may be cult. **A. falcàta.** To 1 ft.: lvs. to 2 ft. long and 1 in. wide: fls. bright red, fragrant, in many-fld. umbels terminating a flat solid scape, the perianth-segms. clawed and reflexed. It may be grown in pots in the greenhouse or planted out and the bulbs stored in winter. It blooms in summer or autumn or in winter under glass; requires rich loamy soil.

AMMÓPHILA. *Gramineæ*. Per. grasses with creeping rootstocks, one useful as a binder in sandy soil, particularly along sea-coasts: lvs. long and stiff: spikelets in dense spike-like panicles; native along shores in the northern hemisphere. See *Grasses*.

arenària. European Beach-Grass. Sea Sand Reed. Marram. To 4 ft.: lvs. to 1 ft. long, rolled inward, rough above, the ligule to 1 in. or more long: panicles to 1 ft. long and ½ in. thick. Eu.; intro. on Pacific Coast.—Propagated by rootstocks.

breviligulàta. American Beach-Grass. The plant of shores and dunes of the Atlantic Coast and Great Lakes, formerly confused with the European species, is a larger plant, with longer panicle and very short ligules: a good sand-binder.

AMOLE: *Chlorogalum pomeridianum.*

AMOMIS CARYOPHYLLATA: *Pimenta acris.*

AMÒMUM. *Zingiberaceæ.* Per. herbs with creeping rootstocks, leafy sts. and fls. in dense cone-like spikes beneath the foliage, having 1 petal-like staminode or lip.

Grown as foliage plants in warm regions; sometimes seen in economic collections under glass, as some of the species yield medicinal products. See *Elettaria.* They require rich soil and abundant moisture. Propagated by division in spring. See *Zingiberaceæ.*

Cárdamon. To 8 ft.: lvs. to 10 in. long and 3 in. wide: fls. yellow. E. Indies.

vitellìnum: *Alpinia vitellina.*

AMÓRPHA. False Indigo. *Leguminosæ.* Shrubs bearing alternate pinnate lvs. with small lfts., small fls. in dense terminal spikes, and short slightly curved pods; native in N. Amer. and Mex.

Grown for ornament out-of-doors. Propagated by seeds, greenwood cuttings under glass, hardwood cuttings planted in sheltered position in autumn and left for a year, suckers or layers. The cultivated species are mostly hardy North.

angustifòlia: *A. fruticosa* var.

brachycárpa. Erect shrub to 3 ft., glabrous: lfts. 21–45, oblong, to ⅝ in. long and ⅓ in. wide, overlapping: fls. dense, in panicles to 10 in. long: fr. to ⅕ in. long. Mo.

califórnica. Similar to *A. fruticosa,* differing in its branchlets and rachis with prickle-like glands and in its longer and more lanceolate glandular-hairy calyx-lobes. S. and Cent. Calif.

canéscens. Lead-Plant. To 4 ft., plant usually densely white-hairy: lfts. to ¾ in. long: fls. blue, in spikes to 6 in. long. July–Aug. Man. to La. and New Mex.

cròceo-lanàta (*A. fruticosa* var.). Allied to *A. fruticosa,* differing in twigs, lvs. and calyces densely tawny-pubescent. Ky. to Fla. west to Mo. and La.

elàta: plants so listed in trade are probably *A. fruticosa.*

fràgrans: *A. fruticosa* var. *angustifolia.*

fruticòsa. Bastard Indigo. To 20 ft., branchlets and rachis glabrous or somewhat pubescent, not with glandular prickles: lfts. to 1½ in. long, oblong, obtuse or slightly mucronate, glandular: fls. dark purple varying to pale blue and white, in spikes to 6 in. long, calyx-lobes short and obtuse. May–June. Sask. to Fla. and Mex. Var. **angustifòlia** (*A. angustifolia. A. fragrans*). To 10 ft. or more: lfts. mucronulate, strongly glandular: fls. purple-blue. Ill. to Tex. and Mex. Var. **críspa** has lfts. with curled edges. Var. **cròceo-lanàta** is *A. croceo-lanata.* Var. **tennessénsis** (*A. tennessensis*). Lfts. to 1 in. long: fls. violet-purple. Tenn.

glàbra (*A. montana*). To 6 ft.: lfts. to 2 in. long: fls. blue, in racemes to 6 in. long, in spring. N. C. to Ga. and Ala.

herbàcea. To 4 ft., grayish-pubescent: lfts. to 1 in. long: fls. violet-purple varying to white, the spikes clustered, to 1 ft. long, in spring. N. C. to Fla.

microphýlla: *A. nana.*

montàna: *A. glabra.*

nàna (*A. microphylla*). To 1 ft.: lfts. to ½ in. long: fls. purplish, in racemes to 6 in. long, in spring. Minn. to Rocky Mts.

nìtens. To 9 ft.: lfts. to 2½ in. long, shining: fls. in racemes to 10 in. long, in summer. Ga.

tennessénsis: *A. fruticosa* var.

virgàta. Similar to *A. fruticosa,* but of lower stature, more sparingly branched and more broadly oblong and leathery lfts. with glandular petiolules and reflexed margins. S. U. S.

AMORPHOPHÁLLUS. *Araceæ.* Very large herbs native in trop. Asia, with tuberous roots, large 3-parted lvs. with the segms. pinnately cut, and unisexual fls. borne on an upright spadix surrounded by a conspicuous spathe; grown as curiosities in the greenhouse. The fls. have a disagreeable odor and appear in advance of lvs.

The great *Amorphophallus Titanum,* "largest flower in the world." is not in general cult., although a plant of it bloomed at the N. Y. Botanical Garden in 1937 and was fully reported in publications of that institution. The bell-shaped highly colored erect spathe was 4 ft. across, and the top of the spadix was about 8½ ft. above the soil. The corm, which had been imported from Sumatra, weighed 113½ lbs. after the flowering.

Plants thrive in a rich loamy soil and should be kept dry and warm in winter. Propagated by offsets of the tubers potted singly and kept in a temperature of 65–70°. or more. Grown in greenhouses and sometimes in tubs for summer bloom, or planted out in mild climates.

campanulàtus. To 2 ft.: lvs. to 3 ft. long and broad, the petioles spotted with white: spathes ovate, 8 in. long and 10 in. across, fleshy below spotted with white, purplish in center, with wavy margins; spadix about 10 in. long. E. Indies.

gigantèus. Lvs. 3 ft. or more broad, pale green, the petioles variegated with white: spathes broadly ovate, 1 ft. long and 8 in. across, clouded with purple, the margins wavy; spadix slightly shorter than spathe. Malaya.

mossambicénsis. Small plant with spathe to 6 in. long, deep purple, spadix equalling or somewhat shorter than spathe. E. and S. Afr.

mozambiquànus: probably *A. mossambicensis.*

Rivièri: *Hydrosme Rivieri.*

AMPELODÉSMA. *Gramineæ.* One per. tufted grass with stiff erect sts. to 5 ft. tall, grown for ornament in Calif. **A. mauritánicus** (*A. tenax*). Lvs. very long and narrow, becoming convolute, rough on edges: spikelets in long loose one-sided nodding panicles. Medit. region. See *Grasses.*

AMPELÓPSIS. *Vitaceæ.* Tendril-climbing shrubs native in N. Amer. and Asia, with alternate simple or compound lvs., small greenish fls. in long-stalked cymes, and fr. a berry. In Ampelopsis the tendrils do not bear expanded cup-like tips and the disk in the fl. is separate from the ovary and prominent, thus differing from Parthenocissus.

Ampelopsis is grown as a covering for walls and arbors, and is not particular as to soil. Propagated by seeds, also by cuttings and layers. Cuttings of hard wood may be made in September under glass or stored until spring after the manner of grape cuttings; those of soft wood can be struck in the summer.

aconitifòlia (*A. dissecta. A. aconitifolia* var. *dissecta*). Lvs. of 3 or 5 lanceolate pinnately lobed lfts. to 3 in. long: fr. orange or yellow, sometimes bluish when young. China. Var. **glàbra** (var. *palmiloba*): lvs. 3-parted and segms. toothed and lobed.

arbòrea (*A.* and *Vitis bipinnata. Cissus arborea*). Pepper-Vine. Lvs. bipinnate, lfts. ovate, to 1½ in. long, coarsely toothed: fr. dark purple. Va. to Fla. and Mex.

bipinnàta: *A. arborea.*

Bodinièri (*A. micans*). Lvs. ovate, to 4 in. long, unlobed or shallowly lobed, coarsely toothed, pale beneath: fr. dark blue. China.

brevipedunculàta (*A. heterophylla* var. *amurensis*). Lvs. cordate-ovate, to 5 in. long, with 3 coarsely toothed lobes: fr. lilac becoming blue. N. E. Asia. Var. **citrulloìdes,** lvs. deeply 5-lobed. Var. **élegans** (*A. variegata, A. tricolor*), lvs. variegated with white, green or pink. Var. **Maximowíczii** (*A. heterophylla, Vitis heterophylla* and var. *humulifolia*), lvs. deeply 3–5-lobed.

Chaffanjònii (*A. Watsoniana*). Lvs. pinnate, lfts. oblong, to 4½ in. long, slightly toothed, purplish beneath. China.

cordàta (*A.* and *Vitis indivisa*). Lvs. broad-ovate, to 5 in. long, toothed and only slightly 3-lobed: fr. blue. Va. to Fla. and Mex.

Delavayàna. Lvs. cordate-ovate, to 5 in. long, 3-lobed or -parted or sometimes simple, crenate-toothed, usually pubescent beneath: fr. dark blue. China.

disécta: *A. aconitifolia.*

Éngelmannii: *Parthenocissus quinquefolia* var.

flexuòsa: *A. brevipedunculata,* at least in part.

hederàcea: *Parthenocissus quinquefolia.*

Henryàna: *Parthenocissus Henryana.*

heptaphýlla: *Parthenocissus heptaphylla.*

heterophýlla: *A. brevipedunculata* var. *Maximowiczii.*

hirsùta: *Parthenocissus quinquefolia* var.

humulifòlia (*Vitis humulifolia*). Lvs. broad-ovate, to 5 in. long, 3–5-lobed, coarsely toothed, shining above, whitish beneath: fls. pale yellow or pale blue. China.

hypoglaùca: *Cissus hypoglauca.*

indivìsa: *A. cordata.*

japónica. Root tuberous: lvs. of 3–5 pinnate or pinnately lobed lfts. to 4 in. long, shining above, the rachis broadly winged: fr. blue. Japan, China.—Some of the material cult. under this name belongs to *Parthenocissus tricuspidata.*

lætévirens: *Parthenocissus lætevirens.*

Lòwii: *Parthenocissus tricuspidata* var.

megalophýlla. Lvs. pinnate or bipinnate, lfts. ovate, to 5 in. long, coarsely toothed: fr. black. China.

micans: *A. Bodinieri.*

orientàlis (*Vitis orientalis*). Lvs. pinnate or bipinnate, lfts. to 3 in. long, sharply notched: fr. red. S. W. Asia.

quinquefòlia: *Parthenocissus quinquefolia.*

Saint-Paùlii: *Parthenocissus quinquefolia* var.

sempérvirens: *Cissus striata.*

Thómsonii: *Parthenocissus Thomsonii.*

trícolor: *A. brevipedunculata* var. *elegans.*

tricuspidàta: *Parthenocissus tricuspidata.*

variegàta: *A. brevipedunculata* var. *elegans.*

Veitchii: *Parthenocissus tricuspidata* var.

virginiàna: *Parthenocissus quinquefolia.*

vitàcea: *Parthenocissus quinquefolia* var.

Watsoniàna: *A. Chaffanjonii.*

AMPHICÁRPA. Hog-Peanut. *Leguminosæ.* Twining bean-like herbaceous vines of N. Amer. and Asia: lvs. of 3 lfts.: small fls. of two kinds, the upper papilionaceous ones in axillary racemes, those in lower axils without petals and fertile. Sometimes, but not originally, written Amphicarpæa.

monoica (*Falcata comosa*). Climbing to 8 ft.: lfts. ovate, to 3 in. long: fls. purplish or white, ½ in. long: pods 1 in. long. N. Amer.

AMPHÍCOME. *Bignoniaceæ.* Himalayan per. herbs, sometimes woody at base, with alternate pinnate lvs. and funnelform red fls. in terminal racemes; grown in rock-gardens and greenhouses.

argùta. To 3 ft.: lfts. 5–9, lanceolate, to 1½ in. long, deeply toothed: fls. 1 in. long, narrowed at base, in racemes to 8 in. long.

emòdi. To 3 ft.: lfts. 11–15, cordate-ovate, with triangular teeth: fls. with orange corolla-tube.

AMPHILOPHIS: *Andropogon saccharoides.*

AMSÒNIA. *Apocynaceæ.* Per. herbs with alternate lvs., terminal panicles of narrow blue fls., included stamens, and long slender frs.; native in N. Amer. and E. Asia.

The amsonias are grown in shady positions in the hardy border for ornament. Propagated by division, seeds or cuttings.

Amsònia: *A. Tabernæmontana.*

angustifòlia: *A. ciliata.*

ciliàta (*A. angustifolia*). To 5 ft. tall, rarely more than 3 ft.: lvs. linear to oblong-lanceolate, to 2½ in. long, petiolate: fls. purplish-blue, corolla-tube longer than lobes. N. C. to Fla. and Tex. Var. **texàna** (*A. texana*) has a slightly longer corolla-tube than type. Okla., Tex.

salicifòlia: *A. Tabernæmontana* var.

Tabernæmontàna (*A. Amsonia*). To 3½ ft.: lvs. ovate to lanceolate, to 4 in. long: fls. ¾ in. long, pubescent outside, in a dense cluster. May–July. N. J. to Fla. and Tex., in low grounds. Var. **salicifòlia** (*A. salicifolia*) has narrower lvs. and fls. few in a loose cluster.

texàna: *A. ciliata* var.

AMYGDALUS: *Prunus.*

ANÁBASIS. *Chenopodiaceæ.* About a score of subshrubs or woody herbs of the Medit. region eastward related to Salsola, with jointed sts. and opposite scale-like or inconspicuous lvs. and minute fls. **A. aphýlla** is recently proposed for experimental cult. in dry regions of the Southwest as a source of anabasin, an insect poison. It is a green woody erect plant 12–20 in. high, with many upright branches, lvs. reduced to scales, fls. in terminal spikes, fr. in a 3-winged calyx.

ANACÁMPSEROS. *Portulacaceæ.* S. African succulent herbs with fleshy lvs. and racemose fls. opening only in the sun, with 2 sepals and 5 fugacious petals; occasionally grown in the greenhouse. Propagated by seeds or by stem- and leaf-cuttings.

albíssima. Sts. pure white, 1½ in. or less long: stipules broadly ovate and holding the very small succulent lf. next above it: fls. inclosed within terminal stigmas.

álta. Sts. to 6 in., branched: lvs. obovate, ⅕ in. long, spotted, white-tomentose, stipules about length of lvs. and whitish.

arachnoìdes. Lvs. ovate, ¼ in. long, cobwebbed, green and shining: fls. white, in 2–3-fld. racemes on scapes to 4 in. high. Var. **grandiflòra** (*A. rufescens*) has purplish lvs. and fls.

filamentòsa. Distinguished from *A. arachnoides* by the axillary hairs longer than the webby-pubescent lvs. and larger rose fls.

lanceolàta. Lvs. lanceolate, glabrous, with very long axillary hairs: fls. reddish, usually solitary.

Meỳeri. Sts. short, with erect branches to 3 in. long: lvs. fleshy, broad-obovate, 1/12 in. long, stipules dense and longer than lvs.

papyràcea. Sts. to 2 in.: stipules tongue-shaped, white, ¼ in. long, much longer than the thick lvs.: fls. yellow, sessile, solitary.

parviflòra. Sts. to 2 in., branched: lvs. dense, obovate or cuneate, ⅙ in. long, tomentose, reddish-green, stipules longer than lvs.: fls. red, in racemes.

rufèscens: *A. arachnoides* var. *grandiflora.*

Telephiástrum. Lvs. ovate, ⅛ in. long, glabrous: fls. reddish, in 2–4-fld. racemes on scapes to 6 in. high.

tomentòsa. Differs from *A. arachnoides* by its smaller woolly-felted lvs. exceeded by the axillary hairs: fls. bright red.

ANACARDIÀCEÆ. Cashew Family. About 60 genera of woody plants with resinous bark, mostly in the tropics but some of them extending into cool temp. regions, sometimes evergreen; some species have medicinal, tanning and poisonous properties and yield material for varnishes, others are grown for their edible fruit, and still others for ornament. The family is characterized by alternate lvs., the small bisexual or unisexual fls. with a disk between the stamens, 1–6-celled ovary with 1 seed in each cell and 1–6 styles, and fr. commonly a drupe or nut. The following genera are sometimes cult. in our territory: Anacardium, Cotinus, Harpephyllum, Lithræa, Mangifera, Pistacia, Pleiogynium, Rhus, Schinus, Spondias.

ANACÁRDIUM. *Anacardiaceæ.* Trees and shrubs of trop. Amer., one cult. for its nuts, with simple leathery lvs., numerous small polygamous fls. in terminal panicles, 7–10 stamens, and kidney-shaped fr. borne on a greatly enlarged soft receptacle. Of easy cult. in regions free from frost. Propagated by seeds or choice varieties by shield-budding.

occidentàle. Cashew. Evergreen spreading tree to 40 ft.: lvs. to 8 in. long and 4 in. wide: fls. yellowish-pink: fr. consisting of fleshy bright yellow or red receptacle (cashew-apple, from which sweetmeats and beverages are made) 2–3½ in. long, and kidney-shaped nut containing kernel edible when roasted. Trop. Amer.; nat. in all trop. countries; planted also in S. Fla.

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ANÁCHARIS. *Hydrocharitaceæ.* Aquatic submerged perennials with soft leafy sts. and inconspicuous unisexual or bisexual fls.; grown in aquaria and ponds and spreading rapidly. Propagated by cuttings and winter-buds.

canadénsis (*Elodea canadensis. Philotria canadensis*). Water-Weed. Ditch-Moss. Elodea. Lvs. about ½ in. long and 1/12–⅙ in. wide, more or less obtuse, at the top of the st. strongly imbricated: fls. whitish, to ⅓ in. across, the pistillate with tube elongated, allowing fls. to float on surface, inclosed singly in a tight spathe constricted at the base; staminate fls. not known. Que. south and west; nat. in Eu.—Material in aquaria may also represent *A. occidentalis*, a plant with narrower more pointed not imbricate lvs., and distinct staminate fls.; native but not extending as far north.

dénsa (*Elodea canadensis* var. *gigantea*). Similar to the above, but of much stouter habit, longer internodes, white fls. about ¾ in. across, several being inclosed by a broad loose spathe not constricted at the base. S. Brazil to the La Plata River.

ANACỲCLUS. *Compositæ.* Ann. or per. herbs, somewhat like the chrysanthemums and chamomiles, with pinnately cut lvs. and many-fld. solitary heads of yellow disk-fls. and white, yellow or purplish ray-fls.; pappus none or consisting of a crown or scales; native in Medit. region and Orient. Sometimes grown in the flower-garden.

atlánticus. Per., sts. prostrate, villous, to 3½ in. long: basal lvs. 2–3-pinnatisect, to 1¾ in. long, white-hairy, ultimate segms. linear-lanceolate, acute, st.-lvs. linear-lanceolate, to ⅓ in. long: head to ⅜ in. diam., hemispherical, unisexual. Mts. Morocco. Var. **vestìtus** is listed.

depréssus. Bien. or per., sts. prostrate or ascending: lvs. 1–2-pinnatisect, segms. lanceolate, acute: heads to 2 in. across, ray-fls. dark red often margined white, or white. Morocco.

officinàrum. Ann. to 10 in.: lvs. 2-pinnatisect into linear segms.: ray-fls. white marked purple beneath, heads 1 in. across. S. Eu.

Pyrèthrum. Per., procumbent: lvs. 2-pinnatisect into linear segms.: ray-fls. white, purplish beneath. S. E. Eu.

radiàtus. Ann. to 2 ft., villous to glabrescent: lvs. 2-pinnatisect into linear-lanceolate segms. with mucronate apices: ray-fls. yellow, heads to 1½ in. across. Medit. region. Var. **purpùreum** has the ray-fls. broadly striped maroon.

ANAGÁLLIS. Pimpernel. *Primulaceæ.* Widely distributed herbs having usually opposite or whorled lvs., axillary solitary fls. in shades of red, blue and white, wheel- or bell-shaped corolla, usually hairy stamens, and fr. opening transversely.

Seeds of the annual species may be sown where the plants are to be grown. The perennials are propagated by division and cuttings.

arvénsis. Poor Mans Weatherglass. Spreading ann.: lvs. ovate, to ¾ in. long: fls. scarlet or white, about ¼ in. across. Nat. from Eu. and Asia. Var. **cærùlea** has blue fls. Var. **phœnícea** has red fls.

grandiflòra: *A. linifolia.*

linifòlia (*A. grandiflora. A. Phillipsii*). Per. or bien. to 1½ ft.: lvs. linear or linear-lanceolate, to 1 in. long: fls. blue, reddish beneath, ¾ in. across. Medit. region. Var. **collìna,** fls. rose or purplish. Var. **Monéllii,** lvs. ovate or oblong.

Phíllipsii: *A. linifolia.*

tenélla. Ann. to 6 in.: lvs. orbicular-ovate, to ½ in. long: fls. red, bell-shaped. W. Eu. and Medit. region.—Fls. on longer pedicels than those of *A. arvensis.*

ANÁNAS. *Bromeliaceæ.* Stiff terrestrial per. herbs native in trop. Amer., usually grown for the edible fr.-head. For cult. see *Bromelia* and *Pineapple.*

bracteàtus. Similar to *A. comosus* but fls. in showy red heads with large elongated spiny bracts. Brazil.

comòsus (*A. sativus*). Pineapple. St. to 4 ft.: lvs. in rosettes, to 3 ft. long and 1½ in. wide, with spiny tips and prickly edges: fls. bisexual, violet or reddish, borne in dense heads crowned with a tuft of lvs.: fr. fleshy and watery, being really a thickened st. in which the berries are imbedded, becoming 1 ft. long.—A few forms are cult. for ornament, as var. **variegàtus** with striped lvs. and **A. Porteanus** with olive-green lvs. having a central yellow band. Var. **còchin-chinénsis** is listed.

Porteànus: see *A. comosus.*

satìvus: *A. comosus.*

ANAPALÌNA. *Iridaceæ.* A small S. African genus formerly combined with Antholyza from which it differs in the fl.-peduncle definitely terminated by the infl. and not continuing beyond as a naked stalk bearing some barren bracts at apex, and from Chasmanthe in all the perianth-lobes equal or nearly so. Cult. as for *Gladiolus.*

revolùta (*Antholyza revoluta. Gladiolus præcox*). To 2 ft.: lvs. linear-subulate, to 1 ft. long: fls. bright red, in lax few-fld. secund spikes.

ANÁPHALIS. *Compositæ.* White-woolly perennials with leafy sts., interesting for the rock-garden and hardy border, the small white or gray corymbose heads remaining stiff and dry; fls. all tubular; pappus bristly. They are often cut before maturity, dried and dyed for use as everlastings.

margaritàcea (*Antennaria margaritacea*). Pearl Everlasting. To 3 ft.: lvs. linear-lanceolate, to 5 in. long, entire, green above, white-tomentose beneath: heads white, ¼ in. across. N. Amer., Eu., N. Asia. Var. **subalpìna** (*A. subalpina*) is of lower habit, has wider lvs. and fewer heads in the infl.

subalpìna: *A. margaritacea* var.

triplinérvis. Lvs. obovate or oblong, to 8 in. long, white-woolly beneath, cobwebby above, 3–5-nerved: heads white, to ¾ in. across. Himalayas.

ANARRHÌNUM. *Scrophulariaceæ.* Bien. or per. herbs native in Medit. region: basal lvs. in rosette, serrate or dentate; st.-lvs. alternate, palmately divided or linear segms. entire or toothed: fls. 2-lipped, spur minute or absent, in long slender racemes. Distinguished from Antirrhinum and Linaria by absence of palate in throat of corolla. Propagated by seeds: of questionable hardiness north of New York.

bellidifòlium. Bien. to 2 ft.: basal lvs. spatulate, to 3 in. long, deeply toothed, st.-lvs. 3–7-parted, segms. linear: fls. blue, limb often white-fringed, to ⅛ in. long, spur short and recurved, racemes erect.

crassifòlium: *Chænorrhinum origanifolium.* The material cult. as *A. crassifolium* is usually *A. bellidifolium.*

ANASTÁTICA. *Cruciferæ.* One little ann., **A. hierochúntica,** is sometimes grown for curiosity as Resurrection-Plant or Rose-of-Jericho. When ripe and dead the branches curve inward forming a ball-like object that rolls over the deserts and which opens out when moist. The seeds are borne in small hairy pods or silicles close along the branches and soon germinate when wet weather comes. The balls are sometimes sold; they open and close with moisture and dryness. It is a gray unattractive plant a few inches high, with oblong-spatulate toothed lvs. and minute white fls. The plant is easy to grow in warm locations. Algeria to Arabia and Persia.

ANASTROPHUS: *Axonopus.*

ANATHERUM: *Vetiveria.*

ANAY: *Hufelandia.*

ANCHISTEA: *Woodwardia virginica.*

ANCHOR-PLANT: *Colletia cruciata.*

ANCHÙSA. Alkanet. Bugloss. *Boraginaceæ.* Old World hairy herbs with alternate simple lvs. and blue, violet or white funnelform or tubular fls. in coiled leafy-bracted cymes or racemes; throat of corolla bearing scales. Of easy cult. in the flower-garden or border. Propagated by seeds in spring or division of the roots.

affìnis. Per. to 2 ft.: lvs. ovate or ovate-lanceolate: fls. blue, ¼ in. across. Trop. Afr.

angustifòlia: *A. officinalis* var.

azùrea (*A. italica*). Per. to 5 ft.: lvs. lanceolate to ovate-lanceolate: fls. bright blue, to ¾ in. across, in summer and autumn; calyx-lobes long-pointed. Medit. region. Var. **florairénsis** is listed as an improved hort. form.—Known in several hort. forms, as Dropmore, Opal, Perrys, Picotee, Pride of Dover.

Barrelièri. Per. to 2 ft.: lvs. ovate-lanceolate: fls. blue with white tube and yellow throat, in spring. Eu., Asia Minor.

capénsis. Bien. to 1½ ft.: lvs. narrowly lanceolate: fls. blue margined with red and with white throat, ¼ in. across, in summer and autumn. S. Afr. Var. **álba** has white fls.

incarnàta: *A. officinalis* var.

itálica: *A. azurea.*

myosotidiflòra: *Brunnera macrophylla.*

ochroleùca (*A. procera*). Bien. or per. to 4 ft.: lvs. linear-lanceolate, to 8 in. long, hispid: fls. pale yellowish-white to ivory, to ½ in. across. Caucasus.

officinàlis. Bien. or per. to 2 ft.: lvs. lanceolate: fls. bright blue or purple, ¼ in. across, in summer and autumn. Eu. Var. **incarnàta** (*A. incarnata*) has flesh-colored fls. Var. **angustifòlia** has narrowly lanceolate lvs.

procèra: *A. ochroleuca.*

ripària. Bien. or per. to 2½ ft.: lvs. narrowly lanceolate, to 6 in. long, hispid to setose: fls. blue to purplish-red, about ⅛ in. across, in loosely-fld. cymes. Cent. Eu.—Distinguished from *A. officinalis* by its narrower lvs. and minute calyx-teeth.

sempérvirens: *Pentaglottis sempervirens.*

ANCISTROCÁCTUS. Hook Cactus. *Cactaceæ.* Small globular indistinctly ribbed cacti with prominent tubercles and many spines, one of the central spines always hooked: fls. borne at top of plant, campanulate with short tube.

brevihamàtus (*Echinocactus brevihamatus*). To 4 in. high and 3 in. diam., tubercles grooved; radial spines 10–14, ¾ in. long, white; central spines 4: fls. rose, 1¼ in. long. S. Tex.

megarhìzus (*Echinocactus megarhizus*). Plant usually solitary, to 3 in., with large roots; radial spines 20 or more, appressed, yellow becoming white; central spines strongly hooked. Mex.

Scheèri (*Echinocactus Scheeri*). Fishhook Cactus. Plant to 2 in.; radial spines 15–18, ½ in. long, white or yellowish: fls. greenish-yellow, 1 in. long. S. Tex., N. Mex.

ANDÌRA. Angelin-Tree. *Leguminosæ.* Trees mostly native in trop. Amer., with alternate pinnate lvs., fragrant papilionaceous fls. in terminal panicles, and drupe-like pods. They require trop. temperature and rich loamy soil. Propagated by cuttings over bottom heat, when seeds are not available.

inérmis (*Vouacapoua americana*). Cabbage-Tree. To 40 ft. or more: lfts. to 2½ in. long: fls. lilac or pale rose: pods 1½ in. long. Trop. Amer., W. Afr.

ANDRÓMEDA. Bog-Rosemary. *Ericaceæ.* Low evergreen shrubs, now restricted to 2 species, with narrow entire revolute lvs., pinkish urn-shaped fls. in nodding terminal umbels, and capsular frs.

Grown in rockeries and borders and very hardy North. Propagated by seeds, cuttings of mature wood under glass, and by layers.

arbòrea: *Oxydendrum arboreum.*

cærùlea: *Phyllodoce cærulea.*

calyculàta: *Chamædaphne calyculata.*

cassinifòlia: *Zenobia pulverulenta* var. *nuda.*

Cátesbæi: *Leucothoë Catesbæi.*

floribúnda: *Pieris floribunda.*

glaucophýlla. Similar to *A. polifolia* but the lvs. white-tomentose beneath and fr. glaucous. Newf. to N. J. and Ind.

japónica: *Pieris japonica.*

ligustrìna: *Lyonia ligustrina.*

marià na: *Lyonia mariana.*

nítida: *Lyonia lucida.*

paniculàta: *Lyonia ligustrina.*

polifòlia. To 1 ft., the rootstocks creeping: lvs. oblong to linear, to 1½ in. long, the margins revolute, glaucous beneath: fls. ¼ in. long. Eu., N. Asia, N. N. Amer. Var. **montàna,** more dwarf and compact habit with darker lvs.

pulverulénta: *Zenobia pulverulenta.*

racemòsa: *Leucothoë racemosa.*

speciòsa: *Zenobia pulverulenta.*

ANDROPÒGON. Beard-Grass. *Gramineæ.* Per. grasses widely distributed in both hemispheres, having narrow lvs. and spikelets in spike-like racemes which are borne singly, in pairs or clusters, florets awned, rachis prominently bearded; a few grown for forage. See *Grasses.*

argénteus: *A. saccharoides;* see also *A. hirtus.*

furcàtus. To 6 ft., branched above: lvs. to 1½ ft. long and ½ in. wide: racemes to 5 in. long, 2–6 at tips of sts., florets awned. Me. to Fla. and N. Mex.

halepénsis: *Sorghum halepense.*

hírtus. To 3 ft.: lvs. to 1 ft. long and 1/12 in. wide, slightly glaucous with white midrib: racemes to 1½ in. long, silvery-hairy, in pairs in loose panicles to 1 ft. long. Warm regions of the Old World.—Some of the material cult. as *A. argenteus* belongs here.

saccharoìdes (*A. argenteus. Amphilophis saccharoides*). To 3½ ft.: lvs. to 8 in. long and ⅓ in. wide: racemes 1½ in. long, silky-hairy, in shining white panicles to 4 in. long. Colo. to Mex., W. Indies, N. S. Amer.

Sórghum: *Sorghum vulgare.*

ANDRÓSACE. Rock-Jasmine. *Primulaceæ.* Small tufted herbs of Eu., Asia and N. Amer., sometimes grown in rock-gardens or low borders: lvs. mostly basal: fls. in shades of red and white, resembling primroses but the corolla shorter than the calyx and constricted at the throat. Generic name has four syllables.

Androsaces require well-drained soil which must not be allowed to dry out in time of drought. Propagated by seeds, division or cuttings.

alpìna (*A. glacialis*). Per. to 3 in., loosely tufted: lvs. in rosettes at ends of branches, oblong-lanceolate, ⅕ in. long, hairy: fls. rose, solitary, ⅕ in. across. Alps.

arachnoídea: *A. villosa* var.

armenìaca. Bien. to 2 in.: basal lvs. oblong-lanceolate, to ⅝ in. long, usually acute, somewhat laciniate-dentate: fls. white, in 5–10-fld. umbel-like clusters. Asia Minor.

brigantìaca: *A. carnea* var.

carinàta: *A. Chamæjasme* var.

cárnea. Per. to 3 in.: lvs. linear, to ¾ in. long, forming rosettes: fls. in 3–7-fld. umbels, rose or whitish with a yellow eye, ⅓ in. across. Alps and Pyrenees. Var. **brigantìaca** has narrower lvs. and white fls. Var. **Hálleri** (*A. Halleri*) has longer shining hairy lvs. Var. **Lággeri** (*A. Laggeri*) is more densely tufted and with short scape.

Chamæjásme. Per. to 3 in.: lvs. lanceolate to ovate, to ½ in. long, hairy, forming rosettes: fls. in umbels, white with yellowish eye, to ½ in. across. N. Asia, Eu., N. N. Amer. Var. **carinàta** (*A. carinata*), lvs. keeled beneath.

Chúmbyi, chumbyiénse: *A. sarmentosa* var.

cilià ta. Per. to 3 in.: lvs. oblong-ovate, ¼ in. long, ciliate on margins, forming rosettes: fls. rose, ⅓ in. across, solitary. Pyrenees.

coronopifòlia: *A. lactiflora.*

eximoìdes: listed name.

foliòsa. Per. to 5 in., stoloniferous: lvs. all basal but not in rosettes, obovate, to 1½ in. long: fls. pink, in umbels. Himalayas.

glacià lis: *A. alpina.*

Hálleri: *A. carnea* var.

Haùsmannii. Densely tufted per. to 3 in.: lvs. overlapping in rosettes, spatulate, to ⅜ in. long; fls. pale rose, to ¼ in. across. Mts. of Cent. and S. Eu.

hedræántha. Per. to ½ in.: lvs. oblong-lanceolate, ⅓ in. long, in rosettes: fls. violet-red, in 5–10-fld. umbels. Balkans.

helvética. Per., densely tufted: lvs. lanceolate, very small, in dense rosettes, hairy: fls. white, ⅙ in. across, solitary, nearly sessile. Alps.

láctea. Per. to 8 in.: lvs. linear or linear-lanceolate, to ¾ in. long: fls. snow-white, ⅓ in. across, in umbels, the pedicels to 2 in. long. Mts. of Eu.

lactiflòra (*A. coronopifolia*). Ann. to 1 ft.: lvs. linear-lanceolate, to 2 in. long, forming rosettes: fls. in large clusters, white, to ½ in. across. Siberia.

Lággeri: *A. carnea* var.

lanuginòsa. Per. covered with silky white hairs, prostrate: lvs. both basal and st., lanceolate-ovate, to ¾ in. long: fls. in dense clusters on scapes about 2 in. long, rose-colored, ⅓ in. across. Himalayas. Var. **Leichtlínii,** hort. form with white fls. Var. **oculàta** is listed with lilac fls.

máxima. Ann. to 4 in.: lvs. ovate or oblong, toothed in upper part, in basal rosettes: fls. white or pink, in umbels terminating the scapes. Eu., Asia, N. Afr.

micropýhlla: *A. mucronifolia.*

mucronifòlia (*A. microphylla*). Laxly tufted, stolons to 1 in. long: lvs. imbricated in rosettes, obovate, to ⅕ in. long, obtuse, ciliate: fls. rose to lilac, usually 3–6 in. compact umbellate heads on scape to ½ in. long. N. W. Himalayas to Tibet.

obtusifòlia. Per. to 6 in.: lvs. lanceolate, to ¾ in. long, in rosettes: fls. white or pinkish, ⅓ in. across, in umbels. Alps.

ovàta: listed name.

primuloìdes. Stoloniferous, the runners to 4 in. long: lvs. linear-lanceolate, to ½ in. long or the larger ones 2 in. or more, in rosettes, covered with silvery hairs: fls. in clusters on scapes to 5 in. high, pink, to ½ in. across. Himalayas.

puberulénta. Ann. to 8 in.: lvs. oblanceolate, to 1¼ in. long, pubescent, in rosettes: fls. white, ⅙ in. across, in umbels, the pedicels to 2 in. long. Alaska to New Mex.

sarmentòsa. Stoloniferous, the runners to 5 in. long: lvs. lanceolate or ovate-lanceolate, to 1½ in. long, in rosettes, covered with silvery hairs when young: fls. many, in clusters on scapes to 5 in. high, rose-colored, ¼ in. across. Himalayas. Var. **Chúmbyi** (*A. Chumbyi* and *chumbyiense*). More cespitose and woolly. Forms with smaller crowded lvs. are **Wátkinsii** and **yunnanénsis.**

sempervivoìdes. Stoloniferous, the runners to 2 in. long: lvs. ovate, to ¼ in. long, fleshy, in rosettes on the stolons: fls. rose, ¼ in. across, in umbels on scapes to 4 in. high. Himalayas.

septentrionàlis. Ann. to 8 in.: lvs. lanceolate or oblong, to ¾ in. long, in rosettes: fls. white or pink, to ⅕ in. across, in umbels. Eu., Asia, N. N. Amer. Var. **subumbellàta** (*A. subumbellata*) is of more dwarf habit; scapes to 2 in. or less. Ore. and Mont.

strigillòsa. Tufted: lvs. narrowly oblong to obovate, to 3 in. long and ¾ in. wide, obtuse to acutish, usually hairy, base attenuated into petiole: fls. purple-violet, in umbels of 5–10. Himalayas.

subumbellàta: *A. septentrionalis* var.

villòsa. Per. to 3 in., densely white-hairy: lvs. lanceolate, in rosettes: fls. white or rose with yellowish-red throat, ⅓ in. across, in umbels. Eu., Asia. Var. **arachnoídea** (*A. arachnoidea*), lvs. oblong-ovate, to 1 in. high.

Vitaliàna: *Douglasia Vitaliana.*

ANDROSTÈPHIUM. *Liliaceæ.* Cormous American herbs with basal linear lvs. and blue fls. in terminal umbels, the perianth-segms. united about half way; one species is sometimes planted in the wild-garden or border.

cærùleum (*A. violaceum*). To 8 in.: fls. lilac or violet, 1 in. long. Kans. to Tex.

violàceum: *A. cæruleum.*

ANEMARRHÈNA. *Liliaceæ.* A monotypic genus of N. China, belonging to the Asphodel tribe and characterized by its rhizomatous rootstock, fls. with 3 stamens having versatile anthers and the perianth-segms. free, not spirally twisting after flowering: infl. a much elongated raceme and fr. a loculicidal caps. **A. asphodeloìdes.** To 3½ ft.: lvs. basal, grass-like, to 2½ ft. long and ⅜ in. wide, long-tapering: fls. dull rose-purple, segms. linear, about ¼ in. long.

ANEMÒNE. ANEMONE OR ANEMONY. WINDFLOWER. *Ranunculaceæ.* Attractive perennials blooming in spring, summer or autumn, white, rose, red or even purplish; the lvs. are more or less divided or dissected or even compound; fls. lacking petals, the showy parts consisting of colored sepals; fr. an achene which in the Pulsatilla section has long feathery styles, but in no case is it ribbed; mostly native in the north temp. zone. As a Latin generic name the word is pronounced Anemŏ-ne (four syllables): as an English vernacular, Anem′-one.

Anemones are valuable in all types of gardens, where they thrive in rich sandy loam, many in partial shade. Aside from the florists and Japanese anemones, the species are employed mostly in wild borders, rock-gardens, and for colonizing. The florists' tuberous-rooted kinds, as St. Brigid and The Bride, are useful for late winter and spring bloom in the house, being started in autumn in flats and handled after the manner of freesias. These and similar anemones may also be flowered out-of-doors, with the culture of tulips and hyacinths, if given good winter protection as they will not stand much frost. These florists, plants are of the species *A. coronaria, A. fulgens, A. hortensis.*

The Japanese anemones are amongst the best perennial herbs for autumn bloom. They stand for some years in good land; the situation should be protected from strong wind.

The anemones adapted to rock-garden conditions include, among others, *A. baldensis, A. Drummondii* and *A. Halleri.*

Most species can be propagated by seed or by root-division, the best time for the latter being in early spring; sow the seed in the fall as soon as it has ripened.

acutipétala: *A. alpina.*

albàna. To 1 ft.: lvs. tripinnatifid, segms. oblong to linear, white-villous: fls. creamy-yellow, sometimes pale blue, erect. Siberia to N. Asia Minor.—Belongs in the Pulsatilla group.

Állenii: *A. apennina* var., *A. nemorosa* var.

alpìna (*A. acutipetala. Pulsatilla alpina*). To 1½ ft.: involucral lvs. short-petioled: fls. few in a cluster or solitary, cream inside, purple outside, to 3 in. across. May–June. Eu. Var. **sulphùrea** is soft sulfur-yellow.

altàica. Per. to 8 in., with single st. bearing involucre of 3 petioled toothed lvs. and a single large white fl. Siberia, Japan.

angulòsa: *Hepatica angulosa.*

apennìna. To 9 in. with tuberous roots: involucral lvs. long-petioled, ternately compound, lfts. deeply incised and appearing acute both in sinus and apex: fls. solitary, sky-blue, to 1½ in. across, sepals pubescent without, at least on lower third, peduncle as long as st., slender. Mar.–Apr. Woods, Italy.—Sometimes confused with *A. blanda.* Var. **álba,** fls. white. Var. **Állenii,** fls. pale blue. Var. **plèna,** fls. double. Var. **purpùrea,** fls. mauve. Var. **ròsea,** fls. rose-pink.

atràta: hort. name for member of Pulsatilla section.

baldénsis. To 6 in.: involucral lvs. petioled: fls. solitary, white, often tinged rose outside, to 2 in. across. July–Aug. Rocky places in the high Alps.

blánda. To 8 in. with tuberous root: involucral lvs. ternately compound, lfts. not deeply incised and appearing somewhat obtuse: fls. solitary, deep sky-blue, sepals glabrous without. Greece, Asia Minor. Vars. **atrocærùlea** and **ròsea** are in the trade.—This plant is often confused with its close relative *A. apennina* and may be distinguished from it by its usually smaller less markedly laciniate lfts., shorter petioles and shorter slender peduncles.

boreàlis: *A. parviflora.*

cærùlea: *A. nemorosa* var. *Robinsoniana.*

canadénsis (*A. pensylvanica. A. dichotoma*). MEADOW A. To 2 ft.: involucral lvs. sessile: fls. solitary, white, to 2 in. across. May–Aug. On shores, in low places and open meadows. N. Amer.

caroliniàna. To 1 ft., with tuberous root: involucral lvs. sessile: fls. solitary, cream or purple, to 1½ in. across. Apr.–May. Open places, Ill. to Fla. and Tex. Var. **ròsea** has dark rose-colored fls.

cérnua. Differs from *A. vernalis* in the nodding fls. and more numerous pinnæ with larger teeth. Japan.

chrysántha: *A. coronaria* var. *chrysanthemiflora.*

chrysanthemiflòra: *A. coronaria* var.

coronària. POPPY-FLOWERED A. POPPY A. To 1½ ft., root tuberous: involucral lvs. sessile, finely divided: fls. solitary, poppy-like, of many shades and combinations of red, blue, white, to 2½ in. across, early spring-June. Meadows, Medit. region.—The most common anemone of the florists for forcing. In the trade are The Bride, St. Brigid, semi-double many colors, Victoria Giant. Var. **flòre-plèno** has double fls. in many colors, and var. **chrysanthemiflòra** has very double fls. and is said to be of hybrid origin.

cylíndrica. Candle A. To 2 ft.: involucral lvs. long-petioled: fls. in clusters, greenish-white, ¾ in. across. June–Aug.: achenes long and narrow. Open places, N. Amer.

dahùrica. To 1 ft.: lvs. ternately divided, the lateral segms. 3-lobed and sessile, terminal segm. petioled, 3-lobed, with lobes 2–3-divided into linear acute segms.: fls. salmon-pink to pale rose-purple, to 1½ in. across or more. Dauria.

decapétala. This species has been referred to *A. caroliniana* but differs in broader segms. of lf., involucre mostly above rather than below middle of scape, pink or greenish-white fls., and achenes buried in wool. Ala. to Ark. and Tex. Var. **ròsea** is listed.

deltoídea. To 1 ft.: involucral lvs. sessile, 3-parted: fls. solitary, white, about 2 in. across. Wash. to Calif.

demíssa. Drooping A. To 10 in., rarely to 16 in., roots somewhat tuberous and woody: involucral lvs. sessile, 3-lobed: fls. white inside, purplish without, in clusters of 3–6, to 1½ in. across. Aug.–Sept. Himalayas to China.—The pubescent foliage forms somewhat of a spreading clump.

dichótoma: *A. canadensis.*

Drúmmondii. Usually 4–8 in., and rarely to 12 in. tall: involucral lvs. petioled: fls. cream-colored inside, blue outside, solitary, to 1 in. across. June–July. Rocky Mts. and Calif.—Foliage forms a close somewhat dense tuft. Considered by some authors to belong with *A. baldensis.*

elongàta. Tall A. To 3 ft., roots small and fibrous: basal lvs. long-petioled, blades ternate, to 4 in. across, outer segms. much-divided: fls. white, to 1 in. across, in branched cymes. June. Himalayas.

fúlgens. Flame A. Scarlet A. To 1 ft., the root tuberous: involucral lvs. sessile, entire or slightly cut: fls. solitary, scarlet, the stamens black, to 2½ in. across. May–June. France. Var. **multipétala** is listed as a semi-double form.

globòsa (*A. multifida*). To 20 in.: involucral lvs. short-petioled: fls. red to whitish or yellowish, about 1 in. across. May–Sept. Meadows and hillsides, W. N. Amer.

Hálleri (*Pulsatilla Halleri*). To 6 in., covered with silky white hairs: involucral lvs. sessile: fls. lilac, 2½ in. across, sepals often cleft. June. Sunny places, Switzerland.

Hepática: *Hepatica americana* and *nobilis.*

horténsis (*A. stellata*). Garden A. Broad-leaved A. To 10 in., the root tuberous: involucral lvs. sessile, entire or only slightly divided: fls. red, rose, purple or white with brownish-violet stamens, to 3 in. across. May. S. Eu.

hudsoniàna. To 1½ ft., silky-hairy: involucral lvs. short-petioled: fls. greenish or red, to 1 in. across, in few-fld. clusters, summer. N. B. to N. Y. and Minn.

hupehénsis: reported as a dwarf early-flowering form of *A. japonica* with pink or pale mauve fls. shaded with deeper pink on back.

hýbrida: name of indefinite and various application.

japónica. Japanese A. Stout, branching, to 3 ft.: lvs. of 3 ovate toothed or lobed lfts.: peduncles several; fls. purplish, red, rose, white, to 3 in. across, Sept. to late frosts. Japan, China. Var. **álba,** fls. white; var. **críspa,** lvs. crisped on edges; var. **Lésseri** is listed as an early-blooming crimson-fld. form; var. **ròsea supérba,** fls. rose; var. **rùbra,** fls. red, waxy. Some of the vernacular-named forms are: Alice, rosy-carmine; Coupe d'Argent, white; Frau Marie Manshart, Herbstrose, double, rose; Honorine Joubert, white; Kriemhilde, lilac; Lady Ardilaun, white; Loreley, silver-pink; Louise Uhink, white; Magdalena Uhink, double; Max Vogel, deep rose, semi-double: Mount Rose, double, deep pink; Prince Henry, dark red; Profusion, semi-double, rose; Queen Charlotte, semi-double, pink; Richard Ahrens; Whirlwind, semi-double, white.

lancifòlia. Mountain A. To 1½ ft.: involucral lvs. petioled, serrations blunt and somewhat rounded, center lft. broadest above middle: fls. white, to 1½ in. across, solitary, sepals commonly 5, the veins obvious, and branches abundant and strongly anastomosing. May. Pa. to Ga.—Has been confused with the European *A. trifolia.*

Leveìllei. To 15 in., roots fibrous: lvs. kidney-shaped, 3-lobed, margins dentate: fls. white inside, rose-pink outside, to 1½ in. across, usually 1–2, sepals rounded and bearded at tip. Apr.–May. China.

lithóphila. To 8 in., remotely long silky-pubescent: lvs. about 1½ in. long, deeply 3-cleft, segms. oblanceolate, lobed and toothed, glabrous and glossy green: fls. pale yellowish tinged with blue, to 1¼ in. across, silky-pubescent. July–Aug. Mts. of Mont. to Utah.

Lỳallii. To 6 in., rarely to 1½ ft.: lvs. trifoliate, petioled, segms. ovate to lanceolate, rounded toothed: fls. white to pale blue, to ¾ in. across, solitary. Apr. N. Calif. to Vancouver Isl.—By some considered a var. of *A. quinquefolia.*

magellánica. Trade name, applied sometimes to a yellow-fld. plant, and sometimes to a white-fld. subject with deeply cut foliage.

mexicàna. To 1½ ft., roots fibrous: lvs. ovate, lobes 3, diamond-shaped and more or less cleft, margins dentate: fls. white, usually 2–5, to 1½ in. across, sepals 5, spreading, ovate-oblong. July–Sept. Mex.

montàna (*Pulsatilla montana*). Similar to *A. Halleri* but with glabrous lvs. and dark violet drooping fls. Eu., Caucasus. Vars. **álba** and **rùbra** are color forms.

multífida: *A. globosa.* The true *A. multifida* of botanists, native in S. S. Amer., is probably not in cult.

narcissiflòra. To 1½ ft.: involucral lvs. sessile: fls. several in a cluster, white, to 1 in. across. May–July. Mts. of Eu.—The American representative has been separated as *A. zephyra* which is distinguished by its lemon-yellow usually solitary fls. and lvs. less lobed.

nemoròsa. European Wood A. To 8 in.: involucral lvs. petioled: fls. white or purplish, solitary, 1 in. across. Apr.–May. Eu., Siberia. Hort. vars. are: **álba** (var. *flore-pleno*), pure white; **Állenii,** lavender-mauve; **màjor,** white; **Robinsoniàna** (var. *cærulea*), blue. Mar.–Apr.; **ròsea** (var. *rubra fl.-pl.*), reddish-purple; **símplex,** fls. white.

nígricans: considered to be a subspecies of *A. pratensis:* fls. purple-black.

Nuttalliàna: *A. patens* var.

occidentàlis (*Pulsatilla occidentalis*). To 1½ ft.: involucral lvs. sessile: fls. solitary, white or purplish, to 2 in. across. May. B. C. to Calif.

oregàna. To 8 in. or more: involucral lvs. petioled, coarsely toothed: fls. blue, to 1½ in. across, solitary. Cascade Mts., Ore.

palmàta. To 9 in., the root tuberous: lvs. nearly orbicular, not divided, involucral lvs. sessile: fls. golden-yellow, solitary or in 2's, about 1 in. across. May–June. Medit. region. Var. **álbida** (var. *alba*), fls. white; var. **flòre-plèno,** fls. double; var. **lùtea,** fls. yellow.

parviflòra (*A. borealis*). To 1 ft.: involucral lvs. nearly sessile: fls. white or tinged with rose, to 1 in. across. May–June. N. Asia, N. N. Amer.

pàtens (*Pulsatilla patens*). Per. to 3–6 in. high when in bloom but becoming 1 ft. and more in fr.: lvs. basal, appearing after the bloom, ternate (petiole not running through the blade), divided into many linear lobes, the involucre of sessile divided bracts: fls. purplish, rarely white, to 2½ in. across. Eu., N. Asia; native Ill. to B. C. and Alaska in races sometimes separated as var. *Nuttalliana* (or var. *Wolfgangiana*), and *Pulsatilla* (*Clematis*) *hirsutissima* and *P. ludoviciana.*

pensylvánica: *A. canadensis.*

praténsis. One of the Pulsatilla group from N. Eu.: to 12 in.: lvs. pinnately parted into linear segms.: fls. dark purple, hanging, with 6 reflexed sepals.

Pulsatílla (*Pulsatilla vulgaris*). Pasque-Flower. To 1 ft.: lvs. pinnately dissected (along a rachis), appearing with the fls.; involucral lvs. sessile, silky-hairy: fls. solitary, blue to reddish-purple, bell-shaped, to 2½ in. across. Apr. Eu. Color vars. are **álba, carpática, lilácina, rùbra, variegàta.**

quinquefòlia (*A. nemorosa* var. *quinquefolia*). American Wood A. Differs from *A. nemorosa* in the slender sts., less lobed involucral lvs. and smaller fls. E. N. Amer.

ranunculoìdes. Yellow Wood A. To 8 in., the rootstock somewhat tuberous: involucral lvs. nearly sessile: fls. usually solitary, golden-yellow, to 1 in. across. Apr.–May. Eu., Siberia. Var. **flòre-plèno** has partially double fls.

refléxa. Per. to 9 or 10 in. bearing single slender st. with involucre of 3 petioled lvs. which have long very narrow toothed lfts.: fls. small, with reflexed sepals. Siberia.

Regeliàna. Basal lvs. broadly ovate, tri-pinnatisect, segms. usually sessile with lanceolate to linear laciniæ, acute; involucral lvs. laciniate: fls. blue-violet or rarely rose-colored, tips reflexed: achenes plumose. Mongolia.

rívulàris. To 3 ft., branched: fls. white or tinged blue outside, 1½ in. across, in many-fld. cymes. India, Ceylon. Var. **grandiflòra** is listed.

Robinsoniàna: *A. nemorosa* var.

rupícola. To 1 ft. silky: lvs. 3-parted, the segms. toothed or cut, the radical ones long-stalked: fls. 1 or 2, large and showy, white, often pinkish outside. Himalayas.

serratifòlia: listed name.

sibírica. To 6 in.: involucral lvs. short-stalked: fls. solitary, white. Siberia.

sphenophýlla. Similar to *A. decapetala,* but with lvs. very deeply cleft. Chile.

stellàta: *A. hortensis.*

sulphùrea: *A. alpina* var.

sylvéstris. Snowdrop A. To 1½ ft.: involucral lvs. long-petioled: fls. solitary or in 2's, pure white, fragrant, to 1½ in. across, often nodding. May–June. Eu., S. W. Asia. Var. **flòre-plèno** has double fls.

thalictroìdes is *Anemonella thalictroides.*

trifòlia. To 1½ ft.: involucral lvs. petioled, serrations sharp-pointed, center lft. broadest at or below the middle: fls. white, to 1½ in. across, solitary or in 2's, sepals commonly 6–7 rarely 5, veins faint, running free to the tip, not markedly branched and not anastomosing. May. Eu.—Material in trade often confused with that of *A. lancifolia.*

tuberòsa. To 1 ft., root tuberous: involucral lvs. short-petioled: fls. white or purplish, to ¾ in. across, usually solitary. Ariz. to Utah.

vernàlis (*Pulsatilla vernalis*). To 6 in.: involucral lvs. pinnate, silky-hairy: fls. purple outside, white inside. Apr. Eu.

villosíssima: said to be a fluffy form of *A. narcissiflora.*

virginiàna. To 3 ft., branching above: involucral lvs. long-petioled: peduncles 2–5; fls. white or greenish, to 1½ in. across. June–Aug. Woods, N. S. to S. C. and Kans.

vitifòlia. Grape-leaf A. Vine-leaved A. To 3 ft., branched: lvs. deeply 5-lobed, densely tomentose beneath; involucral lvs. petioled: fls. white, to 2 in. across, in many-fld. cymes. July. Himalayas. Var. **hupehénsis** is *A. hupehensis.* Var. **tomentòsa** is more vigorous and with larger lvs. which are said to be more hairy beneath.

zéphyra: see *A. narcissiflora.*

ANEMONE, RUE: *Anemonella thalictroides.*

ANEMONÉLLA (*Syndesmon*). *Ranunculaceæ.* One delicate per. herb with tuberous roots, native in E. N. Amer., sometimes transferred to the wild-garden or colonized. **A. thalictroìdes** (*Thalictrum anemonoides*). Rue-Anemone. To 9 in.: lvs. ternately compound, those of the involucre sessile: fls. white or pink, to 1 in. across, in terminal umbels. Mar.–June. Var. **flòre-plèno** has double fls. Var. **ròsea** is offered in the trade.—It thrives in partial shade in light moist soil. Propagated by division of roots in spring or autumn.

ANEMONÓPSIS. *Ranunculaceæ.* One Japanese per. herb to 3 ft., grown as a border plant. **A. macrophýlla.** Lvs. ternately compound and cut: fls. pale purple, drooping, 1½ in. across, with many petals and petal-like sepals, borne in loose racemes.—Does best in rich soil in partially shady well-drained situations. Propagated by division of roots in spring or autumn or by seeds sown in sandy loam.

ANEMONY: *Anemone.*

ANEMOPÆGMA. *Bignoniaceæ.* Mostly Brazilian climbing shrubs with lvs. of 2–3 entire lfts., funnelform fls. in lateral racemes, and fr. a woody or leathery caps.; grown under glass or in the open in warm regions.

Chàmberlaynii (*A. racemosum. Bignonia Chamberlaynii*). Lvs. of 2 oblong or ovate lfts. to 7 in. long and a terminal tendril: fls. pale yellow striped in throat with purple or white, to 3 in. long, in racemes longer than lvs.: fr. oval, to 6 in. long.—*Doxantha Unguis-cati* is sometimes grown under this name.

racemòsum: *A. Chamberlaynii.*

ANEMÓPSIS. *Saururaceæ.* One per. aquatic herb with aromatic rootstocks having medicinal properties. **A. califórnica.** Yerba Mansa. To 1½ ft., the st. with 1 broad clasping lf. bearing 1–3 small lvs. in axil: lvs. mostly basal, elliptic-oblong, to 6 in. long: fls. very small, in a dense spike to 1½ in. long which is subtended by white petal-like involucral bracts. Calif., Ariz., Mex.

ANÈTHUM. *Umbelliferæ.* Ann. or bien. herbs native in the Old World, with lvs. 3–4-pinnately divided into linear segms., small yellow fls. in umbels, and flattened frs.; one species grown for the seeds which are used for flavoring. Easily grown from seeds which should be sown in a warm open situation.

gravèolens. Dill. To 3 ft.: lvs. very finely cut into thread-like divisions. Eu.; nat. in N. Amer.

ANGÉLICA. *Umbelliferæ.* Per. herbs with compound lvs., small white or greenish fls. in terminal umbels, and compressed frs.; sometimes planted in borders for bold effects. Propagated by seeds and sometimes by division.

Archangélica (*Archangelica officinalis*). Stout bien. or per., to 6 ft.: lvs. 2-pinnate into 3-parted lfts. Eu., Asia, in low ground.

atropurpùrea. To 6 ft.: lvs. biternate, the divisions pinnate: umbels to 10 in. across. Newf. to Del. and Minn., in swamps.—Sometimes grown for medicinal purposes.

Cúrtisii. To 4 ft.: lvs. biternate, the divisions pinnate: umbels to 6 in. across. Pa. to Ga., in woods.

montàna: *A. sylvestris* var. *elatior.*

Pancícii (*Archangelica Pancicii*). To 4½ ft.: lower lvs. triternate, segms. ovate-elliptic, acutely toothed, the lower ones petioled, terminal segm. 2–3-lobed, upper lvs. biternate, the segms. bipinnatisect: fls. small, white to pink. Bulgaria.

rosæfòlia. Sts. to 5 ft. long, scrambling: lvs. of 2–5 pairs of toothed lfts. to 2½ in. long: umbels to 3 in. across New Zeal.

sylvéstris. To 4 ft.: lower lvs. large, 2–3-pinnatisect; lfts. ovate or ovate-lanceolate, acute, serrate, glabrous: fls. white, in compound umbels of 20–30 or more rays: fr. ⅕ in. long. Cent. Eu. Var. **elàtior** (*A. montana*). Sts. to 7 ft., lfts. larger and more finely serrate, umbels 30–50-rayed: fr. ¼ in. or more long. Croatia.

ANGELICA, JAPANESE: *Aralia elata.*

ANGELIN-TREE: *Andira.*

ANGELÒNIA. *Scrophulariaceæ.* Per. herbs and subshrubs with opposite lvs. or the upper alternate, and showy 2-lipped tubular blue fls. solitary and axillary or in terminal racemes; native in trop. Amer. Grown readily in greenhouses in the N. and in the open far S. Propagated by seeds or softwood cuttings.

angustifòlia. Per. to 1 ft., glabrous: lvs. narrow-lanceolate, toothed: fls. violet or purple, in long racemes. Mex., Cuba.

grandiflòra: probably a hort. form of *A. salicariæfolia.*

salicariæfòlia. Per. to 2 ft., sticky-pubescent: lvs. lanceolate to linear-oblong, to 3 in. long, toothed: fls. blue, to ¾ in. across, in leafy racemes. N. S. Amer.

ANGELS-TRUMPET: *Datura arborea.*

ANGIÓPTERIS. *Marattiaceæ.* Large ferns with short thick sts. and bipinnate fronds with sori in a marginal row; native in the southern hemisphere and grown sometimes in greenhouse collections. For cult. see *Ferns.*

evécta. St. or caudex 2 ft. thick and 2–6 ft. high: pinnæ to 1 ft. long, entire or toothed. Japan to Australia and Madagascar.

pruinòsa. Probably a pruinose-nigrescent form of *A. evecta.* Java.

ANGÓPHORA. Gum-Myrtle. *Myrtaceæ.* E. Australian trees or shrubs told from Eucalyptus by opposite lvs.; fl. white, in terminal corymbs; frs. capsular. Rarely planted in S. U. S.

lanceolàta. Large tree with smooth deciduous bark: lvs. lanceolate, to 5 in. long.

ANGRÆCUM. *Orchidaceæ.* Epiphytes with very thick lvs. and fls. usually in racemes, the sepals and petals similar, the lip with side lobes small or lacking, entire middle lobe and commonly long slender spur; grown in the hothouse. For cult. see *Orchids.*

dístichum: *Mystacidium distichum.*

ebúrneum. Sts. to 4 ft. high: lvs. to 2 ft. long and 2 in. wide: fls. to 4 in. across, the sepals and petals green, the lip ivory-white with green spur about 3 in. long, in 8–15-fld. racemes longer than lvs. Dec.–Mar. Madagascar.

Eichleriànum. Sts. pendulous, to 3 ft. long: lvs. to 5 in. long and 2 in. wide: fls. about 3 in. across, 1–3 together on stalks about length of lvs., the sepals and petals yellow-green, the lip white, greenish-yellow near base, with spur about 2 in. long. June–Sept. Trop. W. Afr.

gracílipes. Lvs. strap-shaped, to nearly 8 in. long, retuse: infl. 1-fld., axillary, to nearly 8 in. long; fls. showy white, to nearly 3 in. across; sepals and petals lanceolate, spreading; spur slender, about 2½ in. long. Madagascar.

Leònis. Sts. very short or wanting: lvs. to 10 in. long, equitant, lanceolate, falcate: racemes 3–7-fld.; fls. to 3 in. across; sepals and petals white; lip white with spur to 6 in. long. Comoro Isls., Madagascar.

modéstum: *Aërangis modesta.*

Sanderiànum: *Aërangis modesta.*

Scottiànum. Sts. elongate, pendulous, to 20 in. long: lvs. to nearly 5 in. long, cylindrical: fls. 1–3 on stalks about as long as lvs.; fls. to 2 in. across, pale yellowish changing to white; spur pale reddish-brown, to 5 in. long. May–Aug. Comoro Isls.

sesquipedàle (*Macroplectrum sesquipedale*). Sts. to about 3 ft. high: lvs. densely 2-ranked, ligulate-oblong, to 1 ft. long and 2 in. wide: racemes 2–4-fld., about as long as lvs.; fls. the largest in genus, to 7 in. across, ivory-white, with spur to 1 ft. long. Nov.–Mar. Madagascar.

ANGULÒA. *Orchidaceæ.* Terrestrial orchids from the Andes of Colombia, Ecuador and Peru, with pseudobulbs bearing 2–3 plaited lvs. and large fls. solitary on long erect scapes, the fleshy sepals and petals connivent and almost concealing the smaller 3-lobed lip; grown in a cool greenhouse. See *Orchids.*

Clówesii. Pseudobulbs to 6 in. long: lvs. to 2 ft. long: fls. yellow, solitary on scapes to 1 ft. long. May–June. Var. **ebúrnea** has ivory-white fls.

ebúrnea: *A. Clowesii* var.

Rúckeri. Somewhat smaller than *A. Clowesii* but with olive-green fls. which are brown or spotted within, on scapes to 8 in. long. May–June.

ANHALONIUM: *Ariocarpus, Lophophora, Roseocactus.*

ANIGOZÁNTHOS. *Amaryllidaceæ.* Odd Australian per. herbs with thick rootstocks, linear or sword-shaped basal lvs. and large red, purple, green or yellowish fls. borne in one-sided woolly racemes or spikes, the perianth-tube very long.

Grown in the greenhouse or out-of-doors in the South. It does best in a mixture of peat, loam and sand and should be well watered except in the winter rest period. Propagated by division of the roots.

flávida. Differs from *A. Manglesii* in fls. to 1¼ in. long, almost entirely red, and anthers with appendages.

Mánglesii. To 3 ft., the st. covered with red wool: fls. green, red at base, 3 in. long, with very narrow tube, woolly.

ANISACÁNTHUS. *Acanthaceæ.* Shrubs native in Mex. and W. N. Amer., with opposite entire lvs. and red tubular 2-lipped fls. in one-sided terminal spikes; sometimes cult. in S. Calif.

Thúrberi. To 5 ft.: lvs. lanceolate or oblong, to 2 in. long, pubescent: fls. to 1½ in. long. Ariz., New Mex., Mex.

Wrìghtii. To 4 ft., glabrous or nearly so: lvs. oblong to ovate-lanceolate, acute, to 2 in. long: fls. purplish-red, to 1½ in. long, in naked panicles. Tex.

ANISE: *Pimpinella Anisum.* **Star:** *Illicium verum.*

ANISOSTICHUS: *Bignonia capreolata.*

ANISÓTOME. *Umbelliferæ.* Aromatic herbs of New Zeal., having pinnate lvs. and mostly unisexual white or red fls. in compound umbels; one species is sometimes grown in mild regions for ornament.

latifòlia (*Ligusticum latifolium*). Per. to 6 ft. or more: lvs. leathery, shining, 2-pinnate: fls. red, in umbels to 3 in. across.

ANNATTO: *Bixa Orellana.*

ANNESLIA: *Calliandra.*

ANNÒNA. *Annonaceæ.* Mostly trop. American trees and shrubs grown for the edible frs. in warm climates: lvs. alternate, simple and entire: fls. solitary or clustered, mostly thick or fleshy and of odd dull colors: fr. a large fleshy syncarp formed by the fusion of the carpels and receptacle. For cult. see *Cherimoya.*

Cherimòla. Cherimoya. To 25 ft., deciduous: lvs. ovate to ovate-lanceolate, to 10 in. long, velvety-pubescent beneath: fls. fragrant, yellow- or brown-tomentose outside, 1 in. long: fr. globular to conical, light green, to 5 in. long, smooth or with small tubercles. Andes of Peru and Ecuador.

diversifòlia. Ilama. To 25 ft.: lvs. elliptic to oblanceolate, to 5½ in. long: peduncles with leaf-like bracts at base: fls. maroon, 1 in. long: fr. oval or round, to 6 in. long, pale green or pink, with stout tubercles or sometimes smooth. Mex., Cent. Amer.

glàbra. Pond-Apple. To 40 ft., evergreen: lvs. ovate to oblong, to 7 in. long: fls. yellowish marked with red inside, fragrant, 1 in. or more long: fr. ovoid, yellowish, to 4 in. long, smooth. Trop. Amer., W. Afr.—Grown as a stock.

muricàta. Soursop. Guanabana. To 20 ft., evergreen: lvs. obovate to elliptic, to 5 in. long: fls. yellow, 1 in. or more long: fr. ovoid, to 8 in. long, dark green, covered with short fleshy spines. Trop. Amer.

reticulàta. Custard-Apple. Bullocks-Heart. To 25 ft., deciduous or half-evergreen: lvs. oblong-lanceolate to lanceolate, to 8 in. long: fls. yellowish, 1 in. long: fr. heart-shaped or oval, reddish-yellow or -brown, to 5 in. across, smooth, the carpels marked by impressed lines. Trop. Amer.

squamòsa. Sugar-Apple. Sweetsop. To 20 ft., deciduous: lvs. oblong-lanceolate to lanceolate, to 6 in. long: fls. greenish-yellow, to 1 in. long: fr. round, heart-shaped or conical, yellowish-green and glaucous, to 3 in. across, tuberculate and the carpels falling apart. Trop. Amer.

ANNONÀCEÆ. Annona Family. Over 70 genera of trees and shrubs of wide distribution, mostly in the tropics, having simple alternate lvs., usually bisexual fls. with 3 sepals and 6 similar petals, numerous stamens, and fr. a syncarp or caps. The family yields edible frs. as well as ornamental subjects in the genera Annona, Artabotrys, Asimina, Cananga, Rollinia.

ANNUALS (abbreviated ann. in this book). An annual is a plant that naturally completes its life within one year (Latin *annuus*, of a year's duration) from germination to seeding and death. In a horticultural sense the word frequently denotes a plant that blooms the first year from seed, whether or not it then completes its cycle and dies. Thus, the common bachelor button or cornflower (*Centaurea Cyanus*) is an annual, but four-o'clock is a perennial that blooms freely from seed the first year and is listed with annuals. In the northern states the red pepper is classed as an annual, but the plant is perennial in its native tropical regions.

Plants that live only one year because they are killed by frost but which in mild climates or under glass may live two years or more are properly *plur-annuals*, as the tomato, red pepper, castor-bean, scarlet runner bean, and many more. Other plants treated as annuals but that are carried over winter as bulbs or tubers are *pseud-annuals*, of which dahlia, potato, gladiolus are examples. In this book the term annual is employed mostly in the horticultural sense to designate plants grown from seeds for bloom or fruit only the same season.

Annuals are of simple cultural requirements as a rule. They lend themselves well to amateur gardening and experiment, and they possess a fascination all their own. The range of stature, habit and flower-color is very wide. Some of them are attractive vines. Mostly they can be grown with success in the northern states if sown directly in the garden when the weather becomes settled, in well-prepared "quick" soil. In warm climates many of them are grown in the cool season. Species that bloom very late, as cosmos, single dahlias, moonflowers, castor-beans, may be started indoors in pots or flats. Some kinds are classed as "hardy," which may be sown before frosts have ceased; others are "half-hardy," an intermediate indefinite class that may be sown before the full warm weather comes; others are "tender," that require the arrival of steady warmth before sowing or that are commonly started under glass. In North America these terms are now little used.

Ordinarily the seeds of annuals are sown liberally. Many may not germinate. Even if they all come up, the combined strength of the rising plantlets will break the crust on hard soils; and in the thinning which follows, only strong and promising plants are allowed to remain. Better effects are also often obtained when the colors are in masses, especially if the flowers are thrown into the bays of heavy shrub borders. Plants continue to bloom for a longer period if they are not allowed to produce seeds. The flowers should be picked, if possible, as soon as they begin to fade. Most annuals should be in good bloom at three months from seed, and many of them at two months.

Wide choice is possible in the kinds of annuals. One's personal preference must be the guide. Yet there are some groups considered to be standard or general-purpose plants. They are easily grown almost anywhere, and are sure to give satisfaction. The remaining plants are mostly such as have secondary value, or are adapted to particular purposes or uses. Following are some of the groups of general-purpose annuals: Petunia, phlox, pink or dianthus, larkspur or delphinium, calliopsis or coreopsis, pot-marigold or calendula, bachelors-button or Centaurea Cyanus, clarkia, zinnia, marigold or tagetes, mignonette, collinsia, gilia, California poppy or eschscholzia, verbena, poppy, China aster, sweet pea, nemophila, portulaca, silene, candytuft or iberis, alyssum, stock or mathiola, morning-glory, nasturtium or tropæolum, scabiosa, salpiglossis, amaranthus, cockscomb. Some of the fruit-bearing plants belong with the ornamental annuals, as the gourds of many kinds, and the red peppers or capsicums.

White-flowered annuals: acroclinium, ageratum, alyssum, ammobium, antirrhinum, arctotis, argemony, aster, balsam, brachycome, browallia, candytuft, centaurea, chrysanthemum, clarkia, cosmos, delphinium, dianthus, four-o'clock, gomphrena, helichrysum, lavatera, lobelia, lupinus, malope, matricaria, nemesia, nemophila, nicotiana, nigella, petunia, phlox, poppy, portulaca, rhodanthe, scabiosa, schizanthus, verbena, zinnia.

Pink-, rose-, and red-flowered annuals: abronia, acroclinium, amaranthus, anagallis, antirrhinum, aster, balsam, cacalia, candytuft, centaurea, chrysanthemum, clarkia, cockscomb, convolvulus, coreopsis, cosmos, delphinium, dianthus, four-o'clock, gaillardia, godetia, gomphrena, gypsophila, helichrysum, lavatera, linaria, linum, lupinus, lychnis, malope, morning-glory, nasturtium, nemesia, phacelia, phlox, poppy, portulaca, rhodanthe, salpiglossis, salvia, saponaria, scabiosa, stock, sweet pea, verbena, zinnia.

Blue-, lilac-, lavender-, and purple-flowered annuals: ageratum, anagallis, anchusa, antirrhinum, aster, balsam, brachycome, browallia, campanula, candytuft, centaurea, convolvulus, cosmos, delphinium, gilia, linaria, lobelia, lupinus, machæranthera, nemesia, nemophila, nicotiana, nigella, nolana, petunia, phacelia, phlox, portulaca, salpiglossis, salvia, scabiosa, specularia, sweet pea, torenia, trachymene, verbena.

Yellow- and orange-flowered annuals are to be found in the following genera and groups: abronia, argemony, cacalia, calendula, California poppy, centaurea, chrysanthemum, coreopsis (calliopsis), cosmos, dimorphotheca, emilia, erysimum, evening-primrose, four-o'clock, gaillardia, helichrysum, hunnemannia, marigold, nasturtium, poppy, sanvitalia, sunflower, thelesperma, thymophylla, venidium, zinnia.

Annuals that continue to bloom after the first autumn frosts: Abronia umbellata, Adonis æstivalis, Adonis annua (autumnalis), Argemone grandiflora, calendulas, callirrhoë, Centaurea Cyanus, centauridium, Cheiranthus Cheiri, chrysanthemums, Convolvulus tricolor, dianthus of various kinds, Erysimum Perofskianum, Erysimum asperum (arkansanum), eschscholzias in several varieties, Gaillardia pulchella picta, Gilia achilleæfolia, Gilia capitata, Gilia laciniata, Gilia tricolor, Iberis affinis, Lavatera trimestris, Lychnis Cœli-rosa (oculata), Lychnis elegans, Lychnis Viscaria, mathiolas or stocks, Œnothera Lamarckiana, Œnothera Drummondii, Œnothera rosea, Phlox Drummondii, Salvia splendens, Salvia farinacea, Salvia Horminum, verbenas, Virginia stocks.

Annuals adapted to edgings: abronia, ageratum, alyssum, antirrhinum (dwarf), brachycome, California poppy, candytuft, collinsia, coreopsis (dwarf), dianthus, godetia, Gypsophila muralis, lobelia, marigold (dwarf), mesembryanthemum, nemophila, nigella, pansy, phlox, portulaca, sanvitalia, Saponaria ocymoides (perennial), verbena.

Annuals that are tendril- or petiole-climbers: balloon-vine, balsam-apple, balsam-pear, canary-bird-flower, cobea, eccremocarpus (grown as annual North), gourds, nasturtiums, sweet pea, wild cucumber.

Annuals that are twiners: bean (scarlet runner and hyacinth bean), cardinal climber, cypress-vine, gourds, Japanese hop, moonflower, morning-glory and related plants, thunbergia.

ANÒDA. *Malvaceæ.* Mostly ann. herbs, or grown as such in cold regions, of warm countries, with alternate commonly lobed lvs. and purple or lilac fls. solitary in the axils; occasionally grown under glass or in the open for summer and autumn bloom. Propagated by seeds.

cristàta (*A. Dilleniana*). To 2½ ft., sts. yellow-pilose to nearly glabrous: lvs. simple to 3-lobed, triangular-lanceolate to hastate, entire or serrate, usually glabrous beneath except on veins: fls. rose-pink to lavender, to nearly 2 in. across, on long naked pilose peduncles. Cent. Amer.

Dilleniàna: *A. cristata.*

hastàta. Lvs. arrow-shaped, the upper heart-shaped and 5-angled: fls. blue or white, about 1½ in. across. Mex. to Peru.—Differs from *A. lavateroides* in the reticulated carpels.

lavateroìdes. Lvs. heart-shaped to arrow-shaped, toothed or entire: fls. violet, purple or white, to 2 in. across. Tex. to Mex. and S. Amer.

parviflòra. Similar to *A. cristata*, from which it differs in lower lvs. cordate and the upper ones hastate, crenate petals and larger calyx. Mex.

triangulàris. To 3 ft., much branched: lvs. triangular, toothed at base: fls. lilac, 1¾ in. across. Mex.

Wrìghtii. To 2 ft.: lvs. ovate or oblong-ovate, scarcely lobed: fls. yellow, ¾ in. across. New Mex.

ANOGRA: *Œnothera.*

ANOMATHECA: *Lapeirousia cruenta.*

ANÓPTERIS. *Polypodiaceæ.* One delicate fern native in the W. Indies and sometimes seen under glass. **A. hexagòna** (*Pteris heterophylla*). Fronds tufted, of two kinds, to 2 ft. long, 2–3 pinnate, with marginal indusia. See *Ferns.*

ANÓPTERUS. *Saxifragaceæ.* Small trees or shrubs from Australia and Tasmania, having glabrous alternate persistent leathery lvs. and terminal racemes of white fls.: petals, stamens and calyx-lobes 6–9: fr. an oblong-conical caps. dehiscing by 2 recurved valves; seeds winged at one end.

glandulòsus. Shrub or small tree to 40 ft.: lvs. elliptic-lanceolate to obovate, to 8 in. long, serrate: fls. in racemes 3–6 in. long. Tasmania.

ANÒTA. *Orchidaceæ.* Epiphytic orchids with leafy sts. and fls. in racemes, the lip entire and spurred. See *Orchids* for cult.

densiflòra (*Vanda densiflora. Saccolabium giganteum*). Sts. to 8 in.: lvs. to 1 ft. long and 2 in. wide: fls. 1 in. across, in dense many-fld. pendulous racemes to 16 in. long; sepals and petals white spotted at base with violet, lip purple, white near base. Nov. Burma.

violàcea (*Vanda violacea. Saccolabium violaceum. Rhynchostylis violacea*). Similar to the above but with white sepals and petals spotted with violet and violet lip. Dec.–Mar. Philippines.

ANSÉLLIA. *Orchidaceæ.* African epiphytic orchids of a few closely related species, of which one is sometimes grown in the hothouse. See *Orchids.* **A. africàna.** Sts. elongate, bearing 4–7 linear lvs. to 1 ft. long: fls. yellowish spotted with chocolate-brown, about 1 in. long, in many-fld. terminal panicles to 16 in. long. Dec.–July.

ANTELOPE-BRUSH: *Purshia.*

ANTENNÀRIA. EVERLASTING. PUSSYS-TOES. *Compositæ.* Per. white-woolly herbs with lvs. mostly basal and small clustered heads, the fls. diœcious and tubular; pappus of bristles.

Sometimes grown for the dry flower-heads or in rock-gardens and adapted to poor soil. Propagated by seeds and division.

alpìna. To 6 in., stoloniferous: lvs. oblanceolate, to ¾ in. long, silky-tomentose at least underneath: heads ⅕ in. across, with brownish-green involucral bracts in fertile heads. Alaska to B. C. and Lab.

áprica. Soft-woolly, making patches, to 12 in. or less, with leafy stolons: lvs. mostly spatulate and obtuse, to 1 in. or more long, tomentose on both sides, those on st. linear: heads about ⅓ in. across, the involucral bracts white or pink. S. D. to New Mex. and west.

campéstris. To 4 in.: rosette lvs. obovate, to 1¾ in. long, tapering at base, hairy beneath and nearly glabrous above; st.-lvs. linear, to ¾ in. long, acute: heads sessile, about ⅓ in. across, involucral bracts white or pink. Mich. to Sask., south to Mo. and Kans.

canadénsis. To 12 in., slender: lvs. spatulate or oblanceolate, to 1½ in. long, nearly or quite obtuse, with 1 prominent nerve: heads about ⅓ in. high, in close cluster, the involucre green. Newf. to Conn. and west.

cándida: *A. dioica.*

carpáthica. To 10 in., woolly: lvs. oblanceolate to linear, to 2 in. long: heads ¼ in. across, with brownish-purple involucral bracts. N. N. Amer., Eu., N. Asia.

dioìca (*A. candida. A. tomentosa*). To 1 ft., stoloniferous: lvs. spatulate, to 1 in. long: heads ¼ in. across, with white or rose involucral bracts. Eu., Asia; reported as having escaped in N. Amer. Var. **ròsea** is listed.

fállax. To 16 in., sts. occasionally glandular: rosette lvs. rhombic-ovate, to 3½ in. long and 2 in. across, but often smaller, densely white-woolly, obtuse; st.-lvs. oblong to spatulate: heads in dense corymb, styles often pink to crimson. Que. to Minn. south to Va. and Tex.

lanàta. To 6 in., densely woolly: lvs. spatulate-lanceolate to linear, to 2 in. long: heads in dense clusters. Mts., B. C. to Ore.

magellánica. To 2 in., many-stemmed: lvs. oblong-linear, tomentose: heads 5–6, in sessile cymes. Magellan region.

margaritàcea: *Anaphalis margaritacea.*

mèdia. To 4 in., woolly: rosette lvs. spatulate to broadly oblanceolate, to ¾ in. long: heads 4–7, to ¼ in. across, bracts very dark green, often white tipped. Alta. to B. C. south to Colo. and Calif.

microphýlla (*A. parvifolia* probably). Slender, to 12 in., with very short stolons: lvs. spatulate, obtuse or apiculate, ¾ in. or less long, silky both sides: heads about ¼ in. high. Sask. south and west.

neglécta. To 12 in., the slender stolons leafy at tip: lvs. mostly oblanceolate, tapering to base, tomentose but nearly glabrous above, 1-nerved, to 1½ in. long: heads about ⅓ in. across, the involucre brownish with white tips. Me. to Va., Kans. and Wis.

neodioìca. Slender, to 12 in., woolly, with many leafy stolons: lvs. broad-ovate to spatulate, only indistinctly 3-nerved, to 1 in. long, apiculate, white-tomentose underneath: heads to ⅓ in. broad, the involucre with white tips. Newf. to Va. and west.

obovàta. To 1 ft., stoloniferous: lvs. obovate, 1 in. long, tomentose both sides: heads about ½ in. high. Man. to Colo.

parvifòlia: see *A. microphylla.*

ramòsum: listed name.

rhodántha. To 6 in.: lvs. spatulate to linear, to ¾ in. long: heads ½ in. long, involucral bracts tipped with red. Wash.

ròsea. To 1½ ft., stoloniferous, white-tomentose: lvs. oblanceolate, to ¾ in. long: heads to ¼ in. long, with rose involucral bracts. Alaska to Calif. and Colo.

subviscòsa. To 12 in., stoloniferous: rosette lvs. spatulate, to ⅝ in. long, obtuse or mucronate, densely white-tomentose, glandular-hairy above: fls. in 3–9 heads, bracts glandular-viscid, cream-colored or rose-tipped. Que.

tomentòsa: *A. dioica.*

umbrinélla. To 4 in., stoloniferous: lvs. spatulate, to ½ in. long, white-tomentose: heads about ⅕ in. high. B. C. to Colo.

ÁNTHEMIS. *Compositæ.* Herbs with finely cut strong-scented foliage and solitary fl.-heads, the ray-fls. yellow or white, disk-fls. yellow; pappus none or a minute crown.

A few kinds are useful in wild-gardens and the border, blooming from midsummer to frost. Propagated by seeds and division.

Aizoón: *Achillea ageratifolia* var.

altíssima. Ann. to 3 ft.: lvs. 2–3-pinnatisect into lanceolate segms.: ray-fls. white, in heads to 2 in. across. S. Eu.

arábica: *Cladanthus arabicus.*

austrìaca. Ann. or bien. to 2 ft., sparingly branched: lvs. 1–2-pinnatisect into lanceolate segms.: ray-fls. white, in heads to 1¾ in. across, outer involucral bracts ciliate. Austria.

Biebersteiniàna (*A. Rudolphiana*). To 1 ft. or less: lvs. bipinnate, silvery-white-tomentose: ray-fls. yellow, heads to 1 in. across. Mts. of Cent. Eu.—Adapted to rockery.

carpática (*A. styriaca*). Per. to 6 in., with many sts.: lvs. pinnate into narrow segms. which are entire or 3-lobed: heads to 1¾ in. across, rays white. E. Eu.

cinèrea. Spreading per. to 1 ft., gray-pubescent or -tomentose: lvs. ovate, bipinnatisect into oblong obtuse segms.: heads large, with white rays longer than the disk. Balkans.

Kélwayi. Similar to *A. tinctoria* (of which it is apparently a form) but with deeper yellow fls. and foliage more finely cut.

macedónica. Bien. to 5 in.: lower lvs. pinnate into 3–5 linear segms., upper ones undivided: heads small, long-stalked, rays white. Macedonia.

macrántha. Per. to 2 ft. or more, branched above: lvs. 2-pinnatifid into linear-lanceolate segms.: heads few, 1 in. and more across, rays white. Eu.—Probably only a variant of *A. Triumphettii.*

montàna. : Per. to 10 in., silky-pubescent: lvs. pinnatisect into linear segms.: ray-fls. white. S. Eu.

nóbilis. CHAMOMILE. Per. to 1 ft.: lvs. pinnatisect into narrow-linear segms.: ray-fls. white. Eu. Var. **grandiflòra** has larger sometimes yellow fls. and **flòre-plèno** double.

parnássii: *A. tinctoria.*

ptarmicifórmis: hort. name.

Rudolphiàna: *A. Biebersteiniana.*

ruthénica. Ann. to 1½ ft.: lvs. 2–3-pinnatisect, oblong, woolly: ray-fls. white, heads to 1½ in. across, solitary on stout peduncles, outer bracts laciniate. Cent. Eu.

Sáncti-Johánnis. Per. to 3 ft., slightly branched: lvs. 2–3-pinnatisect, segms. apiculate-tipped: ray-fls. deep orange, heads to 2 in. across, solitary on leafless peduncles to 6 in. long. Bulgaria.—Differs from *A. tinctoria* in its black-margined ciliately-incised involucral bracts, deeper colored fls. and in the achene having a distinctly toothed crown.

styrìaca: *A. carpatica.*

tinctòria (*A. parnassii*). Golden Marguerite. Per. to 3 ft.: lvs. 2-pinnatisect into oblong or ovate segms.: ray-fls. golden-yellow, in heads to 2 in. across. Eu., Asia. Vars. **pállida** and **álba** are listed.

Triumphéttii. Per. to 2½ ft. high: lvs. 1-pinnatisect, segms. oblong, serrate, tomentose beneath: ray-fls. white, heads to 1½ in. across. Medit. region.

ANTHER: the pollen-bearing part of the stamen, borne at the top of the filament or sometimes sessile.

ANTHÉRICUM. *Liliaceæ.* Herbs with tuberous or fleshy roots, linear basal lvs., and small white wheel-shaped fls. in loose racemes terminating slender scapes.

Grown as border plants with protection or in cool greenhouses in pots or benches. Of easy cultivation. Propagated by stolons, division, and by seeds when available.

Bichétii. Lvs. variegated with white. W. trop. Afr.—The botanical identity of this plant is uncertain, as is also that of *Phalangium Bichei* which is probably the same.

comòsum: *Chlorophytum comosum.*

elàtum: *Chlorophytum elatum.*

Goldiànum: hort. form with lvs. variegated with cream; probably referable to *Chlorophytum elatum.*

graminifòlium: *A. undulatum.*

Liliàgo. St.-Bernard-Lily. To 3 ft., not branched: lvs. to 1 ft. long: fls. about 1 in. across. Eu. Vars. **gigantèum** and **màjor** are larger forms, and var. **grandiflòrum** is listed with larger fls.

Liliástrum: *Paradisea Liliastrum.*

Mandaiànum: *Chlorophytum comosum.*

picturàtum: *Chlorophytum comosum.*

plumòsum: *Bottionea thysanoloides.*

racemòsum: catalogue name, probably of *A. ramosum.*

ramòsum. To 2 ft., st. branched: fls. smaller than in *A. Liliago.* Eu.

Rénari: catalogue name.

undulàtum (*A. graminifolium*). Lvs. linear, acuminate, to 15 in. long and ⅓ in. wide: fls. white, in lax racemes to 6 in. long, segms. obtuse, to ½ in. long, on solitary jointed pedicels. S. Afr.

variegàtum: *Chlorophytum elatum* or *comosum.*

vittàtum: *Chlorophytum elatum.*

ANTHOLỲZA. *Iridaceæ.* The identity of the plants ascribed in the literature to this genus is considered to have been imperfectly understood until the relatively recent study of them by the late N. E. Brown, who demonstrated that the plant long known as *A. æthiopica* belonged to another genus and that the true Antholyza (*A. ringens,* not known to be in cult. here) as known to Linnæus had been misinterpreted by subsequent authors and erroneously placed in the genus Babiana. The synonymy of the plants in cult. or listed as Antholyza follows:

æthiòpica: *Chasmanthe æthiopica.*

floribúnda: *Chasmanthe floribunda.*

paniculàta: *Curtonus paniculatus.*

præálta: *Chasmanthe floribunda.*

revolùta: *Anapalina revoluta.*

ANTHOPOGON: *Gentiana.*

ANTHOXÁNTHUM. *Gramineæ.* Ann. and per. grasses adapted to meadows, fragrant when drying, the spikelets in spike-like terminal panicles, florets awned; native of Eu., Asia, and N. Afr. See *Grasses.*

aristàtum (*A. Puelii*). Ann. to 1 ft.: lvs. to 4 in. long and ⅙ in. wide: panicles to 1½ in. long, conspicuously awned. Eu.; escaped in E. N. Amer.

grácile. Tufted ann. to 8 in.: lvs. hairy: spikelets ½ in. long, silvery and shining, conspicuously awned, in racemose panicles. Medit. region.

odoràtum. Sweet Vernal-Grass. Per. to 2 ft.: lvs. to 6 in. long and ¼ in. wide: panicles to 3 in. long, bronzy-green, early. Eu., Asia; nat. in N. Amer.

Puélii: *A. aristatum.*

ANTHRÍSCUS. *Umbelliferæ.* Herbs with pinnately compound lvs., small white fls. in compound umbels, and compressed frs.; grown for the lvs. which are used like parsley.

They are of easy cultivation in any soil, thriving in shaded situations. Propagated by seeds.

Cerefòlium. Salad Chervil. Ann. to 2 ft.: lvs. 2-pinnate, the segms. ovate and deeply cut, giving the foliage a very finely divided appearance: fr. beaked. S. E. Eu., W. Asia; nat. in N. Amer. See *Chervil.*

sylvéstris. Per. or bien. to 3 ft.: lvs. 2-pinnate, the segms. ovate-lanceolate and deeply cut: fr. not distinctly beaked. Eu., W. Asia.

ANTHÙRIUM. *Araceæ.* Trop. American perennials of varied habit, having arrow- or heart-shaped entire or lobed lvs. and bisexual fls. in densely-fld. spadices subtended by widely spreading or reflexed often colored spathes; grown in the greenhouse for the striking foliage and spathes.

Anthuriums require high temperatures, never below 55° in winter, and a humid atmosphere. They thrive in rough fibrous loam and the roots should be kept well covered. Repotting is necessary only every few years with older plants. Propagated by suckers or root-cuttings placed in pots over bottom heat; also by seeds under a bell-glass in a temperature of about 80°.

álbum. Hybrid with *A. Andræanum* as one parent, or a variant, having white spathes.

Andræànum. Lvs. oblong-ovate, heart-shaped at base with deep narrow sinus, to 1 ft. long and 6 in. wide, green, the petiole longer than blade: spathes spreading, cordate, to 6 in. long, orange-red varying to rose or white. Colombia. Var. **gigantèum** is listed as having larger spathes. Var. **ròseum** has a glossy rose-pink spathe. Var. **rùbrum** is similar but spathe is darker red.

atrosanguíneum: hort. name, probably for form of *A. Scherzerianum* or *A. splendidum.*

bogoténse. Lvs. cordate, to 2 ft. long and 16 in. wide, long-acuminate, dark green: spathes broadly lanceolate, spreading, 8 in. long, yellowish. Colombia.

Broẁnii. Lvs. lanceolate-cordate, to 3 ft. long and 20 in. across, shining green above, paler beneath: spathes lanceolate, spreading, 6 in. long, green tinged with purple. Colombia.

cárneum. Hybrid between *A. Andræanum* and *A. nymphæfolium* with rose-colored spathes.

cordàtum (*Pothos cordatus*). St. to 1 ft.: lvs. triangular-cordate, to 16 in. long and 12 in. wide, leathery, bright dark green above, on petioles longer than lvs.: spathes green, linear-lanceolate, to 8 in. long, very long-acuminate; spadix brownish-green, longer than spathe. W. Indies.

crystállinum. Lvs. cordate-ovate, to 14 in. long and 10 in. across, deep velvety-green prominently veined with white, pale rose beneath: spathes linear-oblong, to 6 in. long, green. Colombia.

ferrierénse. Hybrid between *A. Andræanum* and *A. ornatum* with ovate-cordate lvs. and spathes, the latter rosy, and white spadices.

Forgétii. Lvs. to 14 in. long and 9 in. wide, peltate, deep velvety-green, venation lighter: spathes to 6 in. long and ⅔ in. wide, green. Colombia.

gránde. Lvs. oblong-ovate, to 2 ft. long and 16 in. wide: spathes ovate-cordate, 6 in. long, white or purplish. Bolivia.

Hoòkeri (*A. Huegelii*). Lvs. obovate-oblong, to 4 in. long, short-petioled, midrib sharply keeled beneath, green, dotted black: spathe lanceolate-acuminate, shorter than spadix, latter to 10 in. long on peduncle to 15 in. long. W. Indies.

Huegèlii: *A. Hookeri.*

magníficum. Lvs. cordate-ovate, to 1½ ft. long and 10 in. wide, olive-green above with prominent white veins, the petioles 4-angled: spathes lanceolate, 8 in. long, becoming recurved, green or reddish. Colombia.

regàle. Lvs. cordate-oblong, to 16 in. long and 8 in. wide, very long-acuminate, green above with veins becoming whitish, paler beneath: spathes broadly lanceolate, 3 in. long. Peru.

Rothschildiànum: *A. Scherzerianum* var.

Scherzeriànum. Lvs. oblong-lanceolate, 8 in. long and 2 in. wide, long-pointed, green: spathes broadly ovate, 3 in. long, deep red varying to rose and white; spadix spirally coiled, yellow. Cent. Amer. Var. **álbum,** spathes white. Var. **atrorùbrum,** spathes dark blood-red. Var. **atrosanguíneum,** spathes red. Var. **gigantèum** has larger spathes. Var. **máximum,** spathes scarlet, large. Var. **ròseum,** spathes rose-colored. Var. **Rothschildiànum** has red spathes spotted with white.

spléndidum. Lvs. cordate-ovate, leathery, blue-green, glaucous with blistered-like appearance, the depressions and nerves brownish. Colombia.—Many hort. forms and hybrids have been developed in part from this plant.

tetragònum. Lvs. oblong to obovate-lanceolate, to 4 ft. long and 1½ ft. wide, glaucous-green above, yellowish below: spathes oblong-lanceolate, to 8 in. long. Costa Rica.

Veitchii. Lvs. long-oblong, to 3 ft. long and 10 in. wide, cordate at base, rich metallic-green with prominent veins: spathes ovate-lanceolate, 3 in. long, erect or becoming reflexed, greenish-white. Colombia.

velùtinum. Lvs. cordate, 10 in. long and 6 in. wide, shining green. Colombia.

Warocqueànum. Lvs. cordate-lanceolate, 3 ft. long and 10 in. wide, velvety-green veined with white: spathes linear-lanceolate, reflexed, 4 in. long, green. Colombia.

ANTHÝLLIS. *Leguminosæ.* Per. herbs or subshrubs from Eu., N. Afr. and Asia, with pinnate lvs. and papilionaceous fls. in dense clover-like heads; grown for ornament and *A. Vulneraria* for forage in Eu. on poor soils. Propagated by seeds, division and cuttings.

alpéstris: *A. Vulneraria* var.

Bárba-Jòvis. Jupiters-Beard. Silky-hairy evergreen shrub to 12 ft.: lfts. to ¾ in. long: fls. yellowish-white. S. Eu.

Dillènii: *A. Vulneraria.*

montàna. To 1 ft. or less, white-silky lvs. pinnate, the many lfts. small and entire, oval or oblong: fls. purple or pink, in dense involucrate heads. Alps. Vars. **atrorùbens, carmínea** and **rùbra** are color forms.

tetraphýlla. Ann., mostly prostrate: lvs. with large terminal lft. and 2–4 small lateral lfts.: fls. yellowish-white striped with pink. Medit. region.

Vulnerària (*A. Dillenii*). Kidney Vetch. Woundwort. To 1 ft.: lvs. with terminal lft. 1 in. long, lateral lfts. small or none: fls. yellow to deep red. Eu., W. Asia. Var. **alpéstris.** To 8 in.: basal lvs. simple, ovate-lanceolate: fls. in larger heads. Eu.

Webbiàna. Ladys-Finger Vetch. Per. to 10 in., sts. decumbent or erect, branched: lfts. 7–11, oval-acute, terminal lft. much larger than laterals, all with appressed white-silky hairs: fls. rose, in terminal heads. Teneriffe.

ANTIÀRIS. *Moraceæ.* Evergreen trees of Malaya and Australia with alternate lvs. and unisexual fls., the staminate in dense heads and the pistillate solitary; one intro. in S. Calif.

toxicària. Upas-Tree. To 250 ft., the milky juice poisonous: lvs. oblong, to 8 in. long, entire or slightly toothed: fr. a fleshy purple or red drupe. Malaya.

ANTICLEA: *Zigadenus.*

ANTIDÉSMA. *Euphorbiaceæ.* Trees and shrubs native in the tropics of the Old World; the bark of some species furnishes cordage and frs. are sometimes edible: lvs. alternate, simple: fls. diœcious, without petals, in spikes or racemes: fr. a small fleshy drupe. Sometimes cult. for ornament in warm regions. Propagated by cuttings.

Bùnius. Bignay. Evergreen tree to 30 ft.: lvs. oblong, shining, to 6 in. long: fls. green, in spikes: frs. currant-like, red, often made into preserves. India, Malaya.

ANTÍGONON. *Polygonaceæ.* Tendril-climbing vines with alternate entire lvs. and red, pink, white or yellowish fls. in racemes terminating in a tendril.

One species is commonly grown in warm climates to cover verandas, bushes and fences. Of easy cultivation, but the soil should not be too rich, for the best bloom; it may also be grown in a warm light greenhouse. Propagated by seeds and cuttings.

léptopus. Coral-Vine. Pink-Vine. Corallita. Confederate-Vine. Rosa de Montana. Climbing to 40 ft.: lvs. arrow-shaped or cordate-ovate, to 4 in. long: fls. bright pink, in axillary racemes, outer sepals ovate in fr., the achenes obscurely angled. Mex. Var. **álbum** has white fls.

macrocárpum. Similar to *A. leptopus,* differing in the thicker more hairy lvs. to 5 in. long, the outer sepals orbicular in fr. and the achenes with wing-like angles. Costa Rica; intro. in W. Indies and S. Fla.

ANTIPHYLLA: *Saxifraga oppositifolia.*

ANTIRRHÌNUM. Snapdragon. *Scrophulariaceæ.* Erect, climbing or procumbent herbs usually grown as annuals, with sac-shaped 2-lipped fls. in rose, red, purple, yellow and white.

The snapdragon grown in gardens and for cut-flowers in greenhouses is *A. majus.* For the garden, treat the same as any annual. Plants sometimes winter over, if well protected, and bloom early in spring. For greenhouse culture the seed for the first lot is planted in July; by successive sowings the grower may have snapdragons all the year.

angustifòlium: *A. siculum.*

antirrhiniflòrum: *Maurandia antirrhiniflora.*

Asarìna. Procumbent per., sticky-pubescent: lvs. cordate-ovate and crenate, 5-lobed or -nerved: fls. white or pinkish, 1½ in. long, solitary. S. W. Eu.

assúrgens: *A. siculum.*

carnifòlium: listed as having blue fls.

Coulteriànum. Chaparral S. Ann. to 3 ft., erect or climbing, glabrous except the infl.: basal lvs. ovate, to 1¼ in. long, entire: fls. purplish to white with yellowish hairy palate, ½ in. long, in spike-like racemes. Calif.

crassifòlium: *Chænorrhinum origanifolium.* The material in cult. as *A. crassifolium* is usually *Anarrhinum bellidifolium.*

gibraltáricum: listed as a per. with "reddish-green foliage and pink fls."; not known botanically.

glandulòsum. Viscid erect per. to 5 ft.: lvs. lanceolate, sessile, to 2½ in. long, those on sterile shoots linear: fls. pink, in dense racemes, to ¾ in. long. Calif.

glareòsum: *Chænorrhinum origanifolium.*

glutinòsum. Prostrate much branched per., sticky-pubescent: lvs. oval, entire: fls. yellowish-white with lip red-striped, in racemes. Spain.

Huètii: *A. sempervirens.*

latifòlium. Per. to 2 ft., sts. somewhat woody, glandular-hairy: lvs. ovate to ovate-lanceolate, pubescent: fls. yellowish or purple, to 1½ in. long, in terminal spikes. S. W. Eu.

màjus. Common or Large S. Per. to 3 ft., glabrous except infl.: lvs. lanceolate or oblong-lanceolate, to 3 in. long, entire: fls. purplish-red varying to white and other colors, to 1½ in. long, in long terminal racemes. Medit. region; escaped in E. U. S. Forms in the trade are grouped under Tall, 2–3 ft., Intermediate or Half Dwarf, 15–18 in., Dwarf or Tom Thumb, 6–9 in.

maurandioìdes: *Maurandia antirrhiniflora.*

máximum: a giant race of *A. majus* with very large fls.

mólle. Per. to 1½ ft., softly woolly and whitish: lvs. suborbicular to ovate, to ¾ in. long, lateral veins seemingly absent: fls. whitish to pale yellow, to 1¼ in. long, in loose leafy spikes. S. W. France.

nànum: a hort. race of *A. majus.*

Nuttalliànum. Ann. to 3 ft., climbing, sticky-pubescent: lvs. broad-ovate, to 2 in. long: fls. blue or violet with white spot on lower lip. S. Calif.

Oróntium. Ann. to 1 ft., glabrous or pubescent: lvs. linear, to 2 in. long: fls. purple, ½ in. long, solitary. Eu., Asia; escaped in N. Amer.

prǽcox: *Linaria spartea.*

pùmilum. Botanically this is a synonym of *Linaria flava,* which see, but some of the material so listed in the trade may be a dwarf form of *A. majus.*

sempérvirens (*A. Huetii*). Evergreen procumbent much branched per., tomentose: lvs. ovate or oblong: fls. white spotted purple, with yellow throat. Pyrenees.

sículum (*A. angustifolium. A. assurgens*). Much branched per. to 2 ft., pubescent or glabrous: lvs. linear-lanceolate, to 1½ in. long: fls. white or yellowish with yellow throat, to 1 in. long, in racemes. Medit. region.

speciòsum: *Galvezia speciosa.*

ANYCHIA: *Paronychia argyrocoma.*

APETALOUS: lacking or without petals.

APHANÓSTEPHUS. *Compositæ.* Ann. or bien. herbs having alternate lvs. and solitary fl.-heads with white, violet or purple ray-fls. and golden disk-fls.; pappus a crown.

skirrobàsis. To 1½ ft.: lvs. spatulate to linear, to 2½ in. long, gray-pubescent, the lower toothed or cut: ray-fls. white, to 1 in. across. Tex. to Fla.—Adapted to the flower-garden, with the look of erigeron.

APHELÁNDRA. *Acanthaceæ.* Trop. American herbs or shrubs with opposite simple lvs. and yellow, orange or red 2-lipped fls. in dense terminal spikes with large overlapping bracts.

Aphelandras are grown under glass for the showy bracted spikes and are of easy cultivation. After blooming the plants should be rested. Propagated by cuttings of half-ripened wood or of young growth with a heel, and by seeds when obtainable.

aurantìaca. Lvs. ovate to oblong, to 1 ft. long, deep green above, pale beneath: fls. orange, 2½ in. long, in spikes to 6 in. long. Mex. to S. Amer.

Lèopoldii: *A. squarrosa.*

squarròsa (*A. Leopoldii*). Lvs. ovate, to 1 ft. long, dark green veined with white above: fls. pale yellow, 1½ in. long, in spikes to 1 ft. long, bracts orange-yellow. Brazil.

tetragòna. Lvs. oval, to 9 in. long, green: fls. scarlet, 2 in. long, the lateral lobes of lower lip very small, in clustered spikes to 8 in. long. W. Indies, S. Amer.

APHYLLÁNTHES. *Liliaceæ.* One per. fibrous-rooted herb native in Medit. region, somewhat allied to Aloe. **A. monspeliénsis.** To 10 in., with tufted juncus-like leafless sts.: fls. blue, rarely white, in oblong terminal 1–2-fld. heads, corolla withering-persistent.

APÌCRA. *Liliaceæ.* S. African aloe-like succulents with short sts., crowded or spirally arranged lvs. and greenish fls. in racemes. Cult. as for *Succulents.*

áspera. St. to 6 in.: lvs. triangular, ⅝ in. long and wide, warty on back: fls. greenish tinged pink, ⅜ in. long, in a simple infl. to 1 ft. high.

pentagòna (*Haworthia pentagona*). St. to 1 ft.: lvs. triangular-lanceolate, to 2 in. long and ¾ in. wide, in 5 rows: fls. ½ in. long, the infl. to 1½ ft. high.

APIO: *Arracacia xanthorrhiza.*

ÀPIOS. *Leguminosæ.* Tuberous-rooted twining herbs with pinnate lvs., papilionaceous fls. in short racemes, and long flat pods; native in E. N. Amer. and Asia, one sometimes grown in the wild-garden. Propagated by tubers and by seeds.

americàna (*A. tuberosa. Glycine Apios*). Groundnut. Potato Bean. Wild Bean. To 8 ft., the roots with strings of tubers: lfts. 5–7, to 3 in. long: fls. brown, fragrant, in late summer. N. B. to Fla. and Tex.

tuberòsa: *A. americana.*

ÀPIUM. *Umbelliferæ.* Herbs with pinnately compound lvs., small white fls. in compound umbels, and compressed frs.; one species is a common vegetable grown for the blanched lf.-stalks and a var. for the edible roots. See *Celery.*

gravèolens var. **dúlce** (*Celeri graveolens*). Celery. Bien. to 3 ft., strong-smelling: lvs. pinnate, each of the 5–7 lfts. ternately compound and often again divided or toothed. Widely distributed. Var. **rapàceum,** Celeriac, has thickened turnip-like edible root-crown.

Petroselìnum: *Petroselinum crispum.*

APLÉCTRUM. *Orchidaceæ.* One N. American terrestrial species, sometimes transplanted to the wild-garden or border. **A. hyemàle** (*A. spicatum*). Putty-Root. Adam-and-Eve. Lf. to about 7 in. long and 3 in. wide, arising from the corm: fls. yellowish-brown, with narrow sepals and petals and 3-lobed lip, borne on racemes to 4 in. long on leafless scapes to 20 in. high. May–June.

APLOPAPPUS: *Ericameria ericoides.*

APOCYNÀCEÆ. Dogbane Family. Herbs, shrubs and trees, sometimes vines, of about 130 genera most abundant in trop. countries, grown for ornament or a few for the edible fr. The family is characterized by the prevailingly milky juice, regular fls. with gamopetalous corolla, sagittate anthers, single style, and fr. usually of 2 long follicles; from Asclepiadaceæ the family is distinguished by the absence of corona in the corolla, separate filaments, and anthers not connected with the stigmas, and other technical characters. Genera herein treated are Acokanthera, Allamanda, Alstonia, Alyxia, Amsonia, Apocynum, Aspidosperma, Beaumontia, Carissa, Dipladenia, Echites, Ervatamia, Funtumia, Lanugia, Mandevilla, Mascarenhasia, Nerium, Ochrosia, Plumeria, Rhazya, Stemmadenia, Strophanthus, Tabernæmontana, Thevetia, Trachelospermum, Vallaris, Vinca.

APÓCYNUM. Dogbane. *Apocynaceæ.* Per. herbs with milky juice, tough fibrous bark, opposite entire lvs., small white or pink bell-shaped fls. with appendages in the throat, borne in cymes, and long slender frs. Sometimes planted in the hardy border and the roots have medicinal qualities; propagated commonly by division.

androsæmifòlium. Spreading D. To 4 ft.: lvs. to 4 in. long and 2½ in. wide, pale beneath, apex acute: fls. pinkish, ⅓ in. across, corolla twice as long as calyx. N. Amer.

cannábinum. Hemp D. Indian Hemp. To 8 ft.: lvs. to 6 in. long and 3 in. wide: fls. greenish-white, corolla not much longer than calyx. Conn. to Wis. and Kans.

pùmilum. To 20 in., usually pubescent: lvs. ovate-orbicular, to 2½ in. long, apex obtuse: fls. rose-pink, corolla twice as long as calyx. Utah to Calif., north to Mont. and Wash.

APONOGÈTON. The only genus of *Aponogetonaceæ.* Aquatic per. herbs from Asia, Afr. and Australia, with tuberous rootstocks, floating or submerged lvs., fls. in spikes, and fr. of 3 or more hard follicles.

Aponogetons are grown in ponds in the greenhouse, or *A. distachyus* out-of-doors although tender North. They should be potted and plunged 1½ to 2 feet under water. Temperatures of 65–70° should be given *A. fenestralis.* Propagated by division, offsets, or by seed when available. The flowers should be pollinated and kept above water to produce good seeds.

distàchyus. Cape Pondweed. Water-Hawthorn. Lvs. floating, solid, linear-oblong. Cape of Good Hope. Var. **Lagràngei** has lvs. violet beneath and fls. with violet instead of white bracts. Var. **gigantèus** is an improved form.

fenestràlis (*Ouvirandra fenestralis*). Lace- or Lattice-Leaf. Lvs. submerged, only a network of veins, broad-oblong. Madagascar.—Grown in tubs or under protected conditions.

APOROCÁCTUS. *Cactaceæ.* A small genus of slender creeping, hanging or clambering vine-like diurnal cacti, emitting aerial roots: fls. rather small, solitary on the areole, funnelform, pink or red: spines several at each areole, small. See *Cacti.*

Conzáttii. Sts. ½–1 in. diam., with 8–10 rather prominent ribs: fls. nearly straight, to 3½ in. long, red, inner perianth-segms. acute but not acuminate. Mex.

flagellifórmis (*Cereus flagelliformis*). Rat-tail Cactus.

Sts. ½ to nearly 1 in. diam., with 10–12 ribs: fls. strongly bent just above ovary, about 3 in. long, crimson; outer segms. narrow, more or less reflexed; inner ones apiculate. Probably Mex.—A good window, conservatory and basket plant; often grafted on other and erect cacti, also hybridized with other species; of easy cult.

flagrifórmis. Differs from *A. flagelliformis* in its oblong outer perianth-segms., acuminate inner ones and darker crimson fls. Probably Mex.

léptophis (*Cereus leptophis*). Sts. cylindric, to ½ in. diam., with 7–8 ribs, often creeping: fls. strongly bent just above the ovary, about 2 in. long. Mex.

Mállisonii (*Selenicereus Mallisonii. Cactus Mallisonii. Cereus Mallisonii. Cereus Smithii. Cereus crimsonii*). Hybrid between *A. flagelliformis* and Heliocereus sp.: sts. weak, creeping, usually 6-angled, to 1½ in. diam.: fls. usually crimson but color variable in degree, tube may be very short or elongated.

Martiànus (*Cereus Martianus*). Much like *A. Conzattii* but fls. deep rose-color and inner perianth-segms. long-acuminate: sts. to ¾ in. diam. Mex.

APPLE. The common cultivated varieties of apple are forms of *Malus sylvestris*, probably native in Europe and southwestern Asia. The paradise (or "garden," as the name signifies) apple is a bush or small-stature form of the same species, on which common varieties are sometimes budded or grafted to prevent the trees from growing large or to dwarf them; this race has been called *Malus pumila*. The true crab-apples are *Malus baccata*, and some of the larger crabs may be hybrids between the two species. Other species may be involved in the long development of the domesticated apple, but this subject is not yet sufficiently understood. See *Malus*.

The great variation in the adaptability of varieties of apple to different soils and climates makes its cultivation possible over a wider range of territory than with most other temperate-zone fruits. Commercial orchards are located as far south as the mountains of Georgia and New Mexico and north into Maine, Wisconsin, and parts of Canada. In home plantings, by careful choice of varieties, the range is much wider, extending from the Gulf states to the more rigorous climates of the northern plains states. The larger commercial plantations, however, are localized in regions particularly well adapted to the apple, as, for example, western New York, the Shenandoah-Cumberland Valley and the valleys of the Pacific Northwest, and others.

Soils for the apple are of wide range. Although some apple varieties are restricted to certain soil types for their best development, most kinds will succeed on any good agricultural soil that is fairly deep and well drained. Friable, rather heavy, sandy, or gravelly loams with good humus content and with an open subsoil are considered ideal. In general, for any given variety, climate is of much more importance than soil type, provided the soil is at all suitable, particularly as to drainage.

Propagation of named varieties is by either budding or grafting on one-year apple seedlings, either French or American grown. For budding, the seedlings are set out in early spring in the nursery row, and the buds set in July and August when the bark of the stock slips readily. Early the following spring the stocks are cut off above the bud forcing it into vigorous growth. Root-grafting is a common practice in the southern nurseries. Cions 4–6 inches long are whip-grafted on either whole or piece roots in the winter and the grafts stored. In early spring the grafts are planted out and make two-year trees at the end of the second season. Root-grafted trees are preferable for planting hardy varieties in cold climates because the graft union is below the surface of the ground and thus the tender stock is protected from the cold.

Planting is undertaken with either one- or two-year nursery trees. These are best set out in the early spring in the northern states but may be set in the fall to advantage in milder climates. The standard planting distance on good soils for vigorous sorts, such as Baldwin and Greening, is 50 x 50 feet. On light soils 40 x 40 feet is satisfactory and with weaker-growing varieties, such as Wealthy or Wagner, 35 feet is ample. A common commercial practice is to plant filler trees of early bearing varieties between the permanents. These are removed after twelve to fifteen years, when they begin to crowd. The most important consideration in planting trees is to tamp the soil firmly about the roots.

Tillage and fertilizers are various. Apples can be grown successfully under either sod or tillage. The latter method is often followed in commercial orchards where the soil is readily tillable without risk of serious erosion and consists of annual fall or spring plowing or disking followed by three or four cultivations with disk or harrow in the early spring. The last cultivation should be about July first after which a natural cover-crop of weeds or sowed crop, such as buckwheat, rape, or vetch, is allowed to grow. In sod culture, which is adapted to home plantings and where the land is too rough or stony for tillage, the trees are allowed to grow in a natural sod of grass, or one composed of sowed clover or alfalfa. This is mowed once or twice a year and the mowings either allowed to lie where they fall or placed about the tree as a mulch. Trees growing in non-leguminous sod must be fertilized with manure or commercial nitrates if good yields are to be obtained. Sodium nitrate, or ammonium sulfate, at the rate of 8–12 pounds to a mature tree, applied just as the buds open, is effective.

Younger trees, of course, require much less, as for example, 2–4 pounds for a ten-year-old tree. The nitrate should be spread under and several feet beyond the branches, not next the trunk. Any readily available nitrogenous fertilizer may be used instead of those named, the amount supplied depending on the actual nitrogen content. Cultivated trees usually need no fertilizer of any kind except on poor humus-depleted soils where nitrate may be beneficial to the tree, or a complete fertilizer may be used to increase the growth of the cover-crop and so benefit the trees indirectly by increasing the supply of humus. Rarely soils are found which show potassium, boron or other minor-element deficiencies.

Pruning at time of setting the one-year whip consists in heading at the desired point, 30 to 40 inches being a satisfactory height. In the case of two-year trees all lateral branches are cut off except one upright growing shoot at the top, called the leader, and one or two others spaced as far apart as possible along the main stem. A good practice is to head these back about a fourth of their length, leaving the uppermost branch the longest. From this time until the tree comes into bearing it should be pruned as little as possible, removing only suckers and such branches as interfere with the development of the frame-work of the tree. When the trees are in full bearing and especially with old trees, the tops must be thinned to reduce the number of fruit-spurs and to prevent injury to the lower limbs by shading. Dead or diseased limbs, those that rub others badly, and suckers should be removed as soon as discovered. If trees are too tall they may be headed back to vigorous side branches. Apple trees may be pruned at any time when they are dormant.

Harvesting, marketing, and yields require few special comments. The apple crop is hand-picked into bags or buckets, when the fruit is mature but still firm. The degree of care necessary in handling varies with the variety. Tender fruits like McIntosh should never be poured from one container to another, whereas Baldwin and Ben Davis may, with care, be handled in that way. Marketing is done in various ways. Recently much fruit has been sold in roadside markets, at the farms. Where the markets are near, the crop, packed in bushels or hampers, is trucked directly to the wholesaler or to retail stores. In most of the large fruit districts, however, the fruit goes to the general market, either in boxes, special crates or bushel baskets. Barrels are used mostly for export.

Under good cultural conditions, early bearing varieties such as Wealthy and McIntosh begin bearing four to six years after planting and by the tenth year may yield 5–15 bushels to a tree in the bearing year. Late bearing varieties like Northern Spy may not fruit until after eight to ten years in the orchard. Mature trees may yield from 10 to 50 bushels in a single year. On the average, however, 15 to 20 bushels to a tree or 300 to 500 bushels an acre are considered good yields.

Storage should be provided as soon as the crop is off the trees, if it is to be kept for any length of time. The best cold storage temperature is about 31° F. Apples will not freeze above 29° F. Developments in gas storage indicate that the season can be greatly prolonged by storing in atmospheres of reduced oxygen and increased carbon dioxide content. Fruit can be stored fairly well for home use in outside storage cellars or in a special compartment of the house cellar. In either case the temperature should be kept as near as possible to 31° F. by regulating ventilators or windows. An earth floor in such a storage will aid in keeping the air moist. Sprinkling the floor now and then with water may be necessary to keep the fruit from shrivelling.

Varieties are numberless but the commercial kinds are not numerous. The choice of suitable varieties for planting in different regions is of the greatest importance. Bud sports or mutations of many varieties have been propagated and may be superior in color to the standard sorts. The following lists include most of the best varieties arranged in order of ripening and are chosen to give a succession for the home planting. Commercial varieties are starred (*).

Varieties of more than average hardiness adapted to the northern states or cold situations: *Yellow Transparent, Early McIntosh, *Oldenburg, *Wealthy, *McIntosh, Fameuse, Cortland, *Delicious, Tolman Sweet, *Northern Spy.

Varieties adapted to New York and New England: Yellow Transparent, Early McIntosh, *Oldenburg, Gravenstein, *Wealthy, *McIntosh, Twenty Ounce, Cortland, *Rhode Island Greening *Baldwin, *Red Canada, *Delicious, *Northern Spy, Rome.

Varieties adapted to the southeastern states, especially the Shenandoah-Cumberland Valley and the Eastern Shore: *Yellow Transparent, *Red June, *Williams Favorite, *Summer Rambo, *Grimes Golden, *Jonathan, *Stayman Winesap, *Winesap, *York Imperial, *Yellow Newtown, Rome.

Varieties adapted to the southern and Gulf states: Red Astrachan, Red June, Hackworth, Rome, Delicious, Arkansas, Winesap, York Imperial, Yates, Terry, Romanite.

Varieties for the Middle West: *Yellow Transparent, Red Astrachan, Oldenburg, *Benoni, Wealthy, *Jonathan, *Grimes Golden, *Delicious, Ben Davis, Missouri Pippin, Golden Delicious.

Varieties for the Pacific Coast and Rocky Mountain states: *Gravenstein, *Jonathan, *Winesap, *Stayman Winesap, *Ortley, *Esopus, Grimes Golden, *Delicious, *Golden Delicious, Rome.

In the parts of Canada bordering the Great Lakes the varieties recommended for New York and the northern states are satisfactory. The following list is made up of the hardiest varieties that will stand extreme cold: Tetofsky, Oldenburg, Charlamoff, Whitney, Wealthy, Hibernal, Longfield, Patten Greening, McIntosh, Milwaukee, Baxter, Scott Winter, Haralson.

To insure cross-pollination, several varieties of apples should be planted together. Although most varieties are satisfactory sources of pollen, Baldwin, Gravenstein, Arkansas, Rhode Island Greening and some others are exceptions and should not be relied on as pollenizers. In commercial orchards, yields can often be increased by bringing in colonies of bees at blooming time to distribute pollen. One strong colony to every two or three acres is considered to be sufficient.

Of the many diseases affecting the apple the most important is apple scab which may cause many of the blossoms to drop off, and disfigure fruit and leaves. The most important pest is the codlin-moth which is responsible for most wormy apples. Other insects of lesser, though often of great importance, are the San José scale, apple red-bugs, aphids, apple maggots, borers, and a number of caterpillars. The control of these pests and diseases is a complicated problem in which the commercial grower needs expert guidance based on a knowledge of the pests present and their stage of development. In home orchards of many localities, reasonably good control of scab and codlin-moth and other chewing insects can be obtained with three sprays. The first, called the delayed dormant spray, should be applied just as the tips of the buds are showing green, the second or calyx spray just after the petals have fallen and the third about two or three weeks later. Liquid lime-sulfur, 1 gallon to 50 of water with 1–2 pounds of powdered arsenate of lead added, may be used in all of these sprays. Scale can be controlled by using lime-sulfur, 1 gallon to 11 of water in the delayed dormant spray or with oil emulsions while the trees are dormant. Aphids, red-bugs, and other sucking insects can be kept in check by adding ½ pint of nicotine sulfate to 50 gallons of spray. The delayed dormant is the most effective spray for aphid control, the calyx for red-bugs. If only one spray can be applied, the calyx application is of the most importance but often will not give satisfactory control.

In many regions east of the Rocky Mountains borers are a serious pest. These are found at the bases of young trees where their presence is indicated by sawdust-like fragments of wood on the ground next the trunk; or by dark sunken areas in the bark. An effective control is to dig out the grubs with a sharp knife, or to kill them by forcing a wire into the burrow. This should be done in September and again in the early spring.

Field-mice frequently cause great damage, especially in the sod orchard, by girdling the young trees at the base. Effective protection may be secured by placing guards of ⅛-inch mesh wire netting about the trees at the base, making sure that the guard fits the ground closely. A piece of netting 15 x 18 inches will make a guard that will be adequate until the tree is 5–6 inches in diameter. Pine mice, if present, may dig under such guards; they may be controlled by poisoned bait placed in the burrows and runways. Diced carrots or apples with powdered strychnine or white arsenic sifted on them are effective for both kinds of mice.

APPLE, BALSAM-: *Momordica Balsamina.* **Custard-:** *Annona reticulata.* **Kei-:** *Dovyalis caffra.* **Malay-:** *Eugenia malaccensis.* **Mammee-:** *Mammea americana.* **May-:** *Podophyllum.* **-of-Peru:** *Nicandra Physalodes.* **Otaheite-:** *Spondias cytherea.* **Pond-:** *Annona glabra.* **Rose-:** *Eugenia Jambos.* **Star-:** *Chrysophyllum Cainito.* **Sugar-:** *Annona squamosa.* **Vi-:** *Spondias cytherea.* **Wood-:** *Feronia Limonia.*

APRICOT. A stone-fruit, ripening mostly in advance of peaches, pubescent or smooth at maturity, with a flat stone or pit that is not corrugated or furrowed on the side; much prized as a summer fruit in the regions where it is grown, also for dessicating and canning. It is about as hardy as the peach. The apricot is of one prevailing species, *Prunus Armeniaca,* native in China, the so-called Russian race being small-fruited hardy kinds adapted to severer winters than the usual large-fruited commercial kinds. The Japanese *Prunus Mume* yields a few fruit-bearing varieties, as Bungo and Bungoume, but it is not greatly grown except as an ornamental tree for its early bloom (the "plum flowers" of Japan).

Regions of apricot growing are determined largely by the early blooming period and consequent damage from late spring frosts. Its cultivation, therefore, is confined mostly to regions where such frosts are not common. Commercially it is grown on the Pacific Coast, and in some of the Rocky Mountain states, about 95 per cent of the crop being produced in California. In home gardens it is planted sparingly wherever peaches thrive, and while not dependable in bearing gives occasional crops and in some cases may supply local markets.

Soil and planting for apricots depend somewhat on the stocks on which the tree is worked. Light soils are best in the case of peach and apricot stocks, whereas plum stocks adapt the apricot for growth upon the heavier soil types. As with other fruits, good drainage is necessary. One- or two-year trees are planted in the early spring in the East and in the late fall in California. The common planting distance is 24 x 24 feet.

Cultivation, cover-crops, and in the West irrigation, are the common commercial practices, as with the peach. Trees in the home planting should be mulched to keep down the grass and if growth is not fairly vigorous they should be fertilized with manure or 2–3 pounds of nitrate to a tree, applied early in the spring.

Propagation is by budding on apricot, peach or myrobalan stocks. Apricot stocks are considered best in the West and peach or plum is used in the East.

The young trees are pruned to give them a balanced head according to the modified leader system. Bearing trees require moderate heading and thinning to assure renewal of fruit-spurs and invigorate new growth.

Harvesting and marketing are much as for the peach. For home use the fruit ripens on the tree to advantage. Commercially, for shipping and canning, it is hand-picked, preferably with the stems attached, while still firm but full size and just beginning to take on the yellow color. For drying the fruit is allowed to become riper but not soft and in some cases is shaken from the trees. For eastern shipment, apricots are packed in five-pound baskets, four baskets to the crate, and sent through in iced cars. Storing this fruit for any length of time is not practicable.

Varieties recommended for planting in the East are the Early Moorpark, Early Golden, Helmskirk, Moorpark and Peach. In California the Blenheim, Royal, Tilton, Peach, Newcastle, Helmskirk and Moorpark are among the most important. For the northern limits of apricot-growing, the Russian varieties are to be recommended but are recognized as inferior.

Curculio, bacterial leaf-spot and brown-rot are difficult to control in the case of the apricot. In the East the same spray program recommended for the peach is of value. Borers can be controlled with paradichlorobenzine as with the peach, using about ¾ ounce to a tree. In the commercial orchards of the West the spray program is more complex and special practices with expert guidance are advised.

APPRESSED: closely and flatly pressed against, as bracts applied to or appressed against a stem; adpressed.

APTÈNIA. *Aizoaceæ.* Monotypic S. African genus, separated from Mesembryanthemum mostly by technical characters of fr.; calyx lobed to the ovary; parts of caps. lacking wings or flaps. Frequently seen in conservatories and window-gardens. For cult. see *Mesembryanthemum.* **A. cordifòlia** (*M. cordifolium*). Diffuse per., sts. to 2 ft. long, minutely papillose: lvs. opposite, flat, ovate, to 1 in. long: fls. purple, about ½ in. across. Var. **variegàta** has variegated lvs.

AQUATICS are plants that pass their life in deep water; the word is frequently but improperly employed for those that grow in bogs, swamps and about the borders of ponds and lakes. The true aquatic plants usually have floating parts, and some of them are not permanently attached to the bottom. See *Bog Plants.*

AQUIFOLIÀCEÆ. Holly Family. Three genera of trees and shrubs, sometimes evergreen, with alternate simple lvs., small fls. with mostly 4–6 sepals, petals and stamens, a superior ovary, and fr. a berry-like drupe. Ilex and Nemopanthus are cult. for ornament.

AQUILÈGIA. COLUMBINE. *Ranunculaceæ.* Hardy per. herbs with attractive ternately compound lvs. and spurred fls. in white, yellow, blue, lavender, red.

Columbines are favorites in rock-gardens and the perennial border. They thrive in light sandy loam and some of them in shaly soils. Propagated by seed or by division in the spring; seeds sown in spring should give good blooming plants the following year. The clumps should stand 12–18 inches apart. Protection from strong winds favors their development and safeguards the bloom.

The common garden aquilegias do not belong to clearly recognized species; they are mutants or hybrids. Probably *A. glandulosa, A. vulgaris, A. sibirica, A. cærulea, A. chrysantha,* and *A. Skinneri* are the main parents. The Old-World species are characterized by strongly hooked spurs and the American kinds (except certain undomesticated ones in the Rocky Mountains and westward) by straight or at least not hooked spurs although there may be a knob at the end. It is supposed that the character of the spur in the horticultural kinds is an indication of parentage. The "long-spurred hybrids" are now popular.

akiténsis. To 6 in.: fls. with pale purple sepals and pale yellow petals, the spurs nearly straight. Japan.

alpìna. To 1 ft.: fls. blue, to 2 in. across, with incurved spurs about length of petal-limb and sepals twice as long. July–Aug. Switzerland. Var. **álba,** fls. white. Var. **atroviolàcea,** fls. dark violet-purple. Var. **cærùlea,** fls. blue. Var. **supérba** does not differ from the type. Var. **grandiflòra** is listed as an improved large-fld. form.

árctica: *A. formosa.*

atràta: *A. vulgaris* var.

atropurpùrea: confused name; botanically the name has been applied to plants of *A. Buergeriana* and also of *A. viridiflora,* but the material in the trade may be a color form of *A. vulgaris.*

aùrea. To 20 in., tufted with many erect sts.: lvs. mostly basal, biternate, primary segms. petioled, to 1½ in. across, middle one 3-divided, lobes oblong to linear, obtuse: fls. pale yellow, usually solitary, sepals to 1 in. and petals about ¾ in. long, spurs hooked. July–Aug. Bulgaria.—The material in the trade under this name may be *A. chrysantha,* a species having straight and much longer spurs.

baikalénsis: hort. name for a form with large violet-blue long-spurred fls.

Bauhínii: *A. Einseleana.*

Bertolònii (*A. Reuteri*). To 1 ft., alpine: lvs. small, glaucous: fls. about 1 in. across, blue-violet, spurs very short, knobbed. S. Eu.

bícolor: *A. sibirica.*

brevístyla. Per. to 3½ ft.: basal lvs. biternate, st.-lvs. ternate or simple, lfts. coarsely crenate: fls. nodding, about ¾ in. long, sepals blue, petals yellowish-white, spurs hooked, to ⅓ in. long. Minn. to Alta. and north to Yukon.

Buergeriàna. To 1 ft.: fls. to 1½ in. across, yellow tinged purple, spurs nearly straight, as long as petal-limbs. Japan.

cærùlea. COLORADO C. To 3 ft.: fls. to 2 in. across, the blue-purple sepals longer than white petal-limbs; spurs to 2 in. long, straight or spreading, knobbed at end. May–June. Rocky Mts.; the state fl. of Colo. Vars. **álba** and **candidíssima** have white fls.; **citrìna,** fls. yellowish; **cùprea,** fls. copper-red with darker spurs; **fòliis-aùrea,** lvs. variegated yellow; **Héleniæ,** fls. blue and white; **hýbrida** and **lùtea,** sepals blue or pink and petals white or yellow; **ròsea** is listed as having rose-pink fls. There is a wild var. **albiflòra** with white fls.

califórnica: *A. formosa* var. *truncata.*

canadénsis. COMMON AMERICAN C. To 2½ ft.: fls. 1½ in. across, with yellowish or red sepals about as long as yellowish petal-limb; spurs red, nearly straight, knobbed at end, to ¾ in. long. May–July. N. S. to Fla. and Tex. Var. **nàna,** 1 ft. high. Var. **flavéscens** (*A. flavescens*), with yellow fls. is known to merge imperceptibly into forms of *A. formosa.*

caryophylloìdes: garden name.

caucásica: *A. vulgaris* var. *olympica.*

chrysántha (*A. thalictrifolia* of Amer. authors). GOLDEN or GOLDEN-SPURRED C. To 4 ft., much branched: fls. to 3 in. across, yellow, the sepals much longer than petal-limb; spurs straight, to 2½ in. long. May–Aug. Rocky Mt. region and Tex. Some of the vars. are: **álba,** fls. whitish; **álba-plèna** (var. *grandiflora alba*), fls. whitish, partly double; **flavéscens,** fls. tinged with red; **flòre-plèno,** fls. double; **grandiflòra sulphùrea,** fls. deep yellow; **Jæschkànii,** RED-SPUR C., dwarf, with red spurs, probably a hybrid; **nàna,** dwarf.

citrìna: *A. cærulea* var.

clematídea. To 1½ ft.: fls. to 3 in. across, with well-developed spurs. A hybrid race differing from *A. clematiflora* by its much longer spurs.

clematiflòra. To 1½ ft.: fls. to 3 in. across, pale pink and blue, the 10 sepals and petals of equal size and similar shape, spurs greatly reduced or absent. A hybrid race of garden origin.

clematíquilla. Fls. large, white, with long spurs; hort. form.

delicatíssima: a strain of hybrids with pink and rose long-spurred fls.

díscolor. Fls. of medium size, nodding in bud, with blue petal-like sepals about twice as long as whitish petals, spur length of petals, slightly curved at tip. Mts., N. Spain.

ecalcaràta: plants of this name in the trade are variously described and are of unknown botanical identity. The botanical status of the name is further confused because it has been applied to three different plants, one from China, a second from Colo. and the third of hort. origin and said to be a synonym of *A. vulgaris.* The Colo. plant is per. to 2 ft., basal lvs. ternate, lfts. sticky glandular-puberulent beneath: fls. ivory-white, to 1 in. across, with spurs reduced to sac-like outgrowths.

Einseleàna (*A. Bauhinii*). To 15 in., sts. erect and little branched: lfts. somewhat hairy but not glandular-sticky, segms. ovate to roundish: fls. bluish-violet, to 1½ in. across, spurs short, nearly straight. Limestone regions of Austrian Alps.

elegántula. To 16 in., usually with only 1 lf.: fls. yellow. with straight scarlet spur to ¾ in. long. Colo., Utal. New Mex.

erécta: hort. name, possibly a var. of *A. vulgaris.*

exímia: *A. formosa.*

Faurièri. To 8 in.: lvs. biternate into orbicular lfts.: fls. solitary, large, with narrow horned spurs. Japan.

flabellàta. FAN C. To 1½ ft.: fls. 2 in. across, nodding, lilac, sepals twice as long as petal-limb which is often white, spurs incurved, shorter than petal-limb, summer. Japan. Var. **nàna-álba** (var. *flore-alba*) is dwarf with pure white fls.

flavéscens: *A. canadensis* var., *A. chrysantha* var.

florariénsis: hort. name.

formòsa (*A. arctica. A. eximia*). SITKA C. To 3 ft.: fls. to 2 in. across, nodding, the red sepals twice as long as yellow petal-limb; spurs red, straight, about length of sepals. May–Aug. Calif. to Alaska and Siberia. Var. **hýbrida** (*A. californica* var. *hybrida, A. superba*), supposed hybrid between *A. formosa* and *A. chrysantha.* Var. **nàna-álba,** dwarf, pale sometimes nearly white. Var. **pauciflòra** (*A. pauciflora*) is almost stemless and tufted. Var. **rùbro-plèna,** fls. double. Var. **truncàta** (*A. truncata, A. californica*), petal-limb very short.

glandulòsa. ALTAI C. To 1¼ ft.: fls. to 3 in. across, nodding, lilac-blue, the sepals twice as long as the white-bordered petal-limb, spurs much incurved, ½ in. long, spring, early summer. Siberia. Var. **jucúnda** (*A. jucunda*), fls. somewhat double, with white petal-limb. Var. **màjor** is listed as a larger form having blue and white fls.

gràta: a confused name of uncertain botanical standing.

haylodgénsis: a blue-fld. race with long spurs; hort. form.

Héleniæ: *A. cærulea* var.

hirsutíssima: listed name.

hýbrida. A name of uncertain application to include hybrids between several species.

Jæschkànii: *A. chrysantha* var.

Jetschaùii: listed name, perhaps a misspelling for *A. chrysantha* var. *Jæschkanii.*

Jònesii. Tufted stemless plant with scapes 2 in. high bearing a solitary erect blue or purple fl. ½ in. long, spurs slightly curved, ⅓ in. long. Alta. to Wyo.

jucúnda: *A. glandulosa* var.

Kitaibèlii. To 1½ ft.: lower lvs. dense, sparingly villous, lobes obtuse: fls. blue, large, sepals very short, spur short, incurved at tip, glabrous. Cent. Eu.

lactiflòra. To 1½ ft.: fls. ½ in. long, the white or bluish sepals twice as long as petal-limbs, spurs nearly straight, ⅓ in. long. Siberia.

lappónica: listed name of plant to 2 ft., with violet short-spurred fls.: botanical status unknown.

leptocèras. To 1 ft.: fls. violet with tips of sepals greenish and of petal-limbs yellow, spurs slightly curved, ½ in. long. Siberia.

longíssima. To 3 ft.: basal lvs. triternate with narrowly segmented deeply-lobed lfts.: fls. pale yellow, the sepals longer than petals, the spurs 5 in. and more long. July–Oct. S. W. Tex., Mex.

lùcida: listed name of plant to 2 ft., having dark purple double fls.; probably a garden hybrid.

lùtea. Probably a hybrid between *A. cærulea* and *A. chrysantha.*

Moorcroftiàna. To 2½ ft., sts. branched: fls. white, straw-colored to blue or purple, usually 3–9, rarely solitary, to 2 in. across, spurs short and incurved at tip. June–Sept. Himalayas. Var. **cactiflòra** is advertised. Var. **suavèolens** has fls. to 3 in. across with longer spurs.

nevadénsis. To 2 ft., sts. hairy: basal lvs. biternately divided: fls. pale to dark blue, about 1½ in. across, spurs long and incurved at tip. Spain.

nígricans: *A. vulgaris.*

nívea: *A. vulgaris* var.

olýmpica: *A. vulgaris* var.

oxypétala: probably a catalogue error for *oxysepala.*

oxysépala. Early C. To 2½ ft.: fls. to 1½ in. across, with blue sepals much exceeding the white petal-limbs; spurs bent inward, knobbed, shorter than petal-limb. June. Siberia.

pauciflòra: *A. formosa* var.

pubéscens. To 1½ ft.: basal lvs. 1- or 2-ternate with rounded lobes: fls. about 1 in. across, erect, cream-yellow varying to white or pink, spurs nearly 1 in. long, straight or spreading. Calif.

pubiflòra. A soft-pubescent form of *A. vulgaris* with short spurs. Himalayas.

pyrenàica. To 1 ft.: fls. deep blue, about 2 in. across, the sepals about length of petal-limb, the spurs short and incurved. June–July. Pyrenees.

Reùteri: *A. Bertolonii.*

sachaliénsis: listed name.

saximontàna. To 8 in.: fls. greenish or blue with yellowish petals, spurs blue, ⅕ in. long, incurved or hooked. Colo., Utah.

scopulòrum. To 8 in., glabrous or pubescent above: lower lvs. biternate, glaucous, segms. 3-lobed, sessile, rarely to ½ in. long: fls. pale blue to pale purple, spurs to 2 in. long, slender and straight. Mts. of Utah.

sibírica (*A. bicolor. A. speciosa*). Siberian C. To 2 ft.: fls. to 3 in. across, lilac-blue, the sepals twice as long as petal-limb, spur very incurved or even coiled, to ¾ in. long, summer. E. Siberia. Var. **flòre-plèno,** fls. double. Var. **spectábilis** (*A. spectabilis*), fls. large, with tips of petal-limbs yellow.

Skínneri. Mexican C. To 3 ft.: fls. about 1½ in. across, nodding, the greenish-yellow sepals much longer than yellowish petal-limb; spurs pale red, straight, to 2 in. long. July–Sept. Mts. Mex., Guatemala. Var. **flòre-plèno** has double fls.

speciòsa: *A. sibirica.*

spectábilis: *A. sibirica* var.

stellàta: *A. vulgaris.*

striàta: listed as a double striped-fld. form of *A. vulgaris.*

Stùartii. Hybrid between *A. glandulosa* and *A. vulgaris* var. *olympica:* fls. lilac-blue, very large, spurs incurved. May–June.

suavèolens: *A. Moorcroftiana* var.

supérba: *A. formosa* var. *hybrida.*

thalictrifòlia. To 2½ ft., sticky: lvs. biternate, glandular-hairy, lfts. petioled: fls. blue-violet, to nearly 1 in. across, spurs about ⅓ as long as sepals, straight. Alps of S. Austria and N. Italy.—The American plant sometimes referred to as *A. thalictrifolia* is *A. chrysantha.*

transsilvánica: *A. vulgaris.*

truncàta: *A. formosa* var.

Vervæneàna: *A. vulgaris* var.

viridiflòra. To 1½ ft.: fls. about 1 in. across, greenish, sepals and petals about equal, spurs straight, ½ in. long, summer. Siberia. Var. **atropurpùrea,** see *A. atropurpurea.*

vulgàris (*A. stellata. A. nigricans. A. transsilvanica*). European C. To 2½ ft.: fls. to 2 in. across, nodding, blue, purple, white, the sepals longer than petal-limb, spurs knobbed and much incurved, about length of petal-limb, summer. Eu., Siberia. Vars. **álba-plèna** and **flòre-plèno** have double fls. Var. **atràta** (*A. atrata*), plant to 1 ft., fls. blue. Cent. Eu. Var. **atroròsea,** fls. deep rose-pink. Var. **compácta** is listed. Var. **erécta,** said to be a dwarf form with fls. borne erect. Var. **hýbrida** is probably a cross between *A. canadensis* and *A. vulgaris,* with lilac-purple spurs. Var. **nívea** (var. *alba*), Munsteads White C., fls. large, pure white. Var. **olýmpica** (*A. olympica, A. Wittmanniana, A. caucasica*), sepals lilac, petal-limb white. Var. **Vervæneàna,** lvs. lined with yellow.

Wittmanniàna: *A. vulgaris* var. *olympica.*

ARABIDÓPSIS. Mouse-ear Cress. *Cruciferæ.* Ann. or per. white-fld. herbs of Eurasia and N. Amer., differing from Sisymbrium in pod 4-angled not terete, and from Arabis in pod flattened at right angles to the cross-partition and not parallel to it.

Thaliàna (*Arabis Thaliana. Sisymbrium Thalianum*). Ann. to 18 in., usually branched: basal lvs. spatulate, to 2½ in. long, remotely toothed, sparsely stellate-hairy: fls. white, about ⅛ in. across, in terminal racemes: pods to ⅝ in. long, glabrous, ascending, beak very short. Eu., nat. in E. and Cent. U. S.

ÁRABIS. Rock-Cress. *Cruciferæ.* Annuals, biennials and perennials, mostly low, with white, pink or purple fls. in terminal spikes or racemes, pods or siliques long and narrow; more than 100 species in widely separated temp. regions, a few native to Amer.

Some of the rock-cresses are alpine, grown in the border or rock-garden. They require plenty of sun but many of them thrive even in poor soil. They are prevailingly spring and early summer bloomers. Some of them produce attractive mats of late-season foliage. Propagated by division, seeds or cuttings.

álbida (*A. Billardieri. A. caucasica*). Wall R. Tufted whitish soft-pubescent per. to 1 ft.: lvs. spatulate and tapering to base, 1–3 in. long, coarsely toothed on upper broad part: fls. to ½ in. long, white, in early spring, fragrant, in loose racemes. Caucasus.—Sometimes double-fld., and forms with vari-colored foliage. There are also compact forms. Listed vars. include **argéntea-variegàta, lutéscens, nàna compácta, ròsea, supérba** and **variegàta.**

Alliònii. Per.: lvs. glabrous, ovate-oblong and somewhat toothed, those on st. ovate and sessile: fls. white, with erect petals. Italy.

alpìna. Mountain R. Per., mostly more slender than *A. albida* and less pubescent: lvs. oblong to oblong-acute, broad at base, sharply toothed along sides: fls. smaller, white. Mts., Eu.—Apparently not common in cult., the stock usually grown under this name being *A. albida.* Vars. listed under this name include **álba, compácta, grandiflòra, nàna, ròsea, supérba, variegàta.**

androsàcea. Per. to 2½ in., densely cespitose, silvery-hairy: lvs. mostly in dense rosette, oblong-elliptic, nearly entire, st.-lvs. linear: fls. white, in corymbose racemes: pods erect, to ½ in. long, short-pedicelled. S. E. Eu.

arenòsa. To 6 in., hairy: lvs. pinnatifid, upper ones toothed: fls. rose, sometimes white or bluish, on spreading pedicels. Eu.

aubretioìdes. Densely tufted little per., either somewhat tomentose or green: lvs. very small, obovate and obtuse, those on st. ovate and clasping: fls. purple. Asia Minor.

bellidifòlia. Per. to 9 in.: lvs. glabrous, spatulate or those on st. oblong-ovate and sessile, sparingly toothed: fls. white, in short racemes. Pyrenees, Alps.

Billardièri: *A. albida.*

blepharophýlla. Per. to 1 ft.: lvs. spatulate to oblong, toothed or entire, margins ciliate: fls. rose-purple, fragrant, ½ in. long. Calif.

Brèweri. Per. to 6 in., much branched, pubescent: lvs. spatulate to lanceolate, usually entire: fls. red-purple, ¼ in. long. Calif.

cærùlea. Per. to 6 in., with tap-root, st. producing short stolons terminating in rosettes: basal lvs. spatulate to lanceolate-ovate, glabrous or sparsely pubescent, usually ciliate, thick and glossy green: fls. bluish-lilac or rarely white, petals to ⅕ in. long, in 5–8-fld. somewhat branched and erect infl.: pods small, about ¼ in. long. Bavarian and Salzburg Alps.

canéscens. Per. to 1 ft., densely cespitose, short-stellate-pubescent: lvs. narrowly spatulate to linear-oblanceolate, to 1 in. long and ⅛ in. wide, obtuse, densely pubescent producing bluish-green effect: fls. white to pale purple, to ¼ in. long, pedicels recurved: pods pendulous, usually 1¼–2 in. long and nearly ⅛ in. wide. Dry plains of Mont., Wyo. and Ore.

carduchòrum (*Draba gigas*). Per. a few in. high: lvs. in rosettes, linear, margins ciliate: fls. white. Armenia.—Some of the material grown as *Draba fladnizensis* belongs here.

caucásica: *A. albida.*

cebennénsis. Per. to 2½ ft., villous-pubescent, sts. erect: lvs. ovate to ovate-lanceolate, all petiolate, irregularly toothed, acuminate: fls. violet to pale violet-purple, to nearly ½ in. across: pods erect. France.

cenísia: *A. corymbiflora.*

cóckilis: catalogue name.

collìna. Per., gray-pubescent: lvs. oblong, wavy-toothed, on st. sessile: fls. white. Italy.

corymbiflòra (*A. cenisia*). Bien. or per. to 8 in.: lvs.

oblong, entire or slightly toothed: fls. white, ⅓ in. long. Mts. of Eu.

corymbòsa: listed name.

Drúmmondii. Bien. to 2 ft., somewhat glaucous, nearly glabrous: lvs. oblong to lanceolate: fls. white or pink, ⅓ in. long. Mts., Que. to Alta. and New Mex.

Féndleri. Bien. or short-lived per. to 20 in.: basal lvs. oblanceolate, to ⅝ in. and rarely 1½ in. long, ciliate, acutish, st.-lvs. linear- to oblong-lanceolate: fls. pink to white, on ascending pedicels to ⅝ in. long: pods slightly curved, to 2 in. long. Wyo., Ida.

Ferdinándi-Cobúrgii. Small: lvs. in gray rosettes that become green in winter: fls. small, yellowish. Macedonia.

Gerárdii. Bien., hairy: lvs. oblong, finely toothed, the st.-lvs. cordate at base: fls. white. Eu.

glàbra. Bien., strictly erect, to 4 ft., glabrous above, glaucous: lvs. oblong to oblanceolate, dentate, on sts. sagittate and sessile: fls. yellowish-white, small: pods erect-appressed. N. B. to Pacific Coast, south to Pa., Eu., Asia.

glaùca. Per., stellate-pubescent: st.-lvs. ovate to ovate-lanceolate, obtuse, clasping: fls. not known: pods ascending, cylindrical, apex long-attenuate with long persistent style. Japan.

Hálleri. Slender weak pubescent or nearly glabrous bien. to 1 ft.: lvs. lyrate with large terminal lobe, on st. oblong or lanceolate and toothed: fls. apparently purple. Hungary.

hirsùta. Bien., erect, to 2½ ft., mostly hairy-pubescent: lvs. spatulate and dentate, on st. oblong and clasping: fls. greenish-white, small. Widely distributed in N. Amer., Eu., Asia.

Holboèllii. The true *A. Holboellii* is a Cent. European species and not known to be in cult.; the plants so-named in cult. originating in W. Amer. are referred to *A. retrofracta.*

Kéllereri. Hybrid between *A. bryoides* and *A. Ferdinandi-Coburgii:* distinguished by the deciduous ashy-gray lanceolate small lvs. hairy on both sides.

Koèhleri. Per. to 6 in.: lvs. narrow-lanceolate to spatulate, to 1 in. long, entire, on st. few and very narrow: fls. scarlet, to ½ in. long, in short racemes. Ore.

Lỳallii. Per. to 10 in., mostly glabrous: lvs. spatulate to narrow-oblanceolate, to 1 in. long, entire, on st. narrow: fls. rose, ¼ in. long. N. W. U. S., B. C.

lyràta. Per. to 1 ft.: basal lvs. oblong-oblanceolate, to 2 in. long, coarsely lyrately lobed, st.-lvs. spatulate to linear, to 1 in. long, entire: fls. white, to ⅓ in. long: pods to 1¼ in. long. Conn. to S. C. west to Sask. and Mo.

móllis. Per. to 2 ft., lightly pubescent, erect, little branched: lvs. ovate or roundish, cordate and blunt-dentate, long-petioled, on st. clasping: fls. white, in terminal racemes. Caucasus.—Plants recently cult. under this name are probably all *A. procurrens.*

muràlis (*A. rosea*). Bien. or per., tufted at base, pubescent, to 10 in.: lvs. spatulate and dentate, on st. oblong and sessile: fls. white or rose, in elongating terminal racemes. S. Eu.

òvirens. By recent authorities considered to be a subspecies of *A. Halleri,* from which it differs in its usually entire ovate long-petioled basal lvs. and pod nearly twice as long. E. and Cent. Eu.

procúrrens. Per. to 1 ft., with creeping stolons: lvs. oblong to lanceolate or obovate, entire, pointed: fls. white, in elongating racemes. S. E. Eu.—There is a form with vari-colored foliage.

pùmila. Per. to 10 in., st. short, lateral shoots terminating in rosettes: basal lvs. obovate, petioled, ciliate, st.-lvs. ovate-lanceolate: fls. white, to ¼ in. long. Cent. Eu.

purpuráscens. Per. to 2½ ft., pubescent, usually livid-purple: lvs. obovate to oblong, toothed: fls. rose-purple, ¾ in. long. Ore.

purpùrea. Per., st. distinctly woody at base: lvs. obovate to oblong-cordate, remotely toothed to entire: fls. rose-pink to pale purple, about ¼ in. long. Greece.

racemòsa: listed name.

retrofrácta. Bien. or per. to 20 in.: basal lvs. oblanceolate, to 1¼ in. long, mostly entire, densely stellate-hairy; st.-lvs. lanceolate, base sagittate: fls. white or pinkish, to ½ in. across, in secund racemes: pods to 2½ in. long, on abruptly reflexed pedicels to ½ in. long. Man. to B. C. south to Neb. and Calif.

ròsea: *A. muralis.*

stellàris ròsea: hort. name, probably for form of *A. Stelleri.*

Stélleri. Small: lvs. oblong or spatulate, the upper ones toothed and partly clasping: fls. white, in a corymbose raceme. E. Asia.

stricta. Per. to 6 in., nearly glabrous: lvs. thickish and shining, oblong, crenate, radical ones in rosette, on st. small and sessile: fls. yellowish-white, in short racemes. Eu.

Stùrii. Compact garden plant with large clear white fls.: botanical position uncertain.

Súendermannii. Hybrid between *A. Ferdinandi-Coburgii* and *A. procurrens:* lvs. lanceolate, twice as large as in *A. Ferdinandi-Coburgii.*

Suksdórfii. Per., tufted, to 8 in.: lvs. oblong to lanceolate, slightly pubescent: fls. white, ⅓ in. long. Wash.

Thaliàna: *Arabidopsis Thaliana.*

Túrrita. Bien. or per. to 2½ ft., pubescent: basal lvs. in rosette, elliptic, toothed, blue-violet beneath: fls. yellow, ⅕ in. long, in many-fld. racemes. Eu.

vochinénsis. Per. to 6 in., cespitose, st. producing numerous short rosette-terminated stolons: basal lvs. obovate, obtuse, glabrous or remotely pubescent beneath: fls. white, to ¼ in. long, on erect mostly unbranched leafy peduncles. Cent. Eu.

ARÀCEÆ (sometimes written Aroideæ). ARUM FAMILY. AROIDS. More than 100 genera widely distributed (but most abundant in trop. countries), of varied habit and foliage but characterized by the infl. which is composed of a densely-fld. spadix having the staminate fls. at the top and the pistillate below, and subtended by a bract or spathe which is often colored and showy and constitutes (as in the florists calla) the ornamental part of the plant: fls. without perianth or these parts merely scale-like; stamens 1–many: fr. a berry borne tightly on the spadix. The family furnishes many plants grown for ornament, curiosity and food; some of them are prominent "foliage plants." All are essentially herbs, but some have more or less woody sts. and attain a shrub-like character and many of them are root-climbers on trees. The family yields acrid and medicinal qualities, and a few species produce edible tubers and frs. Among cult. kinds are the genera Acorus, Aglaonema, Alocasia, Amorphophallus, Anthurium, Arisæma, Arum, Caladium, Calla, Colocasia, Cryptocoryne, Dieffenbachia, Dracunculus, Helicodiceros, Homalomena, Hydrosme, Lysichitum, Monstera, Orontium, Peltandra, Philodendron, Pistia, Rhektophyllum, Sauromatum, Schismatoglottis, Scindapsus, Spathiphyllum, Symplocarpus, Syngonium, Thomsonia, Xanthosoma, Zantedeschia.

ÁRACHIS. *Leguminosæ.* Peanuts are grown in gardens as a novelty and in conservatory collections of economic plants and commercially in field culture in mild long-season climates: lvs. compound: fls. yellow, papilionaceous, in axillary spike-like clusters: seed-pods, the peanuts, are carried beneath the ground where they mature; mostly native in Brazil, one only cult.

Since the vines are very tender to frost, the plant cannot be grown in the garden farther north than central New York, but commercially from Virginia south. If the pods are too hard, the seeds should be removed for planting. When sown under glass a medium temperature only is required. In the open the plants of the bunch type should stand 6–10 inches apart, in rows 30–36 inches apart.

hypogæ̀a. PEANUT. GOOBER. GROUNDNUT. Ann. to 20 in., procumbent: lfts. 4, to 2½ in. long.

ARACHNANTHE: *Arachnis.*

ARÁCHNIS. *Orchidaceæ.* Epiphytes native in Asia, with fls. in panicles, the sepals and petals equal, lip shorter and 3-lobed. See *Orchids.*

Clárkei (*Arachnanthe Clarkei. Esmeralda Clarkei*). Sts. long and pendulous: lvs. to 6 in. long and 1½ in. wide: fls. about 2½ in. across, the spreading sepals and petals yellow striped transversely with brown, the lip about the same length and yellow spotted with brown, in 3–4-fld. clusters to 8 in. long. June–Aug. Himalayas.

Lòwii (*Arachnanthe, Renanthera, Vandopsis* and *Vanda Lowii*). To 6 ft.: lvs. to 2½ ft. long and 2½ in. wide: fls. to 3 in. across, the lower ones orange-yellow finely spotted with red, the upper ones greenish-yellow with large brown spots, in pendulous many-fld. racemes to 9 ft. long. Aug.–Nov. Borneo.

ARAGALLUS: *Oxytropis.*

ARÀLIA (*Dimorphanthus*). *Araliaceæ.* Herbs, shrubs or trees with alternate pinnate lvs., small whitish fls. in umbels which form terminal panicles, and berry-like frs.; planted out-of-doors and most of them nearly or fully hardy N.

Some of the smaller native aralias are planted in borders or naturalized in woods; the larger species make bold lawn specimens and provide somewhat subtropical effects with the large leaves; some of them, as *A. spinosa*, are grown for curiosity. They thrive in rich soil. Propagated by seeds in spring, or by root-cuttings with heat.

aùrea: a yellow-lvd. form, probably of *Polyscias Guilfoylei* or *P. Balfouriana.*

Balfourіàna: *Polyscias Balfouriana.*

cachemírica (*A. cashmeriana*). Per. herb to 8 ft.: lvs. 1–3-pinnate, the lfts. to 3 in. long: infl. with prominent bracts to 1½ in. long. Himalayas; to be planted only far S.

califórnica. Per. herb to 10 ft.: lvs. 2-pinnate, the lfts. to 1 ft. long: fls. in panicles to 1½ ft. long. Ore. to Calif.

cashmeriàna: *A. cachemirica.*

Chabrièri: *Elæodendron orientale.*

chinénsis (*A. sinensis*). To 30 ft., somewhat spiny: lvs. 2-pinnate, the lfts. to 6 in. long and pubescent beneath: fls. in panicles to 2 ft. long. China.

cordàta (*A. edulis*). Udo. Per. herb to 8 ft.: lvs. of 3–5 lfts. to 8 in. long. Japan.—In spring the young blanched shoots are eaten.

crassifòlia: *Pseudopanax crassifolium.*

edùlis: *A. cordata.*

elàta (*A. chinensis* var. *mandshurica. A. japonica. Dimorphanthus mandshuricus*). Japanese Angelica. To 50 ft., usually prickly: lvs. 2-pinnate, the lfts. to 5 in. long, when young pubescent on veins beneath: infl. with spreading somewhat umbellate branches to 1½ ft. long. Manchuria, Korea, Japan. Var. **aùreo-variegàta** has lvs. variegated with yellow. Var. **canéscens** is densely tawny-pubescent beneath.

elegantíssima: *Dizygotheca elegantissima.*

filicifòlia: *Polyscias filicifolia.*

fruticòsa: *Polyscias fruticosa.*

Guilfoỳlei: *Polyscias Guilfoylei.*

híspida. Bristly Sarsaparilla. Per. herb or subshrub to 3 ft., bristly: lvs. 2-pinnate, the lfts. to 3 in. long. Newf. to N. C. and Minn.

japónica: *A. elata* and *Fatsia japonica.*

Kerchoveàna: *Dizygotheca Kerchoveana.*

mandshùrica: *A. elata.*

Maximowíczii: *Kalopanax pictus* var.

monstròsa: *Polyscias Guilfoylei* var.

Mòseri: *Fatsia japonica* var.

nudicaùlis. Wild Sarsaparilla. Per. herb to 1 ft. nearly stemless: lvs. 2-pinnate, the 3–5 lfts. to 5 in. long. Newf. to Ga. and Colo.

papyrífera: *Tetrapanax papyriferum.*

pentaphýlla: *Acanthopanax Sieboldianus.*

quinquefòlia: *Panax quinquefolium.*

racemòsa. American Spikenard. Per. broad herb to 6 ft.: lvs. very large, of 3–5 lfts. to 6 in. long: berries brown-purple. N. B. to Ga. and Mo.

Sièboldii: *Fatsia japonica.*

sinénsis: *A. chinensis.*

spinòsa. Devils-Walking-Stick. Hercules-Club. To 30 ft., very spiny: lvs. 2-pinnate, the lfts. to 3 in. long and glabrous beneath: fls. in panicles to 4 ft. long. S. N. Y. to Fla. and Tex.

trifòlia: *Panax trifolium.*

Veìtchii: *Dizygotheca Veitchii.*

Victòriæ: *Polyscias Guilfoylei* var.

ARALIÀCEÆ. Aralia or Ginseng Family. More than 50 genera, widely distributed in temp. and trop. regions of eastern and western hemispheres, herbs, shrubs and trees, often having aromatic or odoriferous foliage, with mostly alternate simple to much compound lvs., small, regular, bisexual or polygamous fls. that are individually not showy, borne in close umbels or heads, having very small calyx, usually 5 petals, 5 stamens, inferior 1- or more-celled ovary, and fr. a berry or drupe in which feature the family differs from Umbelliferæ. Many species have medicinal value, and the following genera are planted for ornament: Acanthopanax, Aralia, Brassaia, Dizygotheca, Echinopanax, Fatsia, Gilibertia, Hedera, Kalopanax, Meryta, Nothopanax, Oreopanax, Panax, Polyscias, Pseudopanax, Schefflera, Stilbocarpa, Tetrapanax, Trevesia, Tupidanthus. Various plants formerly known as Aralia and Panax are now distributed in other genera. In the juvenile stage many of the woody araliads are attractive in foliage and are prized under glass, but it may be impossible to name them confidently until they arrive at flower and fruit. Those with palmately compound lvs., the petioled entire large glossy lfts. arising from the top of the petiole, are likely to be Schefflera or Tupidanthus.

ARALIA, FALSE: *Dizygotheca.*

ARAR-TREE: *Tetraclinis articulata.*

ARAUCÀRIA. *Araucariaceæ.* Evergreen trees of great height, of about 12 species in S. Amer., Australia and Pacific Isls., having symmetrical whorled branches and scale-like, awl-like or flat stiff lvs. usually closely overlapping, and large woody cones. The secondary branches are mostly in 2 laterals rows and in mature trees are early deciduous, leaving the primary branches naked except at the tips. Juvenile forms persist until trees are large, often to 20–50 ft. Young trees of different species may be closely similar and juvenile lvs. of all species are larger than adult lvs. and may differ from them also in form and arrangement.

Araucarias are grown in warm regions and as pot-plants in juvenile forms. See *Conifers.* Specimens can be grown in the open only in the warmer parts of the country, as in Florida and California, except *A. araucana* which will stand considerably farther north.

angustifòlia (*A. brasiliana*). Lvs. loosely imbricated, oblong-lanceolate, to 2 in. long, sharp-pointed, glaucous-green. Brazil. Var. **élegans** (*A. gracilis*), branches more slender and lvs. narrower; var. **Ridolfiàna,** robust form with larger lvs.

araucàna (*A. imbricata*). Monkey-Puzzle. Lvs. densely imbricated, ovate-lanceolate, 1–2 in. long, leathery, sharp-pointed. Chile.

Balánsiæ. Adult lvs. densely imbricated, ovate, carinate, obtuse, dark olive-green, ⅛ in. long. New Caledonia.

Bidwíllii. Bunya-Bunya. Juvenile lvs. spreading, mostly in 2 rows, ovate- to oblong-lanceolate, to 2 in. long, sharp-pointed, firm and glossy; adult lvs. imbricated, spiral, ovate, to ½ in. long, acute, rigid, woody: staminate cones 3–5 in. long, ⅓–½ in. diam.; ovulate cones 7–9 in. long, 6–8 in. diam. Australia.

brasiliàna: *A. angustifolia.*

columnàris (*A. Cookii*). New-Caledonian-Pine. Juvenile lvs. awl-shaped, deep green, firm, to ½ in. long; adult lvs. imbricate, lance-ovate to triangular, to ¼ in. long, obtuse, rigid, with blunt incurved apex and prominent midrib; phyllotaxy 1/7, 1/9, 1/11: mature tree columnar; secondary branches mostly in 2 rows: staminate cones 1½–3½ in. long, ½–¾ in. diam; ovulate cones ovoid to elliptoid, 4–5 in. long. New Caledonia, New Hebrides. Var. **péndula,** has drooping twigs and less closely imbricate lvs.—Young trees—to 25 ft. with only juvenile foliage—are difficult to separate from *A. excelsa* but the habit of mature trees is distinctive. Much material in cult. passing as *A. excelsa* is of this species. *A. columnaris* has deeper green foliage and closer tiers of branches and makes a better ornamental tree, except in age.

Coòkii: *A. columnaris.*

Cúnninghamii. Hoop-Pine. Juvenile lvs. needle-like, laterally compressed, to ½ in. long, spiny pointed, often recurved; adult lvs. awl-shaped to lanceolate, incurved, imbricate: mature tree with tufted twig clusters at end of naked branches: staminate cones 2–3½ in. long, ¼–⅜ in. diam.; ovulate cones ovoid, 2½–3½ in. long, 1½–2½ in. diam. Australia. Var. **glaùca** has silvery-glaucous foliage; var. **taxifòlia** has the secondary branches freely branching.

excélsa. Norfolk-Island-Pine. Juvenile lvs. awl-shaped, incurved, laterally flattened, decurrent, light green, soft, to ½ in. long; adult lvs. closely imbricate, lanceolate to ovate-triangular with blunt incurved apex and obscure midrib: phyllotaxy 1/18: mature tree pyramidal: staminate cones 1½–2 in. long; ovulate cones subglobose, 3–5 in. long, 3½–6 in. diam. Norfolk Isl. Var. **álbo-spìca,** Silver-Star A., young branchlets white-tipped; var. **glaùca,** lvs. bluish-green; var. **robústa,** Emerald A., lvs. deep green; var. **virgàta,** secondary branchlets very short.—The usual species grown by florists for pot-plants, propagated by cuttings of vigorous erect tip shoots. Part of the material passing under this name is *A. columnaris.*

grácilis: *A. angustifolia* var. *elegans.*

imbricàta: *A. araucana.*

Rùlei. Lvs. densely imbricated, oblong-lanceolate to elliptic, to ¾ in. long, obtuse, silvery-gray above, glossy below. New Caledonia. Var. **Goldieàna,** less branched and lvs. narrower; var. **pàtens,** lvs. loosely imbricated; var. **polymórpha** is a juvenile stage.

ARAUCARIÀCEÆ. Araucaria Family. A few genera, mostly of resinous evergreen coniferous trees in the southern hemisphere, of which two, Agathis and Araucaria, are grown in N. Amer. as conservatory subjects or in the open where climatic conditions permit. Until recently they have been treated with the Pinaceæ, but they differ in technical characters of the cone whose scales are without distinct bracts and bear only a single ovule: lvs. alternate, awl-shaped to broadly ovate, often leathery.

ARAÙJIA. *Asclepiadaceæ.* Woody twiners with salver- or bell-shaped fls. in axillary cymes, large leafy calyx, and long leathery pods; native in Brazil and Argentina. Grown under glass from cuttings or out-of-doors from seed sown in heat in early spring.

sericófera (*Physianthus albens*). Lvs. oblong, to 4 in. long, dark green above, white and mealy beneath: fls. white or pinkish, to 1 in. across. S. Brazil.

ARBORETUM. A growing collection of trees (Latin *arbor*, tree); in common application, a living collection of trees and shrubs, that is, of woody plants. The term ordinarily connotes a plantation of many kinds of woody plants permanently maintained for purposes of study, investigation, and education, a distinction from a grove, forest, nursery, or a parking. An arboretum may be one of the integral parts of a botanic garden.

ARBORICULTURE. The cultivation of trees; in common usage often applied to the growing of woody plants, as trees and shrubs. It implies the cultivation of the plants as individuals rather than as elements in a forest, the latter subject being silviculture and part of the larger domain of forestry. Arboriculture is to be distinguished also from the growing of trees for a particular product, as the raising of fruit which is fruit-growing or pomology. The study of trees is a large and important branch of human activity.

ARBOR-VITÆ: *Thuja.* **False:** *Thujopsis dolabrata.* **Hiba:** *Thujopsis dolabrata.*

ÁRBUTUS. *Ericaceæ.* Evergreen trees and shrubs native in the Medit. region and W. N. Amer., having red flaking bark, alternate lvs., red or white urn-shaped fls. in terminal panicles, and fr. a red berry-like drupe.

Arbutuses are grown out-of-doors in warm regions or under glass in the North. They do best in well-drained soil with protection from the wind. Propagated by seeds, by cuttings of half-ripened wood in the fall under glass, and also by layers, budding or veneer-grafting.

Andráchne. To 40 ft.: lvs. ovate, to 4 in. long, usually entire: fls. dull white, in panicles to 4 in. long. Medit. region.

canariénsis. To 30 ft.: lvs. oblong-lanceolate, to 6 in. long, toothed, glaucous beneath: fls. greenish-white, nearly ½ in. long, in erect panicles in spring. Canary Isls.

Ménziesii. Madrona. To 50 or 100 ft.: lvs. oval to oblong, to 5 in. long, entire, glaucous beneath: fls. white, ⅓ in. long, in erect panicles to 6 in. long. May–June. B. C. to Calif.

Unèdo. Strawberry-Tree. To 30 ft.: lvs. oblong, to 4 in. long, toothed, shining above: fls. white or pinkish, ¼ in. long, in drooping panicles to 2 in. long, in autumn. S. Eu., Ireland; stands in Ga. Var. **integérrima** has entire lvs. Var. **rùbra** (var. *Croomii*) has deep pink fls.

ARBUTUS, TRAILING: *Epigæa repens.*

ARCEUTHOBIUM: see *Loranthaceæ.*

ARCHANGELICA: *Angelica.*

ARCHONTOPHŒ̀NIX (*Loroma*). King Palm. *Palmaceæ.* Unarmed monœcious forest feather-palms of trop. and subtrop. Australia, of two or three species: trunk single, ringed, the upper part represented by a smooth green sheathing column of lf.-sheaths: pinnæ many, long and narrow, entire or somewhat bifid at apex, mostly drooping or hanging and often turned edgewise: spathe-lvs. 2, formed in the sheath of lower lvs. and expanding after the lf. falls: infl. compound on a short white peduncle, the long strands at first hanging; fls. typically in 3's, the middle one small and pistillate but often bearing staminodes; staminate fls. 3-angled, with a pistillode; anthers 8–24: fr. small, red, globose or ellipsoid, ¾ in. or less diam., the exocarp or outer shell soon decaying on the ground and exposing a covering of strong fibers; seed not furrowed, the albumen strongly ruminate. King palms are grown in S. Calif., Fla., Bermuda and in American tropics. For cult. see *Palm.*

Alexándræ (*Ptychosperma Alexandræ*). Alexandra Palm. To 70 or 80 ft., in native regions: trunk enlarged or bulging toward base: under surface of pinnæ prominently grayish-white, middle width of largest ones 1½–2 in. or less, side nerves very prominent: fls. white or cream-color: fr. about ½ in. long, the fibers (under shell) close and not very prominent. Var. **Beátriciæ.** Step Palm. Bole enlarged at base and rings so deep that the trunk appears to have steps.

Cunninghamiàna (*Ptychosperma* and *Loroma Cunninghamiana. Loroma amethystina*). Piccabeen Palm. Trunk not enlarging below, unless merely at surface of ground: under surface of pinnæ green or not gray-glaucous, the side nerves not particularly prominent, width 2–4 in. at middle in the central part of lf.: fls. lilac or purplish: fr. somewhat larger, the fibers or strands strong and loose.—This palm is known to planters as *Seaforthia elegans.*

ARCTERICA: *Pieris nana.*

ÁRCTIUM. Burdock. *Compositæ.* Coarse rank-smelling biennials or short-lived perennials with large alternate lvs. and tubular florets, purple to nearly white, clustered in bur-like heads; pappus of short scales; native in Eu. and Asia, some widely distributed as weeds.

One species is grown for its edible roots and one for medicinal purposes. In Japan the roots are eaten when 2 feet long or less; the plant is treated as an annual, seeds sown in May producing edible roots by autumn and the fall-sown crop harvested in spring.

Láppa (*Lappa major. L. edulis*). Great B. Gobo of the Japanese. Stout, much branched, to 8 ft.: lvs. cordate-ovate, to 20 in. long, white-woolly beneath: heads 1½ in. across, in flat-topped clusters. Eu.; nat. in N. Amer.

mìnus (*Lappa minor*). Common B. Similar to *A. Lappa* but not over 6 ft. high, the lvs. smaller and heads to ¾ in. across. Eu.; nat. in N. Amer.

ARCTOSTÁPHYLOS (*Uva-Ursi*). Bearberry. Manzanita. *Ericaceæ.* Evergreen shrubs and small trees with alternate usually entire lvs., small urn-shaped nodding fls. in terminal racemes or panicles, and fr. a red or brownish drupe. The trailing species are grown for ground-cover in the N. and the others in warmer regions for ornament. Cult. as for *Arbutus.*

alpìna: *Arctous alpinus.*

Ándersonii. To 8 ft. and more: lvs. crowded, oblong or ovate, to 2½ in. long, cordate at base: ovary pubescent. Calif.

bícolor (*Xylococcus bicolor*). To 6 ft.: lvs. oblong, to 2½ in. long, shining above, white-tomentose beneath, the margins revolute: fls. rose; ovary hairy at top. Calif., Lower Calif.

canéscens. To 6 ft., white-pubescent: lvs. ovate, to 3 in. long: ovary densely tomentose. Calif.

cinèrea. To 6 ft., with ash-colored branchlets: lvs. oblong or obovate, whitish-green, to 1 in. long: fls. rose or nearly white; ovary hairy at top. Ore.

columbiàna. Erect shrub to 12 ft., young sts. densely pubescent: lvs. oblong to oblong-ovate, to 2⅜ in. long, pale green, tomentulose beneath: fls. white, in clustered racemes: fr. red. Wash.—By many authors not considered distinct from *A. tomentosa.*

diversifòlia (*Comarostaphylis diversifolia*). To 15 ft.: lvs. elliptic or oval, to 3½ in. long, tomentose beneath, the margins toothed and revolute: fls. light pink; ovary pubescent. S. Calif., Lower Calif.

franciscàna. Low procumbent shrub, sts. often rooting: lvs. bright green, broadest at or below the middle: fls. white, on glabrous pedicels in short terminal clusters: fr. depressed-globose, to ⅓ in. across, dull. Calif.

glandulòsa. Low spreading shrub, sticky-glandular-hairy throughout: lvs. ovate-elliptic to lanceolate, petioled: fls. white, to ⅓ in. long: fr. brown. Calif. Var. **crassifòlia** is listed.

glaùca. Great-berried M. To 30 ft.: lvs. oval or broad-ovate, to 2 in. long, glabrous, pale green: fls. white; ovary glabrous. S. Calif., Lower Calif.

Hoòkeri. To 2 ft., or procumbent: lvs. ovate or elliptic, to 1 in. long, shining: ovary glabrous. Calif.

insulàris. Erect shrub to 10 ft. high, sometimes tree-like: lvs. ovate to elliptic, to nearly 2 in. long, obtuse, bright green: fls. white, in large panicles: fr. yellowish-brown, nearly globose, glabrous. Santa Cruz Isl., Calif.

manzanìta. Erect shrub to 12 ft. and sometimes much more, crooked-branched, young parts pubescent: lvs. thick, oblong, pale green, to 1½ in. long: fls. white, sometimes tinged pink, in drooping panicles. Calif.

Maripòsa. To 8 ft.: lvs. oval or elliptic, to 1¾ in. long, stiff, white-glaucous: ovary glandular-hairy. Calif.

mèdia. Procumbent, branching, sts. to 2 ft. long and 1 ft. high: lvs. obovate, blade to 1 in. long, puberulent beneath: fls. white or pale pink, in terminal racemes. Wash.—Possibly a hybrid of *A. tomentosa* and *A. Uva-ursi.*

nevadénsis. To 9 in., with creeping rooting sts.: lvs. obovate, to 1 in. long: ovary glabrous. Calif.

nummulària. To 1 ft.: lvs. ovate to oblong, to ¾ in. long, glabrous: fls. white; ovary pubescent. Calif. Var. **compácta** is listed.

pátula. To 5 ft. or more: lvs. orbicular, to 1½ in. long, bright green: fls. deep pink; ovary glabrous. Ore., Nev., Calif.

pùmila. To 8 in., prostrate: lvs. obovate, to ¾ in. long: ovary glabrous. Calif.

púngens. To 8 ft.: lvs. oblong to elliptic, to 1 in. long, becoming glabrous: ovary glabrous. Calif. to Mex.

Stanfordiàna. To 6 ft., with dark red sts.: lvs. ovate to oblanceolate, to 1½ in. long, glabrous: fls. pink or lilac; ovary glabrous. Calif.

tomentòsa. Woolly M. To 18 ft.: lvs. broad-ovate to oblong, to 2 in. long, tomentose beneath: fls. white or pink; ovary tomentose. B. C. to Calif.

Ŭva-úrsi. Prostrate and creeping: lvs. obovate, to 1 in. long, glabrous, the margins revolute: fls. white or pinkish. Eu., N. Asia, N. Amer.

ARCTÒTIS. *Compositæ.* More or less white-woolly S. African annuals with alternate lvs. and solitary radiate heads; pappus lacking or a crown of scales; grown in the flower-garden. Propagated by seeds.

acaùlis (*A. scapigera. A. speciosa*). Stemless: lvs. oblong, cut, lobed or lyrate, 6–8 in. long, white-tomentose beneath: fls. with yellow rays purplish beneath, on scape-like peduncles.

ácorus: hort. name; plant listed as somewhat succulent, to 20 in. high, lvs. silvery, wavy, with white ray-fls. and blue disk.

breviscàpa (*A. leptorhiza* var. *breviscapa*). Stemless: lvs. oblong-lanceolate, to 6 in. long, pinnately cut, longer than scape: fls. with orange rays and dark center, the heads to 2 in. across. Var. **aurantìaca.** Fls. orange-yellow with purple disk.

calendulàcea: *Cryptostemma calendulaceum.*

Fósteri. Per. to 3 ft.: lvs. lyrate-pinnatifid, lower ones to 16 in. long, petioled, white-woolly beneath, lobes oblong, toothed, terminal one largest; upper lvs. sessile and margins often entire: heads solitary, to 4 in. diam., ray-fls. white to pale salmon-pink with golden-yellow and purple spot at base, red outside, disk-florets brownish tipped black.

grándis: *A. stœchadifolia* var.

Gúmbletonii. St. very short: lvs. to 1 ft. long and 1½ in. wide, pinnately cut or lobed: ray-fls. deep orange-red marked at base with brown, the heads 3 in. across, on peduncles to 1 ft. high.

hýbrida: hort. name.

lævis (*A. squarrosa*). Per. to 8 in., woody at base: lvs. slightly glandular, usually pinnatifid, the lateral lobes to 3 in. long and nearly ½ in. wide: ray-fls. brownish-orange suffused scarlet, disk-fls. dark brownish-purple to nearly black, on naked peduncle.

scapígera: *A. acaulis.*

speciòsa: *A. acaulis.*

squarròsa: *A. lævis.*

stœchadifòlia. African Daisy. Bushy, to 2½ ft.: lvs. obovate, to 4 in. long, toothed: ray-fls. white or white and pale violet, in heads to 3 in. across, the stalks much longer than lvs. Var. **grándis** (*A. grandis*) has lvs. to 6 in. long, obovate-oblong, toothed, and long fl.-sts.

ARCTÒUS (*Mairania*). *Ericaceæ.* Deciduous low shrubs grown for ground-cover, having alternate finely toothed lvs., urn-shaped fls. in terminal clusters, and fr. a berry-like drupe. Propagated by seeds and cuttings. Does best in shady cool locations.

alpìnus (*Arctostaphylos alpina*). Black Bearberry. Lvs. obovate or oblanceolate, to 1½ in. long, turning red in autumn: fls. white tinged with pink, ⅙ in. long: fr. black. N. Eu., N. Asia, N. N. Amer.

erythrocárpus: *A. ruber.*

rùber (*A. erythrocarpus*). Differs from *A. alpinus* in its brighter green lvs., narrower and more entire corolla and bright red larger fr. N. W. N. Amer. and E. Asia.

ARDÍSIA. *Myrsinaceæ.* Trees and shrubs with alternate simple leathery lvs., small white or rose fls. in cymes or panicles, and berry-like frs.

Grown out-of-doors in warm climates and one a popular greenhouse subject. Propagated by seeds sown late in winter or early in spring; also by cuttings of half-matured wood over bottom heat.

crenàta: *A. crispa.*

crenulàta: *A. crispa.*

críspa (*A. crenulata. A. crenata*). Lvs. oblong-lanceolate, to 3 in. long, wavy-margined, pale beneath: fls. white: berries coral-red, ¼ in. across. Malaya, China.—Shrub, but grown as a pot-plant in conservatories and residences for its abundant crop of durable bright red berries.

japónica. To 1½ ft.: lvs. elliptic, to 4 in. long, shining, crowded at ends of branches: fls. white: berries red, ¼ in. across. Japan, China.

paniculàta (*A. Pickeringia. Icacorea paniculata*). Marlberry. To 20 ft.: lvs. oblanceolate, to 7 in. long, entire: fls. white: berries black and shining, ⅓ in. across. S. Fla., W. Indies, Mex.

Pickeríngia: *A. paniculata.*

ARÈCA. *Palmaceæ.* Graceful mostly very slender-stemmed unarmed monœcious ringed feather-palms of trop. Asia and the Pacific Isls. and Australia, with spadix below the lf.-crown or in some species among the foliage, some of the species soboliferous: base of petiole widely expanded and clasping; pinnæ close together and often joined, with several prominent ribs: spadix much branched, staminate fls. occupying the terminal part of the branches or spikes, stamens 3–6; large and few pistillate fls. at the base: fr. oblong or ovoid, more or less drupe-like, 1-seeded, base inclosed in the enlarging perianth. Formerly the genus Areca was very broadly conceived, and many genera have been segregated from it. As a result, the nomenclature of the group is much confused and old literature should not be followed. Planted in S. Fla. See *Palm*.

álba: *Linoma alba*.

Álicæ. Referable to *A. triandra*, erroneously supposed at time of publication to be native in Australia. Plants grown under this name may be *Arikuryroba schizophylla*.

aùrea: see *Linoma*.

Baùeri: *Rhopalostylis Baueri*.

Cáthecu. BETEL PALM. Very slender palm with solitary trunk to 100 ft. and 6 in. diam., leafless below the relatively small crown: lvs. 3–6 ft. long, with many broad rather soft pinnæ not taper-pointed and irregularly notched or erose at apex and the upper ones confluent: fr. ovoid to globular-ovoid, mostly 2 in. or less long, orange or scarlet, with soft fibrous covering. Probably Malaya; cult. in India and elsewhere for the nut which is chewed along with the lf. of betel pepper. Lvs. sometimes variegated. Fls. fragrant. The name is commonly spelled Catechu but it was not so written by Linnæus, author of the name, in the three editions of Species Plantarum.

glandifórmis. Tall and slender, with marked rings: lvs. to 8 ft. long; pinnæ long-pointed, the midrib prominent underneath and secondary nerves more or less marked: spadix short, branched near base into branches 1 ft. or so long; pistillate fls. aggregated at base of branches, perianth enlarging. Moluccas.

Ilsemánnii. Hort. name for a palm from the Pacific Isls., perhaps not an Areca: sts. red: young lvs. dark red, becoming green. Apparently no longer offered in N. Amer.

lutéscens: *Chrysalidocarpus lutescens*.

Normánbyi: *Normanbya Normanbyi*.

rùbra: see *Linoma*.

sápida: *Rhopalostylis sapida*.

singaporénsis: probably *Ptychoraphis singaporensis*.

speciòsa: *Hyophorbe amaricaulis*.

triándra. Very attractive soft-lvd. palm making several green strongly ringed slender leafy sts. 5–10 ft.: lvs. bright green, 3–5 ft. long, with decurved broad pinnæ toothed or shallowly cut-lobed at the apex, the terminal pinnæ confluent or deeply 2-lobed: fr. oblong or long olive-like, red or orange-scarlet at maturity. India, Malaya.

Verschafféltii: *Hyophorbe Verschaffeltii*.

ARECÁSTRUM. *Palmaceæ*. Separated from Cocos on good botanical characters, considered as a single polymorphous species; native from Bahia in Brazil to Uruguay, Argentina, Paraguay and Bolivia. Unarmed monœcious feather-lvd. tree with solitary ringed trunk; spadix from axils of lower lvs., the staminate fls., with 6 stamens, on upper part of the branches and pistillate on lower part; spathe strongly plicate-sulcate, or grooved, on outside; pistillate fls. ovate when closed, the petals valvate at apex: fr. variable, 1 or 2 in. long, globose, ovate, elliptic or obovate; nutlet with thick bony wall; albumen of seed solid and not ruminate. In cultivation the trees vary widely in stature and habit, but these differences may not be botanically significant any more than comparable divergencies in apple trees, American elms and coconuts. See *Palm*.

Romanzoffiànum (*Cocos Romanzoffiana. C. plumosa*). QUEEN PALM. Medium-sized tree to 30 ft. or more, the trunk smooth and plainly ringed, usually carrying a few dead hanging lvs. and old bases under the graceful crown: lvs. 8–15 ft. long, decurved, many or most of the mature pinnæ (which are soft in texture) making a characteristic bend or knuckle beyond or near the middle at the point where they begin to droop; pinnæ many, green both sides, mostly not exceeding 1 in. broad and most of them narrower, long-pointed, with faint side nerves: spathe 2–3 ft. or more long; branches of big spadix drooping: fr. globose to globose-ovate, about 1 in. lengthwise (to 1¼ in.) and nearly or quite as long as broad, borne in a heavy hanging truss. Cent. and S. Brazil. Commonly planted in S. Fla. and S. Calif. and in tropics. Var. **austràle** (*Cocos australis* of botanists, not hort. *C. Arechavaletana. C. Datil. C. flexuosa* of hort.). Fr. ovate-elliptic, the breadth distinctly less than the length and sometimes only about half as much: considered to be a more slender and graceful tree than the species and with rather smaller crown, but this is to be confirmed; this var. appears to be the prevailing form of the tree commonly planted in S. Calif., Fla. and elsewhere as *Cocos plumosa*. S. Brazil, Uruguay, Paraguay, Argentina. Var. **botryóphorum** (*Cocos botryophora*). Very tall robust tree with heavy upright crown: fr. large, globose-ovate or -obovate, 1½–2 in. long. Brazil.

AREGÈLIA. *Bromeliaceæ*. Epiphytic herbs with prickly-toothed lvs. in a basal rosette and white, violet or blue fls. in simple dense heads among the lvs.; sometimes grown under glass. For cult. see *Bromelia*.

marmoràta. Stemless: lvs. lorate, to 1 ft. long, in rosettes of 10–15, marbled with patches of reddish-brown on both sides, bright red spot below cuspidate tip, marginal prickles small: fls. pale violet, corolla scarcely longer than calyx, heads to 2 in. diam. Brazil.

spectábilis. To 18 in.: lvs. lanceolate to spatulate, to 15 in. long, light green transverse bands across reverse side, margins serrulate, rounded apiculate apex with noticeable red spot: fls. white becoming pale blue at tip. Brazil.

trístis. Lvs. to 1 ft. long and 6 in. wide, mottled with brown: fls. purple. Brazil.

ARENÀRIA. SANDWORT. *Caryophyllaceæ*. Low herbaceous annuals and perennials, often forming mats, suitable for borders, carpets, rock- and alpine-gardens, walls and lawn clumps: spring or summer-blooming; fls. usually white, small, terminal or clustered, sometimes axillary: lvs. entire, narrow and opposite: native around the world but rare in the tropics.

A few of the kinds entered here are listed in the trade also as Alsine, and a troublesome question of nomenclature is involved. For our purposes, however, they are retained in Arenaria. Usually only the perennial species are cultivated and these require no special soil or treatment unless they are alpines. Propagated by division and by seeds, the rare species sometimes by cuttings.

æquicaùlis: *A. verna* var. *pubescens*.

alpìna: plants so named are referable to *A. sajanensis*.

Arduìnii: probably *A. graminifolia*.

Armeriástrum. Tufted per.: lvs. linear-lanceolate, obtuse, very short, glabrous, somewhat ciliate: fls. white, usually 3–4 in dense head-like cymes, petals longer than the lanceolate sepals; peduncles glandular-puberulent. Spain.

austrìaca. Per. to 10 in.: lvs. linear-lanceolate: fls. white, in 2's, on glabrous pedicels and peduncles; pedicels 6–9 times as long as calyx. Alps.

baleárica. CORSICAN S. To 3 in., creeping: lvs. ovate, to ⅛ in. long, glossy, thick and ciliated: fls. white, solitary, on long slender capillary pedicels. Balearic Isls., Corsica; not hardy north of N. Y. City.

banática. To 8 in. or less: lvs. ciliate: fls. white with white sepals striped green, in 3–5-fld. clusters. S. E. Eu.—Probably not distinct from *A. setacea*.

Bauhinòrum: *A. liniflora*.

biflòra (*Alsinopsis biflora*). Per. with decumbent sts.: lvs. obovate, to ⅛ in. long: fls. white, usually in pairs, sepals obtuse, non-glandular, slightly shorter than pedicels. Greenland to B. C.

cæspitòsa: *A. verna* var.

capillàris. Per. to 8 in. with numerous very slender sts.: lvs. mostly basal, awl-shaped, ½ in. or more long: fls. white, in loose cymes. B. C. to Calif., Asia. Var. **formòsa** is listed but may not differ appreciably from typical form.

caroliniàna (*A. squarrosa. Sabulina caroliniana*). Tufted per. to 10 in.: lvs. awl-shaped, stiff; internodes short: fls. white, ½ in. across, in few-fld. terminal cymes. N. Y. to Fla.—Differs from *A. capillaris* in its shorter lvs. and internodes.

caucásica: *A. pinifolia*.

cephalòtes. Sts. erect: lvs. filiform, ciliate: fls. in a compact thyrse, petals exceeding the ovate-acuminate sepals. S. Russia.

ciliàta. Per., finely pubescent, sts. ascending, to 1 ft. long: lvs. ovate, acute, many-nerved, ciliate: fls. white, usually 2–6 in loose cymes, pedicels commonly 2–4 times as long as calyx, sepals ovate-lanceolate, slightly shorter than the entire petals: caps. ovoid, about as long as calyx. Eu.

compácta. Cushion-like per. to 2 in.: lvs. linear, minutely glandular and denticulate, to ⅛ in. long: fls. white, solitary. Mts., Calif.

congésta. Per. to 10 in.: lvs. needle-like, to 2 in. long, ciliate-serrulate near base, dense and viscid: fls. white, in congested heads, on simple slender peduncles. Colo. to Calif. and Wash.

cuspidàta: listed name.

fláccida: see *A. laricifolia.*

formòsa: *A. capillaris* var.

glabréscens (*A. macradenia*). Shrubby per. to 1 ft., glabrous: lvs. filiform, to 1¾ in. long: fls. white, sepals ovate-lanceolate, acute. Utah to Ariz. and Nev.

grácilis. Slightly tufted sticky-pubescent per. to 4 in.: lvs. lanceolate: fls. white, in 2's on long pedicels, petals bifid. S. E. Eu.

graminifòlia (*A. Rosanii*). To 1 ft., glandular-pubescent: lvs. narrowly lanceolate, borne stiffly erect, to 2 in. long, acute: fls. white, in compact heads on peduncles to 1 in. long. Eu.—Not known to be cult.; plants so listed are *A. Preslii.*

grandiflòra. To 10 in. or less: lvs. flat awl-shaped, ciliate: fls. white, large, solitary or in 2's or 3's, sepals with single conspicuous midrib, glandular-puberulous: caps. longer than calyx. Eu.—Runs into many forms although much of the material so listed is *A. laricifolia.*

grœnlándica. Ann., glabrous, very low, forming mats, the decumbent or erect sts. bearing 1–5 white fls.: petals twice as long as the obtuse sepals: lvs. small and narrow. Greenland and Lab. to mts. of N. C.

Hoòkeri. Tufted per. to 6 in.: lvs. subulate, ¼–2 in. long, sharp-pointed: fls. white, in dense cymes, sepals narrowly lanceolate and shorter than petals. Mont. to Colo.

juniperìna (*Alsine juniperina*). Tufted, to 6 in.: lvs. awl-like, nodes swollen, internodes to ¼ in. long: fls. white, in umbellate cymes, sepals about ⅛ in. long. Mts. of E. Eu., Asia Minor.

Kíngii. Per. to 4 in., sts. somewhat woody, glandular above but glabrous below: lvs. filiform, to 3 in. long, mostly erect, to 1½ in. long: fls. white, petals deeply 2-cleft, slightly longer than the lanceolate and glandular-puberulent sepals. Mts. of Utah and Nev.

Koriniàna. Per. to 15 in.: lvs. narrowly linear-lanceolate, setaceous, arising from jointed nodes along erect sts., margin scabrous: fls. white, in 2–7-fld. cymes to biternate corymbs, long-pediceled, petals about twice as long as the ovate obtuse sepals. Russia.—Similar to *A. Preslii*, differing in its much less leafy sts. and technical characters of the caps. Much of the material listed as *A. Koriniana* is *A. Preslii.*

Kotschyàna. Per. to 6 in., glabrous: lvs. linear, acute, to ½ in. long: fls. white, in cymes, on pedicels nearly 1 in. long or more. Asia Minor.

Landriàna: listed name.

laricifòlia. To 8 in.: lvs. awl-shaped, falcate, to ⅝ in. long, acute: fls. large, white, solitary or clustered, sepals lanceolate-oblong, 3-ribbed, hairy: caps. shorter than calyx. Switzerland.—Much of the material listed as *A. grandiflora*, *A. pinifolia* and *A. flaccida* belongs here.

Ledebouriàna. Alpine per., cespitose, glabrous, dichotomous, branched to 6 in. long: lvs. rigid, narrow-awl-shaped and crowded: fls. on stiffish slender glabrous pedicels, sepals keeled, glabrous, mucronate, half as long as petals. S. E. Eu.

leptócladus. Ann. similar to *A. serpyllifolia*, differing in its smaller narrower lvs., with slenderer branches and narrower caps. Eurasia; escaped in Va. and N. C.

liniflòra (*A. Bauhinorum*). Tufted, to 8 in.: lvs. narrowly linear, acute: fls. white, to ½ in. across, sepals densely hairy, shorter than the caps. Eu.

lithóphila. Per. to 1 ft., smooth: lvs. filiform, usually ¾–2 in. long, erect: fls. white, petals twice as long as obtuse sepals. Sask. to Wyo. and Ida.—Perhaps only a variant of *A. congesta* from which it differs in its more open infl. and non-keeled sepals.

longifòlia: *A. Preslii.*

macradènia: *A. glabrescens.*

macrántha (*Alsinopsis macrantha*). Spreading tufted per. to 4 in.: lvs. subulate-filiform, to ½ in. long, obtuse, glabrous, 1-nerved: fls. white, petals longer than the acute sepals. Colo.

marìna: *Spergularia salina.*

montàna (*Alsine montana*). To 4 in.: lvs. lanceolate, to ¾ in. long: fls. white, large, solitary, petals 2–3 times as long as calyx. S. W. Eu. Var. **grandiflòra** is listed.

muscòsa (*Moehringia muscosa*). Per. to 1 ft., glabrous, bright green: lvs. linear-filiform, to 1 in. long, acute, fleshy, 1-nerved: fls. white, in cymes of 2–6, sepals lanceolate, styles 2: caps. 4-valved. Cent. and S. Eu.

nórica: hort. name.

obtusíloba. Allied to *A. sajanensis* and often confused with it, differing in lvs. obtuse and more oblong, calyx and pedicels glandular, and wider petals. Alta. to New Mex.

octándra (*Minuartia aretioides*). Cespitose per. to 2 in., many-stemmed: lvs. linear-lanceolate to ovate, to ⅛ in. long, obtuse, fleshy, 3-nerved: fls. whitish, petals 4 and shorter than lanceolate sepals, styles usually 3, Austrian Alps.

pátula. Ann. to 10 in., finely pubescent to glabrous: lvs. linear-filiform, to 1 in. long, obtuse to acutish: fls. white, several in open terminal cymes, petals emarginate, sepals lanceolate, ribbed, acuminate. Ky. to Minn. south to Ala. and Tex.

peploìdes. Branches procumbent, fleshy, to 4 in.: lvs. ovate-elliptic, to ⅝ in. long, light green, fleshy: fls. white. Eu., N. Amer.

pinifòlia (*A. caucasica*). Dwarf cespitose per. with ascending parts: lvs. narrow-awl-shaped or bristle-like, usually ½–1 in. long: fls. white, in small corymbs. Asia Minor.

Préslii (*A. longifolia. A. graminifolia* of hort.). Tufted, glabrous, to 15 in.: lvs. linear and flaccid, the basal ones grass-like, to 8 in. long, st.-lvs. to 2 in. long, margins usually rough: fls. white, in loose open corymbs, petals about twice as long as ovate and usually obtuse sepals. Cent. Eu.—Widely distributed as *A. graminifolia* but this name must be reserved for the plant so listed in last column and differing from *A. Preslii* in its shorter stiff lvs. and compact head-like infl. Most of the material in the trade as *A. tmolea* is *A. Preslii.*

pùbera: *Stellaria pubera.*

púngens. Forming bristly tufts to 8 in. and more high: lvs. thorny, very narrow, nodes swollen: fls. white, solitary or in compact clusters, terminal or in axils near tip of branches. Spain.—Resembles *A. juniperina* from which it may be distinguished by its sepals ¼ in. long or more and internodes more than ½ in. long.

purpuráscens. Decumbent, tufted, to 4 in.: lvs. ovate-lanceolate: fls. rose-lilac, 2–3: caps. cylindrical and much exceeding calyx-lobes. Pyrenees.

pusílla (*Alsine pusilla*). Ann. to 2 in.: lvs. lanceolate, to ⅙ in. long, usually glabrous: fls. white, petals shorter than sepals. Calif. to Wash.

racemòsa. Somewhat woody per. to 3 in. high, making mats: lvs. awl-shaped, curved, to ¼ in. long, puberulous-ciliate: fls. white, solitary, sepals lanceolate, acute and nearly as long as petals. Spain.

recúrva (*Alsine recurva*). Low tufted per. to 5 in., woody at base: lvs. subulate, to ⅓ in. long, often clustered: fls. white, openly corymbose, petals as long or longer than the 5–7-nerved lanceolate sepals. Asia Minor.

rèpens. Per., prostrate, pilose: lvs. ovate, subsessile: fls. solitary in axils, on short leafy peduncles, sepals lanceolate, acute, as long or longer than corolla. Nativity not known.

rígida. Per. to 1 ft., branched: lvs. linear, to 5 in. long, margins rough: fls. white, in panicles. S. Russia.—Differs from *A. Preslii* in panicles compact and petals about as long as sepals.

Rosànii: *A. graminifolia.*

rotundifòlia. Spreading tufted branches to 6 in.: lvs. roundish, ciliate, ¼ in. across: fls. white, in axillary or terminal clusters on short pedicels. Siberia.

rupéstris (*Alsine rupestris*). Tufted per. to 3 in., woody at base, glandular-puberulent: lvs. stiffly subulate, obtuse: fls. pink, in 3–5-fld. cymes, petals 1½ times as long as calyx, and pedicel 2–3 times as long as calyx. Syria.

sajanénsis. A somewhat confused name which has been used for three different plants: true *A. sajanensis*, *A. obtusiloba* and *A. laricifolia.* The true species is compact, with filiform branches, to 5 in.: lvs. subulate, to ⅓ in. long, obscurely keeled: fls. white with very narrow petals. N. Eu. and Arctic Amer. south in mts. to Ariz. and Que.

saxátilis: a confused name horticulturally, much of the material so listed may be referred to *A. verna.*

Saxífraga. Alpine cespitose per., glandular-hirsute: lvs. in rosettes, linear-lanceolate, about ½ in. long, acute, 5–7-nerved: fls. 2–7 in a cluster. S. E. Eu., Asia Minor.

serpyllifòlia. Ann. or bien. or sometimes per. to 1 ft., upright or prostrate, much branched: lvs. ovoid, hairy: fls. white, solitary, sepals longer than petals. Eu., Asia, N. Amer.

squarròsa: *A. caroliniana.*

Steveniàna. Per. to 10 in.: lvs. bristle-like, margins white-cartilaginous: fls. white, in panicles. Armenia.—Resembles *A. Preslii*, differing in its shorter lvs. and glandular pedicels and peduncles.

strícta (*Sabulina stricta*). Tufted per. to 1 ft.: lvs. linear-awl-shaped, to ¾ in. long, stiff, with fascicles of smaller lvs. in the axils: fls. white, ⅓ in. across, in axillary clusters, sepals mostly ovate. N. H. to S. C. and Mo.

tetraquètra. Per. to 1 in.: lvs. oval, imbricated, leathery: fls. white, solitary, sepals and petals 4. Spain, Portugal.

texàna. Per. resembling *A. stricta* and of which it may be only a variant, differing in lvs. only to ½ in. long, a denser infl. and lanceolate sepals. Mo. to Tex.

tmòlea. Tufted, st. very short: lvs. ovate-oblong, to ⅓ in. long: fls. white, in clusters of 1–3, sepals and pedicels glandular-hairy. Asia Minor (Mt. Tmolus, etc.).

vérna. To 3 in.: lvs. flat, narrow: fls. white, on thread-like sts. Eu. and Rocky Mts. Var. **aùrea** is listed as a form with yellowish-green lvs. Var. **pubéscens** (*A. æquicaulis*) differs from the typical form in its glandular-pubescent to puberulent calyces and pedicels. A compact leafy form making dense moss-like masses is listed as var. **cæspitòsa,** it occurs in dark and yellow-green foliage forms and is best propagated by division or cuttings.

ARÉNGA. *Palmaceæ.* Several monœcious feather-palms (lvs. sometimes pinnatisect) of trop. Asia and Malaya, unarmed except for needles in the heavy lf.-sheath fibers in some species, flowering from the upper lf.-axils downwards, in some kinds the tree dying when the last spadix has fruited: trunk solitary or several: pinnæ or parts with many strong nerves beside the midrib, whitish or gray underneath, jagged, notched or cut off at apex which is sometimes broadened, and often notched on sides: spadix much branched, peduncle short, branches drooping; sexes usually separate on different spadices but sometimes a pistillate between two staminates; stamens many: fr. more or less drupe-like, obovoid to globose, 2–3-seeded. Planted in warmest parts of U. S., and in western tropics. See *Palm.*

Ambóng (*A. mindorensis. A. tremula*). Trunk short and thick, but plant becoming a tree: lvs. very large, the blade to 10 ft. long and petiole to 6 ft.; pinnæ to 2 ft. and more long, somewhat paper-like, with several deep indentations or constrictions on either side: fr. globular, about 1 in. diam. Philippines.

Éngleri. Handsome, dwarf, perhaps to 10 ft.: lvs. gray-tomentose or -pubescent underneath, with many pinnæ that are narrow at the base of the lf. and broad towards its top, the sides and apex variously notched and jagged: spadix short: fr. about 1 in. or less across, subglobose, 3-seeded. Formosa; reported outdoors in S. Calif.

mindorénsis: *A. Ambong.*

pinnàta (*A. saccharifera*). Sugar Palm. Monocarpic large palm, dying when the last spadices have ripened their fr.; trunk solitary, to 40 ft.: lvs. to 20 ft. and more long, whitened beneath; pinnæ to 100 or more on either side, single and fascicled, variously dentate or notched or 2-lobed at apex: fr. oblong-turbinate, about 2 in. long or somewhat more, flat or depressed on top, borne on very long spadices. Malaya.—Cult. in India for sugar made from the sap and for other uses; planted in S. Fla.

saccharífera: *A. pinnata.*

trémula: *A. Ambong.*

AREQUÌPA. *Cactaceæ.* A small genus of the subtribe Echinocactanæ, composed of 2–3 species, growing in mts. of Peru and N. Chile, characterized in part by long funnelform fls. having a scaly tube and ovary, with the scale axils hairy, the dry fr. dehiscing by basal pore.

leucótricha (*Echinocactus leucotrichus*). Solitary or cespitose, occasionally branching, globose to subcylindric, to 2 ft. long, erect, ascending or prostrate; ribs 10–20, compact; spines 6–20, pilose on seedling and young plants, becoming glabrous with age, radials to 1¼ in. long, centrals longer: fls. scarlet, to 2½ in. long, tube slender, straight. Chile.

Weingartiàna: listed name of uncertain botanical standing.

ARETHÙSA. *Orchidaceæ.* Low terrestrial orchids, one native in bogs in E. N. Amer. and sometimes planted in cool moist protected places. **A. bulbòsa.** To 10 in., with small bulbs: lf. solitary, linear, to 6 in. long: fls. solitary or rarely 2, rose-purple, nearly 2 in. long; lip drooping, fringed or toothed, white spotted with purple and yellow.

ARGÀNIA. *Sapotaceæ.* One hardwooded evergreen tree to 20 ft., often with spiny branches, native in Morocco. **A. Sideróxylon.** Lvs. lanceolate-spatulate, entire, glabrous: fls. greenish-yellow, 5-parted, in clusters: fr. an oblong berry, the seeds yielding oil.—May be planted in S. Calif. Propagated by layers and cuttings.

ARGEMÒNE. Argemony. Prickly-Poppy. *Papaveraceæ.* American prickly herbs (1 shrubby, not in cult.) with yellow juice, pinnatifid spine-tipped lvs., and large terminal fls., sepals often horn-tipped; grown as annuals in flower-garden. They thrive in any good soil and sunny exposure. Latin name in four syllables.

álba (*A. intermedia*). To 3 ft. and more, with pale or glaucous foliage: fls. large, white, the sepals with only slight tips: caps. somewhat hispid. Southern states and Mex.

grandiflòra. To 3 ft.: lvs. white-veined: fls. white, 2 in. across, the sepals with stout long tips: caps. not prickly or only slightly so. Mex. Var. **lùtea** has yellow fls.

híspida: *A. platyceras* var.

intermèdia: *A. alba.*

mexicàna. To 3 ft.: lvs. white-veined, glaucous: fls. yellow or orange, 2 in. across: caps. prickly. Trop. Amer.

platycèras. Crested P. To 4 ft.: lvs. somewhat glaucous: fls. white or rarely purple, 2 in. across, closely subtended by bract-like lvs.: caps. very spiny. N. and S. Amer.—Apparently most common garden kind. Var. **gigantèa** is listed as more vigorous. Var. **híspida** (*A. hispida*), Hedgehog P., is densely bristly as well as having yellow spines. Var. **ròsea** has brownish-purple fls.

ARGENTACER: *Acer saccharinum.*

ARGENTINA: *Potentilla Anserina.*

ARGETA: *Gibbæum petrense.*

ARGYRÈIA. *Convolvulaceæ.* Twining (seldom nearly erect) pubescent or tomentose shrubs or per. herbs of Asiatic origin, with alternate simple lvs. and showy purple or rose funnelform fls.; grown under glass, and in the open far S. Propagated by seeds and cuttings over heat.

speciòsa. Woolly Morning-Glory. Large climber: lvs. to 1 ft. across, ovate-cordate, white-tomentose underneath: fls. rose, 2–3 in. long, on stalks to 6 in. long. India, Java, China.

spléndens (*Convolvulus splendens*). Silver Morning-Glory. Tall climber: lvs. to 7 in. long and 4 in. across, elliptic with angular or rounded never cordate base, white-silky-hairy underneath: fls. rose, 1½ in. long, on stalks 1–4 in. long. India.

ARGYRODÉRMA. *Aizoaceæ.* S. African succulents of the Mesembryanthemum association, having solitary terminal bracted sessile fls. with numerous free petals; stigma 1, circular or oval.

aùreum. Lvs. about 1 in. long, upper surface somewhat rhomboid: fls. yellow or golden, seated between the diverging lvs.; petals in 6 series, obtuse, truncate or emarginate.

Braùnsii (*Cheiridopsis Braunsii*). Lvs. in 1 or 2 pairs, keeled, shining blue-green, often with red edges and keel, 2 in. long and ½ in. wide and thick.

brévipes (*M. brevipes. Roodia digitifolia*). Lvs. 4–6, 2 in. long and ¼ in. wide, half-cylindrical, obtuse: fls. rose or purple, ¾ in. across, petals linear.

Delaètii: *A. roseum.*

físsum (*M. fissum*). Similar to *A. brevipes* but lvs. grayish-white.

Lésliei: *A. octophyllum.*

necopìnum. Plant becoming tufted: lvs. to 1 in. long, ¾ in. wide and ½ in. thick, obtuse: fls. bright yellow, to ¾ in. across, petals linear.

octophýllum (*M. octophyllum. A. Lesliei*). Lvs. about 1 in. wide, broader than long, ½ in. thick, whitish: fls. yellow, to 1½ in. across, petals somewhat spirally curved.

ròseum (*A. Delaetii*). Lvs. united about halfway, 1¼ in. long, 2 in. wide and 1 in. thick, bluish-green: fls. violet-rose, 3 in. across, petals very lax.

Schléchteri. Plant of 1 pair of lvs. united about halfway, ¾ in. long and ½ in. wide, bluish-green.

testiculàre (*M. testiculare*). Plant consisting of pair of ovate lvs. to 1½ in. long, 2 in. wide and 1 in. thick, smooth and whitish: fls. white.—The plant cult. under this name is usually *A. octophyllum*.

ARIDÀRIA. *Aizoaceæ*. Segregate from Mesembryanthemum, differing in technical characters: corolla showy, ¾–1½ in. or more across: seeds compressed and tuberculate. S. Afr., in dry habitats. For cult. see *Mesembryanthemum*.

longispínula: *Sphalmanthus longispinulus*.

pentagòna. Shrubby, with spreading branches to 6 in. long: lvs. erect or spreading, to 1 in. long and ⅛ in. wide and thick: fls. solitary, orange to golden-brown, about 1 in. across.

radìcans. Prostrate, with rooting branches to 1 ft. long: lvs. erect or spreading, to 1 in. long and ⅛ in. wide and thick: fls. solitary, white or pale yellowish, 1¼ in. across.

spinulòsa: perhaps an error for *Mesembryanthemum spinosum*.

spléndens (*M. splendens*). Somewhat woody per., branched, erect: lvs. half-cylindric, glaucous, to 1 in. long, crowded: fls. white, on short thickened peduncle, the petals dentate.

ARIKURYRÒBA. Arikury Palm. *Palmaceæ*. One small graceful monœcious feather-palm of trop. Brazil, unarmed except for the strongly spined petioles, differing from Cocos (from which it is a segregate) in the small ovate pistillate fls. with valvate petals and plicate-sulcate spathe as well as in habit and much smaller fr. which has a solid and ruminate albumen; nutlet with thin fragile wall. **A. schizophýlla** (*Cocos schizophylla. Arikury schizophylla. Arikuryroba Capanemæ.*) Trunk 2–8 ft., solitary, covered for the most part with lf.-bases: pinnæ green both sides with strong midrib and faint side nerves, about 1 in. broad, notched or cut at apex: spadices in the axils of lower lvs., long-peduncled and becoming declined; staminate fls. on upper part of branches: fr. ellipsoid, 1 in. or more long, in a grape-like cluster. Probably adapted to S. Fla. *Butia Bonnetii* has apparently been planted as *Cocos schizophylla*. See also *Areca Alicæ*.

ARIL: an appendage or an outer covering of a seed, inside the pericarp, growing out from the hilum or funiculus; sometimes it appears as a pulpy covering.

ARIOCÁRPUS (*Anhalonium*). *Cactaceæ*. Spineless or nearly so, making a small nearly globular or top-shaped body of which the larger part is in the ground, with spirally arranged leaf-like thick tubercles: fls. diurnal, opening wide, from axillary areoles located between the tubercles, the areoles on the apex of the tubercles being barren.

fissuràtus: *Roseocactus fissuratus*.

furfuràceus: *A. retusus*.

Kotschoubeyànus: *Roseocactus Kotschoubeyanus*.

Llóydii: *Roseocactus Lloydii*.

McDowellii: listed name of unknown botanical standing.

prismáticus: *A. retusus*.

retùsus (*A. furfuraceus. A. prismaticus*). Seven Stars. Body globular or flattish, woolly in center, about 4 in. across; tubercles to 1 in. long, spreading, not grooved on upper side: fls. nearly or quite white to pink, to 2 in. or more long; stigma 6–8-lobed. Mex.

scapharóstrus. St. to nearly 4 in. thick; tubercles triangular to 2 in. long and angles acute, areoles absent: fls. purple-red. Mex.

strobilifórmis. Body slightly flattened, about 1½ in. high and 2¼ in. diam., bluish-green, covered with scale-like tubercles, resembling a pine cone, crown slightly sunken and with short gray wool, areoles near top with 10–12 small bristles: fls. near the crown, very small. Mex.

sulcàtus: *Roseocactus Kotschoubeyanus*.

trigònus. Similar to *A. retusus* from which it differs in its more erect tubercles to 2 in. long, its pale yellow fls. and 8–10-lobed stigma. Mex.

ARISÆMA. *Araceæ*. Widely distributed herbs mostly with tuberous roots, palmately compound or dissected lvs., and unisexual fls. borne on a spadix which is surrounded by the tubular spathe, the limb often arching above.

A few species are sometimes transplanted from the wild into moist shady places. Propagated by tubers and seeds.

Dracóntium. Dragon-Root. To 4 ft.: lvs. pedately 5–17-parted into lfts. to 10 in. long and 4 in. wide: spathe greenish, the tail-like spadix projecting: berries reddish-orange. Me. to Fla. and Tex.

Gríffithii. Lvs. of 3 nearly orbicular lfts. to 10 in. long: spathes rich purple veined green, with a spreading and wrinkled limb to 8 in. across. Himalayas.

japónicum: *A. serratum* var. *Blumei*.

serràtum. Lvs. pedately 5–11-parted into slender-pointed more or less serrate lfts. to 6 in. long and 2 in. wide: spathes green or purplish, on stalks to 20 in. high. Japan. Var. **Blùmei** (*A. japonicum*) has entire lfts. and pale spathes.

speciòsum. Lvs. of 3 oblong to oblong-lanceolate lfts. to 16 in. long, the petiole spotted with purple: spathes purple with striped tube and caudate-acuminate limb; spadix with dark purple tail to ½ ft. long. Himalayas.

triphýllum. Jack-in-the-Pulpit. Indian Turnip. To 3 ft.: lvs. of 3 ovate or oblong-ovate lfts. to 7 in. long and 3½ in. wide: spathes green striped with purple, arched in a broad flap over the spadix: berries red. E. N. Amer.

Wallichiànum. Lvs. of 3 broad-ovate lfts. to 8 in. long: spathes striped pale and dark purple, the slightly curved limb with tail-like tip. Himalayas.

ARÍSTEA. *Iridaceæ*. African herbs with lvs. in basal rosette and blue fls. in spikes, racemes or corymbs, the perianth-tube short and segms. twisting up spirally after flowering; grown under glass or in the open in Calif. Propagated by seeds and division.

capitàta. To 4 ft.: lvs. to 4 ft. long and ½ in. wide, rigid: fls. ½ in. long, in long narrow panicles. S. Afr.

compréssa. To 1½ ft.: lvs. linear, to 1 ft. long and ⅓ in. across, strongly ribbed: fls. green with white and brown edges, in lax panicles: pod to ¼ in. long. S. Afr.

Écklonii. To 1 ft. or more: lvs. to 1½ ft. long and ½ in. wide: fls. ⅓ in. long, in loose panicles. S. Afr.

lùcida: name of a plant 2 ft. tall with blue fls., botanical standing not clear.

ARÍSTIDA. *Gramineæ*. Tufted per. grasses, having narrow often involute lvs. and narrow 1-fld. spikelets borne in panicles; adapted to dry soil and rarely planted.

purpùrea. To 16 in.: lvs. to 5 in. long, involute: panicles to 8 in. long, with slender flexuous branchlets, spikelets with awns to 1 in. long. Ark., La. to New Mex.

ARISTOLÒCHIA. Birthwort. *Aristolochiaceæ*. Per. shrubs and herbs, mostly climbers, with usually heart-shaped entire lvs., bent odd-shaped very irregular tubular calyx simulating a corolla, often constricted at the mouth and sometimes tailed, and fr. a caps.; native in warm and temp. regions, and grown as porch vines or in the greenhouse, and a few of them as erect garden herbs.

The tender kinds do best in a greenhouse border of rich soil. Propagated by cuttings of ripened wood over heat, layers, and seeds. *A. durior*, hardy North, is a rapid grower and makes good screens for porches and for covering buildings.

brasiliénsis. Climbing: fls. dingy-yellow veined with purple, with 2 very unequal lips, the upper narrow and to 4 in. long, the lower to 4 in. long and 7 in. across. Brazil. Var. **macrophýlla** has large lvs.

califórnica. Climbing to 12 ft., woody, deciduous: fls. greenish-purple, with strongly bent tube about 1½ in. long, and 2-lipped limb, the upper lip 2-lobed. Calif.

Clematìtis. Erect, to 2 ft., herbaceous: fls. yellowish-green, to 1½ in. long, with straight tube, in axillary clusters. Eu.; nat. in E. U. S.

dùrior (*A. macrophylla. A. Sipho*). Dutchmans-Pipe. Woody, climbing to 30 ft.: fls. yellowish-green, with curved U-shaped tube to 3 in. long and 3-lobed brownish-purple limb to 1 in. across. Pa. to Ga. and Kans.

élegans. Calico-Flower. Slender woody climber with drooping branches: fls. with yellowish-green inflated tube to 1½ in. long and nearly circular entire limb to 3 in. across, white veined purple outside, purple-brown inside. Brazil.

fimbriàta. Sts. scarcely climbing: fls. with green strongly curved tube inflated at base and one-sided cordate limb to 1 in. across, greenish-brown outside, purple-brown inside veined with yellow, edged with long hairs. Argentina.

galeàta. Climber: fls. with curved tube inflated below, to 3 in. long, and 2-lobed dark purple lip, the upper to 3 in. long and lower to 5 in. long which is clawed and expanding into broad blade purple outside and whitish inside. Brazil.

Galeóttii. Herbaceous climber: fls. brown, with straight tube inflated below and broad-lanceolate limb barbed within. Mex.

gigantèa: *A. grandiflora* var. *Hookeri.*

gìgas: *A. grandiflora.*

grandiflòra (*A. gigas*). Pelican-Flower. Climbing, woody: fls. with yellowish-green inflated tube and cordate-ovate wavy limb 6 in. and more across, veined and spotted purple, with long tail. Jamaica. Var. **Hoòkeri** (*A. gigantea*), fls. with short tails. Var. **Stúrtevantii,** fls. very large with tails to 3 ft. long.

hastàta. Erect herb to 3 ft.: lvs. narrow-lanceolate or linear, hastate or sagittate: fl. S-shaped, greenish, near the ground. S. U. S.

kewénsis. Hybrid between *A. trilobata* and *A. brasiliensis.*

macrophýlla: *A. durior.*

macroùra. Herbaceous climber: fls. brownish-green, with strongly curved tube inflated below and broad-cordate dark brown lip with slender twisted tail to 1½ ft. long. Brazil.

odoratíssima. Sweet-scented climber: fls. purple, with inflated tube about 1 in. long and cordate-oblong limb to 3 in. long. Jamaica, Cent. Amer.

Serpentària. Virginia Snakeroot. Erect, to 3 ft., herbaceous: fls. about 1 in. long, greenish, with curved tube and short slightly 3-lobed limb. Conn. to Fla. and La.

Sìpho: *A. durior.*

Stúrtevantii: *A. grandiflora* var.

tomentòsa. Climbing to 30 ft., woody: fls. about 1½ in. long, with greenish-yellow U-shaped tube and yellow reflexed 3-lobed limb ¾ in. across. N. C. to Fla. and Mo.

triangulàris. Herbaceous climber with triangular lvs.: fls. bright purple, spotted and veined, about 1 in. long, with curved tube inflated below and broad-ovate emarginate lip. Brazil.

ARISTOLOCHIÀCEÆ. Birthwort Family. Five genera mostly of warm regions, herbs or shrubs with alternate lvs., bisexual fls. with corolla-like 3-lobed calyx of various forms and colors, 6–36 stamens, mostly inferior 4–6-celled ovary, and capsular frs. Aristolochia and Asarum are known to hort.

ARISTOTÈLIA. *Elæocarpaceæ.* Evergreen trees or shrubs native in the southern hemisphere, with simple lvs. opposite or nearly so, small unisexual fls. and fr. a berry; planted in S. Calif. for ornament. Propagated by cuttings of ripe wood under glass.

Colensòi. Similar to *A. racemosa* but smaller with quite glabrous lvs., simple racemes and smaller berries. New Zeal.

fruticòsa. Shrub to 8 ft., much branched: lvs. leathery, obovate, to 1 in. long, entire or lobed or on young plants pinnatifid: fls. solitary or in 3–6-fld. cymes. New Zeal.

Mácqui. Shrub to 7 ft.: lvs. oblong, about 3 in. long, toothed, shining and sometimes variegated: fls. greenish. Chile.

racemòsa. New Zealand Wineberry. Tree to 25 ft.: lvs. ovate, to 5 in. long, deeply sharp-toothed: fls. rose, in many-fld. panicles: berry dark red or nearly black, size of pea. New Zeal.

ARMATOCÈREUS. *Cactaceæ.* A recently segregated genus of cacti which has not been validly published and whose botanical position is difficult to ascertain. Most of the species ascribed to it are given here under *Lemaireocereus,* which see. Among those not referable elsewhere are *A. Jujuianus* and *A. matucanensis,* the latter said to differ from *Lemaireocereus lætus* in its thicker body and wider fls.

ARMED: provided with any kind of strong and sharp members, as if for defense, as of thorns, spines, prickles, barbs.

ARMÈRIA (*Statice,* in part). Thrift. Sea-Pink. *Plumbaginaceæ.* Dwarf perennials with usually narrow persistent lvs. in tufts or basal rosettes, fls. in heads on wiry scapes blooming early spring to late autumn. For discussion of generic nomenclature, see *Statice.*

Thrifts are useful in the border and rock-garden, and are sometimes used as edging plants. They succeed in any soil, doing best in a well-drained location in full sun; the true alpine forms, such as *A. juniperifolia,* require complete surface drainage especially during the summer months. Propagated by seed or cuttings. Many of the species and their varieties hybridize freely and much of the material in the trade represents mixtures of various trade binomials and not the species indicated.

Recent studies indicate that most of the linear-leaved forms represent variants of a single polymorphic species and not separate entities as heretofore treated.

alpìna: *A. maritima* var.

árctica: an ambiguous name; material so listed is referable to *A. maritima* var. *californica* or var. *purpurea.*

argyrocéphala: *A. canescens* var. *leucantha.*

Armèria: *A. maritima* var. *elongata,* but much of the material so listed is *A. maritima* var. *purpurea.*

atrosanguínea: hort. name for dark magenta-red fld. forms of *A. plantaginea* var. *bupleuroides, A. maritima* var. *purpurea* and *A. pseud-armeria.*

bupleuroìdes: *A. plantaginea* var.

cæsalpìna. Hort. hybrid between *A. juniperifolia* and *A. maritima* var. *alpina,* having the multicipital habit of the former and the longer lf. of the latter, with scapes 4–6 in. tall and rosettes 3–4 in. across and as high.

cæspitòsa: *A. juniperifolia.*

canéscens. To 18 in.: lvs. of two kinds, the outer lvs. of each rosette of clump ½ as long as inner lvs. and twice as wide or wider, inner lvs. narrowly linear, to 3 in. long or more and about $\frac{1}{16}$ in. wide: fls. rose-pink, in heads about ¾ in. across, involucral bracts subtending the head tan-colored. Mts. of N. Medit. region. Var. **brachyphýlla** (*A. majellensis*) differs in its somewhat longer scape with shorter calyx and calyx-lobe cusp. Var. **leucántha** (*A. argyrocephala* and *A. undulata*) has the head subtended by pale straw-colored involucral bracts and fls. usually white. Attica Mts., Greece.

cephalòtes: *A. pseud-armeria.*

córsica: probably *A. leucocephala* var. *procera;* the name has no botanical standing.

dianthoìdes: *A. plantaginea* var. *leucantha.*

dracúncula: plants offered under this name have been determined as Gypsophila, and the name has no botanical standing.

elongàta: *A. maritima* var.

fasciculàta: *A. pungens.*

filicaùlis. To 20 in.: lvs. as in *A. canescens:* scapes usually stiffly erect, narrow, heads to ½ in. across, fls. white or pink. Iberian Peninsula and S. France.

formòsa: plants so listed have been determined as *A. pseud-armeria, A. plantaginea* and *A. gaditana.*

gaditàna. To 2½ ft., glabrous: lvs. broadly oblanceolate to spatulate, to 8 in. long, usually 5–7-veined, somewhat flaccid: fls. pink, in heads to 2 in. across on very stout scapes with sheaths longer than heads are wide, outer involucral bracts lanceolate, acuminate to cuspidate and usually longer than the inner, no bracts present among the calyces within the head, calyx with conspicuous elongated basal spur extending below the point of pedicel insertion. Portugal and S. W. Spain.—The largest of the thrifts and less hardy than *A. cephalotes* under which name it is sometimes offered in the trade and from which it differs in its possession of a calyx-spur and in the absence of interfloral bracts.

gigantèa: listed name lacking botanical standing which has been applied to plants of *A. gaditana, A. mauritanica, A. plantaginea* or *A. pseud-armeria.*

grandiflòra: listed name of no botanical standing usually applied to forms of *A. pseud-armeria.*

Hálleri: *A. maritima.*

japónica: listed name without botanical standing usually applied to hort. forms. of *A. maritima.*

júncea (*A. setacea*). To. 10 in.: lvs. of two kinds, the outer ones about ½ as long and twice as wide as the inner, inner lvs. of each rosette to 1½ in. long and $\frac{1}{16}$ in. wide or less, often glaucous-blue in color: fls. white or pink, inner involucral bracts obtuse and about as long as the outer ones, calyx-lobes abruptly aristate. Iberian Peninsula and S. France.

juniperifòlia (*A. cæspitosa*). To 2 in., in dense tufts of many rosettes: lvs. awl-shaped, to ½ in. long, triangular in cross-section, pungently-tipped, margins ciliate: fls. white to deep pink, in many heads to ½ in. across, on stout scapes not more than 1 in. long. May. Guadarrama Mts., Spain.—Very hardy alpine adapted to rock-garden culture, thriving in well-drained soil whose surface is covered with a fine stony scree to prevent summer decay. Much of the material in cult. as this species is undoubtedly of hybrid origin as is evidenced by larger flat lvs. and longer stout scapes. Var. **spléndens** (*A. splendens*) has flat and somewhat longer lvs. with scape 3–4 times as long and much narrower, head usually nodding. Spain.

latifòlia: *A. pseud-armeria.*

Laucheàna: a rose-crimson color form of typical *A. maritima.*

leucocéphala. To 8, rarely to 18 in.: lvs. linear or narrowly linear-lanceolate, ¾–1 in. long, limp and not erect, conspicuously glandular-punctate: fls. usually white, each individual cluster or cymule of head on distinct stalk within head. Corsica.—The typical form not known to be in cult. Var. **procèra** (*A. corsica* of hort. probably) has lvs. 1½–5 in. long, erect or ascending, fls. usually pale rose-pink or occasionally white in erect heads on glabrous scapes. Var. **Soleiròlii** (*A. Soleirolii*) differs from var. *procera* in lvs. finely and densely pubescent and scape often tomentose, fls. white.

macrophýlla. To 2 ft.: lvs. very narrowly linear, usually 6–10 in. long, stiffly ascending, canaliculate, puberulous: scape slender, erect; fls. usually pink, in heads 1–1¼ in. across, involucral bracts glabrous, calyx-tube hairy on ribs only, with base projected into distinct spur, interfloral bracts absent. S. Spain and Portugal.—Probably not hardy N., and material so listed is usually a variant of *A. maritima.*

majellénsis: material in the trade under this name is much confused; plants with lvs. of uniform shape and size are referred to *A. maritima* and its variants, those with shorter and wider outer lvs. and narrowly linear inner lvs. are referred to *A. canescens* var. *brachyphylla* (fls. pink) or var. *leucantha* (fls. white).

marítima (*A. Halleri*). To 1 ft.: lvs. similar, linear to narrowly linear-lanceolate, to 6 in. long, 1-nerved, hairy or glabrous: fls. white to deep rose-pink, in hemispherical heads to ½ in. across on glabrous to densely tomentose scapes, outer involucral bracts usually mucronate, inner ones mucronulate to obtuse. S. Greenland, Iceland and N. W. Eu. Forms having deep rose-crimson fls. on scapes to 6 in. high are **Laucheàna** (*A. Laucheana*) and **spléndens,** those with white fls. are **álba.**—As noted below, there has been brought together here under a single binomial several groups of plants heretofore treated horticulturally as species whose differences were supposed to be in technical characters of the calyces and involucre; this grouping has resulted because these characters are considered to be unreliable and no better ones have been found. Var. **alpìna** (*A. alpina. A. rhenana. Statice montana*). Heads to 1 in. across on stout glabrous scapes to 8 in. tall: lvs. usually white-scariously margined and wider than scapes. Mts. of Cent. Eu. Most of the material in the trade as *A. alpina* is referable to dwarf forms of typical *A. maritima* or forms intermediate between the latter and *A. juniperifolia.* Var. **elongàta** (*A. elongata. S. Armeria*). To 2 ft.: outer involucral bracts linear-lanceolate, longer than inner ones and often exceeding width of head: lvs. usually ciliate and acute. Var. **califórnica** (*A. arctica* in part). Differs from var. *elongata* in its somewhat shorter scape, larger head and lvs. usually obtuse and non-ciliate. Var. **purpùrea** (*A. vulgaris. A. purpurea*). To 2 ft.: lvs. usually narrower than scapes: outer involucral bracts obtuse and shorter than inner ones: fls. pink to magenta-purple. N. W. and Cent. Eu., Alaska to Wash. Var. **sibírica** (*A. sibirica*) has outer involucral bracts ⅓ as long as inner ones or less, scapes mostly only to 6 in. long. Arctic N. Amer. and Eurasia.

mauritánica. To 2 ft.: lvs. oblong-lanceolate to spatulate, to 7 in. long and ⅝ in. wide, acute: fls. white to deep rose-pink, in heads to 1¾ in. across, interfloral bracts present, calyces with distinct basal spur projecting downward below point of pedicel insertion and ribs sparsely hairy to glabrous. N. Afr., Iberian Peninsula.—Not known to be cult. in N. Amer.; material so listed is usually *A. pseud-armeria.*

plantagínea. To 2 ft.: lvs. lanceolate-spatulate, 4–8 in. long, acute, 3–5-nerved, glabrous, flaccid: fls. white to rose, in heads ¾–1 in. diam., outer involucral bracts narrowly lanceolate and much longer than inner ones. Cent. and W. Eu. Var. **bupleuroìdes** (*A. bupleuroides*) has outer involucral bracts shorter than inner ones with fls. pink to purplish-red and var. **leucántha** (*A. dianthoides*) differs from it only in its white fls. and paler involucre. Var. **longibracteàta** (*A. stenophylla*), differs from the typical form in its head ⅜–¾ in. diam. and lvs. rarely exceeding 4 in. in length.

pseùd-armèria (*A. cephalotes. A. formosa* of hort. *A. latifolia*). To 2 ft.: lvs. broadly lanceolate to oblong-lanceolate, to 10 in. long and 1 in. wide, acute, 5–7-nerved, margin narrowly scarious: fls. white to dark rose-pink, head to 1¾ in. diam., subtended by sheath to 4 in. long, outer involucral bracts usually longer than inner ones, acute to cuspidate, calyx spurless with lobes truncate to abruptly mucronate. Portugal.—The most commonly cultivated of the broad-lvd. thrifts, but sometimes confused with *A. gaditana* and *A. mauritanica.*

púngens (*A. fasciculata*). To 18 in.: lvs. linear, to 5 in. long, acute and harshly pungent, often canaliculate along distal half, frequently recurved and closely fasciculate, glabrous: fls. rose-pink to white, in heads to 1¾ in. diam., interfloral bracts rudimentary or lacking, involucral bracts coriaceous and broadly white-membranaceous along margin. N. W. Medit. region.—Not considered to be hardy N. except perhaps on Pacific coast.

purpùrea: *A. maritima* var.

rhenàna: *A. maritima* var. *alpina.*

robústa: listed name of no botanical standing; plants so named have been identified as *A. maritima* var. *purpurea* and *A. plantaginea.*

ròsea: listed name of no botanical standing, but applied to rose-colored forms of *A. maritima* and its vars.

setàcea: *A. juncea.*

sibírica: *A. maritima* var.

Soleiròlii: *A. leucocephala* var.

spléndens: true *A. splendens* is here treated as *A. juniperifolia* var., but most of the material so listed is the rose-magenta fld. form of *A. maritima* known as *Laucheana.*

stenophýlla: *A. plantaginea* var. *longibracteata.*

undulàta: *A. canescens* var. *leucantha.*

vérna: listed name.

vulgàris: *A. maritima* var. *purpurea.*

Welwítschii. Tufted shrubby per. to 1 ft.: lvs. linear, to 4 in. long, canaliculate or flat, usually pungently acute, glabrous: fls. pink, heads to 1½ in. across, interfloral bracts present, calyx with distinct basal spur, outer involucral bracts ovate, cuspidate to acuminate. Portugal.—Not known to be in cult. and perhaps not hardy N. Plants so listed have been identified as *A. maritima* var. *purpurea.*

ARMORÀCIA. *Cruciferæ.* A few per. herbs in Eu. and Asia, one widely grown in the vegetable-garden and also run wild in N. Amer.; one native species in N. Amer. is considered by some to be referable to this genus: radical lvs. large and often dock-like, variously dissected: fls. white, small: fr. an ovoid or short-oblong pod or silicle. **A. rusticàna** (*Nasturtium, Radicula* and *Roripa Armoracia*), HORSE-RADISH (which see), is a deep-rooted glabrous strong per.: lower lf.-blades to 15 in. long and 9 in. across, crenate-dentate or jagged and sometimes dissected into linear segms., upper st.-lvs. lanceolate to oblong: fls. in spring in a terminal panicle: seedless. S. E. Eu.

ARNÈBIA. *Boraginaceæ.* Old World herbs with alternate simple lvs. and yellow or violet slender-tubed fls. in racemes or cymes, throat without scales; sometimes grown in the border or rock-garden. Of easy cult. Propagated by seeds, division or cuttings.

cornùta. ARABIAN-PRIMROSE. Ann. to 2 ft.: lvs. lanceolate: fls. yellow spotted with black, changing to maroon, ¾ in. across. Orient.

echioìdes. PROPHET-FLOWER. Per. to 1 ft.: lvs. obovate-oblong: fls. yellow with purple spots, changing to pure yellow. Armenia.

ÁRNICA. *Compositæ.* Herbaceous perennials with clustered root-lvs. and opposite st.-lvs. and large long-stalked heads of yellow ray- and disk-fls.; pappus of bristles; native in Eu., Asia and N. Amer.

Arnicas are grown in the rock-garden or border or colonized in woodsy places. Tincture of *A. montana* has medicinal uses. Propagated usually by division, seldom by seeds.

alpìna. To 15 in., pubescent: lvs. lanceolate or spatulate, to 4 in. long, nearly entire: heads about 2 in. across, usually solitary; pappus white. N. N. Amer., N. Eu.

amplexicaùlis. To 2 ft., glabrous or somewhat viscid: basal lvs. ovate, to 3 in. long, acute, those on the st. clasping with st. leafy to top: heads 3–5, to 2 in. across; pappus brownisth. Ore., northward.

betonicæfòlia. To 6 in., nearly glabrous: lvs. oval to oval-lanceolate, to 1 in. long, toothed: heads 1–3; pappus white. Wash.

Chamissònis. To 2 ft., soft-pubescent: lvs. oblong-lanceolate, to 6 in. long, toothed or entire: heads to 2 in. across, corymbose; pappus white or yellowish. B. C. to Mont.

chionopáppa. To 15 in., white-villous: basal lvs. long-petioled, lanceolate to narrowly-ovate, base cuneate, others on lower half of st., the upper ones sessile: heads 1–3, to 1½ in. across, ray-fls. 15; pappus white. Que., N. B.

Clùsii: *Doronicum Clusii.*

cordifòlia. To 16 in., sts. villous: lvs. ovate to orbicular, basal ones cordate, to 4 in. long, dentate, petioled, pubescent: heads 1–4, ray-fls. 8–12; pappus white. N. Mich., S. D. to Colo. west to Calif. and north to Yukon.

foliòsa. To 2 ft., stoloniferous, gray-silky: lvs. many, lanceolate: heads 1 in. across N. W. U. S.

Léssingii. To 1 ft. but often only 6 in.: lvs. oblong-lanceolate to spatulate, to 3 in. long, serrulate, usually about 3 pairs: heads solitary, to 1½ in. across, nodding; rays light yellow, deeply notched or 3-toothed. Alaska.

longifòlia. To 2 ft., pubescent: lvs. linear-lanceolate, to 6 in. long, entire or toothed: heads in flat-topped panicles; pappus brownish, plumose. Wash. to Mont. and Calif.

móllis. To 2 ft., pubescent: lvs. oblong-lanceolate, to 6 in. long, toothed: heads 1–3; pappus brownish, plumose. B. C. to Colo.

montàna. To 2 ft.: radical lvs. oblong-lanceolate, glabrous, entire: heads to 3 in. across, 3–4 in a cluster; pappus white. Eu.

nevadénsis. To 1 ft., pubescent: lvs. orbicular or ovate, to 2¼ in. long, usually entire: heads ½ in. long. Calif.

pedunculàta. To 2 ft., villous or glandular: lvs. oblong to linear, to 4 in. long, mostly basal, entire, st.-lvs. few: heads solitary, ray-fls. orange. N. D. to Colo. west to Wash. and Calif.

sachalinénsis. To 2 ft., nearly glabrous: lvs. oblong-lanceolate, toothed: heads few. Sachalin Isl.

unalaschénsis. To 6 in.: lvs. oblong, about 3 pairs, somewhat hairy: heads solitary, ray-fls. bright yellow, disk light brown. Unalaska.

AROIDEÆ, AROIDS: *Araceæ.*

AROMA: *Cailliea glomerata.*

ARÒNIA. CHOKEBERRY. *Rosaceæ.* N. American deciduous shrubs with alternate toothed lvs., white or pinkish fls. in terminal corymbs in early spring, and fr. a small berry-like pome.

Propagated by seeds sown when ripe or stratified and by suckers, layers and cuttings of green wood under glass. Useful for colonizing in low places, showy in bloom; fruit attractive in autumn.

arbutifòlia (*Pyrus arbutifolia*). RED C. To 10 ft.: lvs. gray-tomentose beneath: fr. red. Mass. to Fla. and Tex. Var. **brilliantíssima** is advertised.

atropurpùrea: *A. prunifolia.*

floribùnda: *A. prunifolia.*

melanocárpa (*A. nigra. Pyrus melanocarpa* and *P. nigra*). BLACK C. To 4 ft.: lvs. nearly glabrous beneath: fr. black. N. S. to Fla. and Mich. Var. **elàta** is taller, with larger lvs. and frs. Var. **grandifòlia** grows to 10 ft. and has larger lvs. and frs.

nìgra: *A. melanocarpa.*

prunifòlia (*A. atropurpurea. A. floribunda. Pyrus arbutifolia* var. *atropurpurea*). PURPLE C. To 12 ft.: lvs. pubescent beneath: fr. purple-black. Newf. to Fla. and Ind.

ARONICUM: *Doronicum.*

ARPOPHÝLLUM. *Orchidaceæ.* Trop. American epiphytes with slender pseudobulbs bearing solitary lvs. and red or purplish fls. in thick racemes, the sepals and petals similar, the lip concave and slightly 3-lobed; do best in a temperate greenhouse. See *Orchids* for cult.

gigantèum. To 2 ft. pseudobulbs to 8 in. high: lvs. linear, to 1 ft. long: fls. small, light rosy-red with somewhat darker lip, in stiffly erect racemes to 1 ft. high. Apr.–June. Mex., Guatemala.

ARRABIDÆA. *Bignoniaceæ.* Climbing trop. vines or shrubs mostly from S. Amer., having bifoliate to triternately compound lvs. whose terminal lft. is often replaced by a tendril: fls. white to pinkish-purple, campanulate to funnelform, usually in dense elongated panicle-like clusters. One species is grown in Calif.

magnífica (*Bignonia magnifica*). Vine to 10 ft.: lvs. opposite, bifoliate, lfts. obovate, to 4 in. long, usually obtuse or abruptly blunt-acute, glabrous, leathery, short-petioled: fls. rose-pink to pale purple, tubular-campanulate, to 3 in. long, usually with 5 orbicular lobes, tube streaked purple within: fr. a linear compressed caps. Colombia.

ARRACÀCIA. *Umbelliferæ.* Stout per. herbs native from Mex. to Peru, with pinnately compound lvs., small white or dark purple fls. in compound umbels, and compressed frs.

One species is grown in the mountains of the tropics for the thick edible roots. Propagated by the small heads which form at the bases of the leaf-stalks.

esculénta: *A. xanthorrhiza.*

xanthorrhìza (*A. esculenta*). APIO. Roots branching, with starchy yellow flesh: lvs. ternate or 2-pinnate. Colombia.

ARRHENATHÈRUM. *Gramineæ.* Tall per. grasses resembling oats, the spikelets in panicles, florets awned; native in Medit. region, nat. in N. Amer.; sometimes sown as a meadow grass. See *Grasses.*

bulbòsum: *A. elatius* var. *tuberosum.*

elàtius (*Avena elatior*). TALL OAT-GRASS. To 4 ft., tufted: lvs. to 1 ft. long and ¼ in. wide, rough: panicles 1 ft. or more long, shining, light green or purplish, the branches erect. Nat. in N. Amer. Var. **tuberòsum** (*A. bulbosum*) has a string of tubers at the ground; often with striped lvs.

ARROJADÒA. *Cactaceæ.* A small genus whose members have been referred to Cereus and to Cephalocereus, from which it differs in that its pseudocephalum does not remain terminal but forms a collar for the new joint which is projected through its center.

rhodán'ha (*Cereus* and *Cephalocereus rhodanthus*). Sts. erect, becoming somewhat prostrate with age, to 7 ft. long and 1½ in. diam., 10–13-ribbed; spines brown becoming white, areoles to ½ in. apart: fls. solitary, pink to red, small, diurnal: fr. red, a small berry. Brazil.

ARROWHEAD: *Sagittaria.*

ARROWROOT: *Maranta arundinacea.*

ARROW-WOOD: *Viburnum dentatum.*

ARSENOCOCCUS: *Lyonia ligustrina.*

ARTÁBOTRYS. TAIL-GRAPE. *Annonaceæ.* Trop. climbing evergreen shrubs with alternate simple lvs., hooked peduncles adapted to climbing: fls. constricted above the closely packed stamens, and fr. of separate carpels borne in clusters on the hardened receptacle; grown in greenhouses or the open far S. Require fertile soil. Propagated by seeds.

odoratíssimus. CLIMBING YLANG-YLANG. Lvs. oblong, to 6 in. long: fls. very fragrant, greenish or yellowish, to 2 in. long: carpels yellow, smooth, 1 in. or more long. Old World tropics.

uncinàtus. Shrub with climbing branches: lvs. lanceolate to oblong-lanceolate: peduncle with a strong hook: fl. brownish-red, pubescent: frs. several together, size of a walnut. E. Indies, Madagascar.—Planted in S. Fla.

ARTEMÍSIA. WORMWOOD. *Compositæ.* Aromatic and bitter herbs or small shrubs with alternate mostly dissected lvs. and small numerous yellow or white heads; fls. all tubular; pappus none. They are per. unless otherwise noted.

Wormwoods are grown for ornament but mostly for the medicinal and aromatic qualities. They thrive even in poor dry soil. Usually increased by division; also by seed when obtainable.

Abrótanum. Southernwood. Old Man. Glabrous green subshrub to 5 ft.: lvs. 1–3-pinnately divided into thread-like segms.: heads yellowish-white, ⅕ in. across, in a loose panicle. Eu.

Absínthium. Common W. Absinthium. Subshrub to 4 ft., white-silky: lvs. 2–3-parted into oblong segms.: heads yellowish, ⅛ in. across, in many-fld. leafy panicles. Eu.

álbula. White-tomentose, to 3½ ft., with slender spreading branches: lower lvs. ovate, to 2 in. long, with 3–5 short broad lobes, upper lvs. linear or nearly so: heads small and numerous in little racemes terminating the branches. Tex., Colo., S. Calif.—Hardy N. and sometimes grown as "Silver King Artemisia."

ánnua. Sweet W. Ann. to 5 ft., glabrous, very sweet-scented: lvs. 2–3-pinnate, the segms. deeply cut: heads yellow 1/12 in. across, in a loose many-fld. panicle. Asia; nat. in N. Amer.

arboréscens. Shrubby, to 2 ft.: lvs. finely divided, silvery: heads bright yellow, in one-sided racemes. Medit. region.

arbúscula. Low Sage-Brush. Shrub to 1 ft., silvery-pubescent: lvs. wedge-shaped, 3-lobed, to ½ in. long: heads brownish, in simple panicles, often spike-like. Wash. to Calif. and Wyo.

argéntea. Shrubby, to 2 ft., white-silky: lvs. 2-pinnate into linear or lanceolate segms.: heads woolly, nodding, in raceme-like panicles. Madeira.

Baùmgartenii. To 1 ft., silvery-pubescent: lvs. 3-pinnatifid: heads yellow, racemose. Alps.

Bígelovii. Per. to 1 ft., woody at base: lvs. linear-cuneate to oblong, to ½ in. long, usually 3-toothed at apex, silvery: heads in leafy panicles, yellow. Utah to Tex. and Ariz.

boreàlis. Per. to 15 in., silky-pubescent: lvs. to 2½ in. long, pinnate into linear lobes: heads small, greenish, in dense terminal panicle. N. N. Amer., N. Asia. Var. **Wormskiòldii** is taller, to 1½ ft.

campéstris. To 2 ft., shrubby, glabrous or becoming so: lvs. pinnatifid into linear segms: heads yellow, minute, racemose. Eu., Asia.

camphoràta. Shrubby, to 2½ ft., camphor-scented: lvs. 2–3-pinnate into thread-like segms., glabrous: heads yellow, nodding, silvery-pubescent, in panicles. S. Eu.

canadénsis. Nearly or quite glabrous per. to 2 ft.: lvs. mostly 2-pinnate, with very slender segms.: heads greenish, small, in long narrow panicle. Newf. to New England and far west, Eu.

diversifòlia. White-tomentose, st. simple, to 4 ft. or more: lower lvs. to 4 in. long, mostly pinnately cut into narrow acute lobes, upper ones linear-lanceolate: fls. in a narrow panicle. Neb. to Calif. and north.

Dracúnculus. Tarragon. Estragon. Per. to 2 ft., glabrous, green: basal lvs. 3-parted at tip; st.-lvs. linear or lanceolate, entire or small-toothed: heads whitish-green, to ⅛ in. across, in spreading panicles. Eu.—The lvs. are used as seasoning. Var. **inodòra** is listed. Var. **satìva** may not differ from the type.

Féndleri: catalogue name.

filifòlia. Subshrub to 3½ ft.: lvs. filiform, entire or trifid, to 1½ in. long, minutely and densely white-tomentose: heads very small and numerous in narrow leafy panicles. Neb. to Nev., south to Mex.

frígida. Fringed W. Per. to 1½ ft., silvery-pubescent: lvs. 2-pinnate into linear segms.: heads yellow, nodding, in racemes. W. N. Amer., Asia.

glaciàlis (*A. laxa*). Per. to 4 in., gray-pubescent: lvs. pinnatisect: heads golden-yellow, in corymbs. Alps.

globulifòlia: catalogue name.

gnaphalòdes. White-tomentose per. to 3 ft. or more: lvs. simple, oblanceolate and somewhat serrate, the upper ones linear and entire: heads many in leafy panicles, small, grayish. N. U. S. and Canda.

grácilis: *A. scoparia.*

granaténsis. Cespitose to decumbent, densely white-tomentose: lvs. oblong-cuneate, palmate, lobes divided, petiole longer than blade: heads many, inconspicuous. Spain.

laciniàta. Per. to 1½ ft.: lvs. finely divided: heads nodding, ⅙ in. across, in panicles. Eu., Asia.

lactiflòra. White Mugwort. To 4 ft., nearly glabrous: lvs. pinnately parted or cut into large toothed or incised segms., pale beneath: heads white, about 1/16 in. across, loosely panicled. China.—Much like *A. vulgaris.*

latifòlia. Per., glabrous: lvs. 1–2-pinnatified, segms. oblong, entire: heads globose, in axillary racemes forming an erect panicle. Russia.

láxa: *A. glacialis.*

longifòlia. White-tomentose per. to 3 ft. or so: lvs. linear or linear-lanceolate, simple and entire: heads erect, in narrow panicle. Neb. northwest.

ludoviciàna. Western Mugwort. Per. erect or ascending to 3 ft.: lvs. linear-oblong, white-tomentose becoming green above, lower ones toothed or lobed, to 3½ in. long: heads bell-shaped, in rather dense panicles. Mo. and Utah to Tex. and Ariz.

macedónica: catalogue name.

marítima. To 2 ft., much branched, silvery-pubescent: lvs. 2-pinnate into linear segms.: heads brownish-yellow, in erect or drooping oblong racemes. Eu.

Michauxiàna. Per. to 1½ ft., woody at base: lvs. to 2¼ in. long, 1- or 2-pinnate into linear or lanceolate segms., white-tomentose beneath: heads ⅕ in. across, in spike-like infl. B. C. to Colo.

minùta. Undershrub to 4 in.: lvs. ½ in. long, pinnatifid with 5–7 divisions, silvery-silky: heads small, in spike-like infl. to 1½ in. long. Alta.

montàna: a listed name, botanical position uncertain.

Mòxa. Shrubby, gray-pubescent: lvs. 2-pinnate into linear-lanceolate segms.: heads ⅙ in. across, nodding, in panicles. China.

mutellìna. To 6 in.: lvs. pinnatisect into linear-lanceolate segms., silvery-pubescent: heads yellowish-green, in racemes. Alps.

pedatífida. Woody per. to 6 in.: lvs. ternate or biternate, white-tomentose: heads small, few, brownish. Wyo., Mont., Ida.

pedemontàna. Small silvery-woolly per. to 6 in.: lvs. more or less rounded in outline, cut into linear divisions: fls. pale yellow, few toward top of st., sometimes not produced. Alps, S. Eu.—See *A. pontica.*

pérsica. Per. or bien. to 4 ft., white-tomentose: lvs. pinnatisect: heads yellow, ⅙ in. across, in racemes. W. Asia.

póntica. Roman W. To 4 ft., shrubby: lvs. hoary below, pinnately cut into linear segms.: heads whitish-yellow, ⅛ in. across, nodding in long open panicles. Eu.—Often remains sterile, forming patches of low feathery shoots; has been planted as *A. pedemontana.*

Purshiàna. Cudweed W. To 2 ft.: lvs. ovate to lanceolate, mostly entire, white-woolly on both sides: heads white, in spike-like panicles. B. C. to Calif. and Neb.

Róthrockii. Shrub to 1½ ft., grayish: lvs. to ¾ in. long, spatulate, entire or 3-toothed at apex: heads ¼ in. long, in spikes. Wash. to Calif.

rupéstris. To 6 in.: lvs. somewhat silky, 2-pinnatisect into linear segms.: heads yellow, nodding, in panicles. Eu.

sacròrum. Russian W. Ann. or bien., shrubby below: lvs. hoary or white-pubescent, sinuately cut: heads nodding, in slender racemes. Russia, Siberia. Var. **víridis.** Summer-Fir. Pyramidal, to 10 ft., with rich green much dissected foliage.

Schmidtiàna. To 2 ft., covered with silvery-white silky hairs: lvs. bipinnatisect, segms. laciniate, long-linear, acute: heads small, in pyramidal panicles. Japan. Var. **nàna** is listed as a dwarf form.

scopària (*A. gracilis*). Ann., slender, to 5 ft.: lvs. much divided into hair-like segms.: heads small, white, in broad densely packed panicles. E. Eu.

serràta. Per. to 10 ft., much branched: lvs. lanceolate, to 6 in. long, serrate, white-woolly beneath: heads greenish, 1/12 in. across, in panicles. Ill. to S. D.

speciòsa: listed name, of unknown botanical standing.

spicàta. To 6 in.: lvs. pinnatisect, silvery-pubescent: heads yellow, in spikes. Alps.

spinéscens (*Picrothamnus desertorum*). Spiny subshrub with hairy sts. to 2 ft. high: lvs. palmately 5-parted, each segm. 3-lobed, the latter lobes spatulate, pubescent: heads solitary or in small racemes. Wyo. to Ore. south to New Mex. and E. Calif.

spléndens. Tufted per., silky-pubescent: lvs. pinnate into narrow-linear segms.: heads globose, in long loose racemes. Asia Minor.

Stelleriàna. Beach W. Old Woman. Dusty Miller. Per. to 2½ ft., densely white-woolly: lvs. pinnatisect into oblong entire or toothed lobes: heads ¼ in. across, yellow, in compact many-fld. racemes. Coasts, N. E. Asia, Que. to Del.

tridentàta. Sage-Brush. Shrub to 12 ft., silvery-pubescent: lvs. wedge-shaped, to 1 in. long, 3–6-toothed or lobed, tips blunt: heads ⅛ in. across, many, in panicles. B. C. to Calif. and Neb.

vulgàris. Mugwort. Per. to 3½ ft., much branched, sts. often purplish: lvs. pinnatifid into oblong toothed or entire segms., fragrant, white-tomentose beneath, dark green above: heads yellow, ⅛ in. across, in panicled spikes. Eu., Asia; nat. in E. N. Amer.

Wormskiòldii: *A. borealis* var.

ARTHROCÈREUS. *Cactaceæ.* A small genus of 3 known species from Brazil allied to Trichocereus and Monvillea, differing from each of these in the narrower and more pubescent fl.-tube, the fls. borne mostly on terminal joints and not on previous season's growth, and the plants of a dwarfer habit.

Damaziòi: *A. microsphæricus.*

microsphǽricus (*Cereus microsphæricus. Cereus* and *Monvillea Damazioi*). Prostrate, much branched, joints globose to ellipsoid, glossy green, to 1⅓ in. long; ribs 8–11, areoles about ⅛ in. apart; spines to ⅛ in. long, bristly, erect, radials 10–14, white, centrals 4–12, reddish-brown: fls. white, to 5 in. long, fragrant.

rondoniànus. St. slender, somewhat erect, to 20 in. long; ribs 14–18, obtuse, low, areoles ¼–½ in. apart; radial spines 40–50, bristly, mostly less than ¼ in. long with a few to ¾ in. long, centrals 1–2, to 2¾ in. long: fls. lilac-pink inside, about 2¼ in. long.

ARTHROPÒDIUM. *Liliaceæ.* Tufted per. herbs with fleshy roots, mostly basal lvs., and white or purplish fls. in racemes or panicles, the perianth-segms. distinct; grown in S. Calif. and cult. as for *Anthericum.*

cándidum. To 14 in.: lvs. to 10 in. long and ¼ in. wide, grassy: fls. white, ¼ in. across, in simple racemes. New Zeal.

cirrhàtum. To 3 ft.: lvs. to 2 ft. long and 2½ in. wide: fls. white, to 1 in. across, in panicles to 1 ft. long; filaments with 2 tendril-like appendages. New Zeal.

ARTICHOKE: *Cynara Scolymus.* **Chinese:** *Stachys Sieboldii.* **Japanese:** *Stachys Sieboldii.* **Jerusalem:** *Helianthus tuberosus;* see *Girasole.*

ARTICULATE: jointed; provided with nodes or joints, or places where separation may naturally take place.

ARTILLERY PLANT: *Pilea microphylla.*

ARTOCÁRPUS. *Moraceæ.* Trees with milky juice, large alternate lvs., staminate fls. in stiff spikes, pistillate in heads, and fr. imbedded in the fleshy perianth forming a heavy syncarp; native in the Asian tropics and grown in trop. climates for the fr. or general interest. For cult. see *Breadfruit.*

Cánnonii. Purple-lvd. greenhouse plant from the S. Seas, of doubtful botanical position: lvs. 3-ribbed from base and 2 basal side lobes and other lobes farther up, all the lobes toothed, sinuses open.

commùnis (*A. incisa*). Breadfruit. To 60 ft.: lvs. ovate, pinnately lobed, to 2 ft. and more long, dark green, thick and leathery: staminate spikes yellow, club-shaped, to 1 ft. long: fr. round or oval, to 8 in. across, yellow when ripe, covered with prickles. Polynesia.—The seedless forms are the breadfruits and those with seeds are known as breadnuts.

incìsa: *A. communis.*

íntegra (*A. integrifolia*). Jakfruit or Jackfruit. To 70 ft.: lvs. elliptic or obovate, to 8 in. long, stiff and glossy, entire: staminate spikes cylindric or club-shaped, to 4 in. long: fr. oblong, to 2 ft. long, greenish-yellow turning brownish, covered with hard points. India to Malaya.

integrifòlia: *A. integra.*

Lakoòcha. To 60 ft.: lvs. oblong or elliptic, to 1 ft. long, entire, pubescent beneath: fr. globose, to 3 in. across, smooth or wrinkled. India to Malaya.

ÀRUM. *Araceæ.* Tuberous herbs native in Eu. and Asia, having arrow-shaped lvs. and unisexual fls. borne on a spadix surrounded by a spathe which is often colored; many plants once named in Arum are now transferred to other genera.

Arums require rich soil, plenty of water, and shady positions. Grown in pots in the greenhouse or some species hardy out-of-doors. Propagated by offsets of the tubers or by seeds.

cornùtum: see *Sauromatum guttatum.*

crinìtum: *Helicodiceros muscivorus.*

Dracúnculus: *Dracunculus vulgaris.*

guttàtum: *Sauromatum guttatum.*

itálicum. A variable species of robust habit: lvs. about 8 in. long and broad, with petioles about 1½ ft. long: spathes green, white inside with purple limb which is reflexed over opening. Eu., N. Afr.

maculàtum. Cuckoo-Pint. Lords-and-Ladies. A variable species to about 1 ft. high: lvs. to 10 in. long, the petioles about twice as long: spathes erect, to 10 in. long, green margined and often spotted with purple. Eu., N. Afr.

palæstìnum (*A. sanctum*). Black Calla. Lvs. to 8 in. long, the petiole about 1 ft. long: spathes green with limb deep purple inside. Syria, Palestine.

pedàtum: *Sauromatum guttatum* var.

píctum. Lvs. oblong-ovate, to 10 in. long, deeply cordate at base, the petioles to 10 in. long: spathe with green tube and purple limb; spadix dark purple, longer than spathe. Medit. region.

sánctum: *A. palæstinum.*

venòsum: *Sauromatum guttatum* var.

ARUM, ARROW-: *Peltandra.* **Ivy-:** *Scindapsus.* **Twist-:** *Helicodiceros muscivorus.* **Water-:** *Calla palustris.*

ARÚNCUS. Goats-Beard. *Rosaceæ.* Per. erect hardy herbs with 2–3-pinnate long-stalked lvs., small white unisexual fls. in spikes forming large panicles, and fr. of separate follicles, stamens numerous; native in the north temp. zone.

These plants thrive in moist partially shady locations; attractive because of the upright astilbe-like panicles of numerous small flowers. Propagated by seeds.

sylvéster (*Spiræa Aruncus. S. Humboldtii*). To 7 ft.: lvs. ovate to oblong-lanceolate, to 5 in. long, toothed. N. Amer., Eu., Asia. Var. **Kneiffii** is listed as having finely dissected foliage.

ARUNDINÀRIA. *Gramineæ.* Large shrubby grasses differing from Bambusa in having 3 instead of 6 stamens and other technical characters of florets; native in N. Amer. and Asia. See *Bamboo.*

aristàta: *Thamnocalamus aristatus.*

aùreo-striàta: see *Pleioblastus viridi-striatus.*

aurícoma: *Pleioblastus viridi-striatus.*

chrysántha: *Sasa chrysantha.*

débilis. To 10 ft., much branched: lvs. to 3 in. long and ⅓ in. across, nearly glabrous. Ceylon.

erécta: *Pleioblastus Hindsii.*

falcàta (*Bambusa falcata*). To 20 ft., sts., yellow-green: lvs. to 6 in. long and ½ in. wide, sheaths ciliate at apex. Himalayas.

Fálconeri: *Thamnocalamus Falconeri.*

fastuòsa: *Semiarundinaria fastuosa.*

Fórtunei: *Pleioblastus variegatus.*

gigantèa (*A. macrosperma*). Southern Cane. Cane Reed. To 25 ft.: lvs. to 1 ft. long and 1¼ in. wide, finely toothed, glabrous or pubescent. Va. to Fla. and La., in swamps and by rivers.

grácilis: *Pleioblastus humilis.*

Hìndsii: *Pleioblastus Hindsii.*

Hookeriàna. To 30 ft., glaucous: lvs. to 6 in. long and ¾ in. wide, glabrous, rough on edges. Himalayas.

hùmilis: *Pleioblastus humilis.*

japónica: *Pseudosasa japonica.*

jaunsarénsis. To 15 ft., sts. with yellow scales at base: lvs. to 6 in. long and ¾ in. wide, rough on edges. Himalayas.

macrospérma: *A. gigantea.*

marmòrea: *Chimonobambusa marmorea.*

Maximowíczii: *Pleioblastus Chino.*

Metàke: *Pseudosasa japonica.*

Mùrieliæ: *Sinarundinaria Murieliæ.*

Narihìra: *Semiarundinaria fastuosa.*

nítida: *Sinarundinaria nitida.*

nóbilis: *Thamnocalamus Falconeri.*

palmàta: *Sasa senanensis* var. *nebulosa.*

pùmila: *Pleioblastus pumilus.*

pygmæ̀a: *Pleioblastus viridi-striatus* var. *vagans.*

quadrangulàris: *Bambusa angulata.*

Ragamòwskii: *Sasa tessellata.*

Sìmonii: *Pleioblastus Simonii.*

técta. Similar to *A. gigantea* and often treated as a variety but smaller, to 12 ft. high. Md. and Ind. to Tex., in low grounds and swamps.

tessellàta: *Sasa tessellata.*

variegàta: *Pleioblastus variegatus.*

Veìtchii: *Sasa Veitchii.*

ARÚNDO. *Gramineæ.* Very tall per. grasses with large flat lvs. and spikelets borne in large terminal plume-like close panicles; native in warm parts of the Old World and planted for bold effects. See *Grasses.*

Dònax. Giant Reed. To 20 ft., sts. or canes rather woody: lvs. to 2 ft. long and 3 in. wide: spikelets hairy, on ascending branches in erect panicles to 2 ft. high. Medit. region; more or less escaped in warm countries, and not hardy in the northern states. Var. **versícolor** (var. *variegata*) has yellowish- or white-striped lvs.

máxima: *Phragmites maxima.*

ÁSARUM. Wild Ginger. *Aristolochiaceæ.* Stemless per. herbs with long-stalked heart-shaped lvs. and large purplish or brown fls. borne singly near surface of ground; native in north temp. zone and sometimes transplanted to woodsy places from the wild. They require moist rich soil.

arifòlium (*Hexastylis arifolia*). Lvs. arrow-shaped, to 5 in. long, on stalks to 8 in. long, usually mottled: fls. 1 in. long, contracted at throat. Apr.–June. Va. to Fla. and Ala.

canadénse. Lvs. 2, to 7 in. across, on stalks to 1 ft. long: fls. brownish-purple, 1 in. across. Apr.–May. N. B. to N. C. and Mo.

caudàtum. Lvs. 2, to 6 in. across, on stalks to 7 in. long: fls. brownish-purple, with lobes prolonged into tails to 2 in. long. June. B. C. to Calif.

europæum. Lvs. 2, to 3 in. across, on stalks to 5 in. long: fls. greenish-purple or brown, ½ in. long. Eu.

Hártwegii. Lvs. to 5 in. across, on stalks to 8 in. long, mottled with white: fls. brownish-purple, ½ in. across, with lobes prolonged into tails to 2½ in. long. Ore., Calif.

heterophýllum. Lvs. orbicular, ovate or triangular, base cordate: fls. purplish-brown without or occasionally orange-purple, lighter within, calyx campanulate and not constricted at mouth, to 1 in. long, lobes as long as tube. Mts. of N. C., Tenn. and Va.

Lémmonii. Lvs. 3 in. across: fls. brownish-purple, ⅓ in. across. Calif.

Shúttleworthii (*Hexastylis Shuttleworthii*). Lvs. 1–2, to 3 in. across, on stalks to 8 in. long, usually mottled: fls. mottled violet within, to 2 in. long. May–July. Va. to Ga. and Ala.

virgínicum (*Hexastylis virginica*). Lvs. 1–3, to 3 in. across, on stalks to 7 in. long, usually mottled: fls. purple, to ⅔ in. long. May–June. Va. to S. C. and Tenn.

ASCÁRINA. *Chloranthaceæ.* Aromatic shrubs and trees native in New Zeal. and the Pacific Isls., having opposite lvs., minute unisexual fls. in spikes, and fr. a drupe; sometimes grown in Calif.

lùcida. To 25 ft.: lvs. oblong, to 2 in. long, coarsely toothed, glossy dark green above: spikes branched and drooping. New Zeal.

ASCENDING: in an upward direction but not truly erect; produced somewhat obliquely or indirectly upward.

ASCLEPIADÀCEÆ. Milkweed Family. About 220 genera of herbs, shrubs, frequently vines, widely distributed over the earth, particularly in the tropics, mostly with milky juice, opposite or whorled lvs., regular fls. commonly bearing a curious internal crown, anthers adhering to the stigma and the pollen united in masses called pollinia, monadelphous stamens, and fr. of 2 follicles with the seeds usually bearing long tufts of hair; many have medicinal and poisonous properties and some are grown for ornament, as Acerates, Araujia, Asclepias, Asclepiodora, Caralluma, Ceropegia, Chlorocodon, Cryptolepis, Cryptostegia, Cynanchum, Diplocyatha, Duvalia, Echidnopsis, Gomphocarpus, Gonolobus, Hoodia, Hoya, Huernia, Huerniopsis, Marsdenia, Morrenia, Pachycarpus, Periploca, Philibertia, Piaranthus, Raphionacme, Sarcostemma, Stapelia, Stephanotis, Strophanthus, Stultitia, Tavaresia, Trichocaulon, Vincetoxicum.

ASCLÈPIAS. Milkweed. Silkweed. *Asclepiadaceæ.* Per. summer- or autumn-blooming milky herbs with fls. in axillary or terminal umbels, the 5 parts of the corolla strongly reflexed, showing a crown of 5 horned hoods: fr. 1 or 2 soft follicles, containing seeds with long silk: mostly native in N. and S. Amer. and Afr.

Of easy cultivation in the wild-garden or border; many of them have attractive habit, showy flowers and ornamental pods. Propagated by division, and also by seeds.

amplexicaùlis. Sts. decumbent, to 2 ft. long, glaucous: lvs. cordate-ovate, apex obtuse, base clasping, glabrous: fls. greenish-purple: fr. unarmed, erect on recurved pedicels. N. C. to Fla. west to Tex.

cordifòlia. Purple M. To 2½ ft., glabrous: lvs. ovate-lanceolate, to 4 in. long, base cordate-clasping, tinged or streaked with purplish shades: fls. dark red-purple: fr. glabrous, to 5 in. long. W. Nev. to Calif.

Cornùtii: *A. syriaca.*

currassávica. Blood-Flower. To 3 ft.: lvs. oblong: fls. with reddish-purple corolla and orange hoods. Trop. Amer.; nat. in S. U. S.

exaltàta: name sometimes used for *A. phytolaccoides.*

grandiflòra: a confused name which has been applied to several different plants; the material in the trade may be *A. syriaca* or *Pachycarpus grandiflorus.*

Hállii. To 16 in.: lvs. lanceolate to ovate-lanceolate: fls. greenish tinged with purple. Colo.

incarnàta. Swamp M. To 4 ft.: lvs. oblong-lanceolate: fls. rose-purple, rarely white (var. **álba**), to ¼ in. across. Swamps, N. B. to La. and Colo. Var. **púlchra** (*A. pulchra*) has broader lvs. and is hairy.

mexicàna. To 5 ft.: lvs. glabrous, whorled or opposite, linear to narrow-lanceolate, to 6 in. long: fls. greenish-white, sometimes tinged purple. Ore. to Mex.

phytolaccoìdes. To 6 ft.: lvs. oval to oblong: fls. greenish-purple with white or pink hoods. Me. to Ga. and Ark.

púlchra: *A. incarnata* var.

pùmila: *A. verticillata* var.

purpuráscens. To 4 ft.: lvs. ovate to oblong, to 8 in. long, acute or obtuse, almost glabrous above: fls. pale red to purple, to ½ in. across. N. H. to N. C. west to Ont. and Ark.

rùbra. To 4 ft.: lvs. ovate to lanceolate: fls. purplish-red, to ½ in. across. N. J. to Fla. and Tex.

speciòsa. To 2½ ft., white-tomentose: lvs. ovate or oval: fls. purple-green, with long hoods. Minn. to B. C. and Calif.

subulàta. To 5 ft., with rush-like sts. leafless or with few thread-like lvs.: fls. yellowish-white. Desert regions of Nev., Calif., Lower Calif.

Súllivantii. To 4 ft.: lvs. thick, oblong to ovate-oblong: fls. purplish. Ont. to Minn. and Kans.

syrìaca (*A. Cornutii*). To 5 ft.: lvs. oblong to ovate, pubescent beneath: fls. green or purplish. N. B. to N. C. and Kans.

tuberòsa. Butterfly-Weed. Pleurisy-Root. To 3 ft., rough-hairy: lvs. lanceolate or oblong: fls. orange. Me. to Fla. and Ariz. Var. **sulfùrea,** fls. primrose-yellow.

verticillàta. Horsetail M. To 2 ft.: lvs. narrowly linear, in 3's to 7's: fls. greenish-white. Me. to Fla. and N. Mex. Var. **pùmila** (*A. pumila*). To 10 in. high: lvs. filiform and densely crowded, the plant mat-forming.

ASCLEPIODÒRA. *Asclepiadaceæ.* N. American per. herbs differing from Asclepias in the spreading corolla and the hoods with a crest instead of a horn; sometimes transplanted to the wild-garden.

decúmbens. Sts. to 1½ ft. long, decumbent or ascending: lvs. lanceolate to linear, to 6 in. long, thick: fls. greenish with purplish hoods, in umbels 2 in. across. Ark. to N. Mex.

ASCOCÉNTRUM. *Orchidaceæ.* Short-stemmed epiphytes with many linear lvs. and fls. in lateral many-fld. short-stalked racemes, the sepals and petals equal, lip spurred. See *Orchids* for cult.

ampullàceum (*Saccolabium ampullaceum*). Fls. ¾–1 in. across, bright rose-carmine. Mar.–June. Himalayas, Burma, China.

miniàtum (*Saccolabium miniatum*). Fls. orange-red or clear yellow, nearly 1 in. across. Jan.–June, Oct. Java, Philippines.

ASCOTAÍNIA. *Orchidaceæ.* Terrestrial orchids with 1-lvd. pseudobulbs and fls. in racemes on scape arising from the rhizome, the sepals and petals similar, the lip entire or 3-lobed and usually with 3–5 keels. See *Orchids* for cult.

viridifúsca (*Tainia viridifusca*). Lvs. up to 20 in. long and 3 in. wide: fls. with brownish-olive-green sepals and petals and yellowish-white lip, the scapes 1½ ft. or more high. Feb.–Mar. Burma, China.

ÁSCYRUM. *Hypericaceæ.* Low herb-like shrubs with opposite entire lvs. and bright yellow 4-parted fls. in terminal few-fld. cymes; native in N. and Cent. Amer. and Himalayas; differs from Hypericum in 4 rather than 5 sepals in 2 unequal pairs and in the separate stamens. Hardy in the N. with winter protection. Propagated by division and seeds.

Crúx-Ándreæ: name sometimes applied to *A, hypericoides.*

hypericoìdes. St. Andrews Cross. To 2½ ft., much branched and often decumbent: lvs. oblong to linear, to 1½ in. long: fls. ½ in. across. Mass. to Cent. Amer. and W. Indies.—Evergreen S. and useful in landscape work.

stáns. St. Peterswort. To 2 ft., the branchlets 2-edged or slightly winged: lvs. oblong to obovate, to 1½ in. long, clasping: fls. 1 in. across. L. I. to Fla. and Tex.

ASEXUAL: sexless; without sex, as in propagation by means of vegetative shoots rather than by seeds, also of flowers without stamens or pistils.

ASH: *Fraxinus.* **Mountain-:** *Sorbus.* **Prickly-:** *Zanthoxylum americanum.*

ASÍMINA. *Annonaceæ.* N. American shrubs or small trees with alternate simple lvs., axillary nodding white or purplish fls., and fr. of 1 or more berries.

They thrive in rich moist soil. Propagated by seeds sown in autumn or stratified, by layers, and by root-cuttings. Only *A. triloba* is hardy North.

angustifòlia. Shrub to 3 ft.: lvs. linear or oblanceolate, to 8 in. long: fls. white or yellowish, to 3 in. across: fr. to 2 in. long. Ga., Fla.

speciòsa. Shrub to 4 ft.: lvs. oblong or obovate, to 6 in. long, tomentose on both sides: fls. yellowish-white, 3–4 in. across, before the lvs. Ga., Fla.

trîloba. Papaw. Deciduous tree to 30 ft.: lvs. obovate-oblong, to 1 ft. long, drooping: fls. purple, to 2 in. across, before the lvs.: fr. fleshy, 3–5 in. long, edible. N. Y. to Fla. and Tex.

ASOKA: *Saraca indica.*

ASPÁRAGUS. *Liliaceæ.* Per. herbs or woody vines and shrubs with fleshy, tuberous or cord-like roots, one a common garden vegetable and others grown for the ornamental green: lvs. reduced to scales, the branchlets (cladodes) narrow, green and leaf-like: fls. small and greenish: fr. a berry.

The decorative kinds are of easy culture but most of them are tender to frost. They are commonly grown under glass or other cover. Propagated by seed and division, and woody kinds also by cuttings. See *Semele;* also *Asparagus, Garden.*

acutifòlius. Shrub to 5 ft., branching: lvs. cylindrical, ¼ in. long, spiny-tipped: fls. yellow, diœcious: berries olive-green, waxy. Medit. region.

africànus. Partially climbing, woody, spiny: lvs. cylindrical, filiform, stiff, to 1 in. long: fls. in umbels. S. Afr.

álbus. Shrub to 2 ft., branches very spiny, angular, flexuous and glabrous: lvs. to ¾ in. long, linear, in axillary fascicles of 8–12: fls. white, fragrant, in axillary fascicles of 6–12. Medit. region.

asparagoìdes (*A. medeoloides. Myrsiphyllum asparagoides*). Smilax A. Smilax of florists. Branching vine: lvs. ovate, about 1 in. long: fls. 1–2 together, greenish-white: berries dark purple, ¼ in. across. S. Afr. Var. **myrtifòlius,** Baby S., is a more graceful form with smaller lvs.

Broussonètii. Per., rootstocks tuberous, sts. procumbent or laxly drooping, terete, striate: stipules short-acuminate with retrorse spines at base: lvs. alternate, ternate, arcuate, 1 in. or more long, mucronulate: fls. greenish, usually in pairs. N. Afr.

cáspius: synonym of *A. officinalis.*

chinénsis: listed name of unknown botanical standing.

Coòperi. Vine to 60 ft.: lvs. very dark green, to ½ in. long, making fern-like sprays: fls. white: berries red, ¼ in. across. S. Afr.

críspus (*A. decumbens*). Climbing or drooping, to 6 ft.: lvs. needle-like, to ⅜ in. long: fls. 1 or 2 together, white, fragrant: berries white or pink, ½ in. across. S. Afr.

dahùricus. Herbaceous shrub to 3 ft.: lvs. acicular, in fascicles, to ½ in. long: fls. inconspicuous, solitary. Dahurica.

decúmbens: *A. crispus.*

drepanophýllus (*A. Duchesnei*). Climbing to 30 ft.: lvs. linear and sickle-shaped, to 3 in. long, forming fern-like fronds: fls. in erect racemes, greenish: berries scarlet, ½ in. across. Cent. Afr.

Duchésnei: *A. drepanophyllus.*

elongàtus: *A. virgatus.*

falcàtus. Climbing to 40 ft.: lvs. linear-lanceolate and sickle-shaped, to 3 in. long, dark green: fls. in racemes, white: berries brown. Trop. Asia and Afr.

filicìnus. Climbing or straggling, much-branched, spineless: lvs. to ¼ in. long: fls. axillary not in racemes. Asia.

Hátcheri. A strong-growing form, probably *A. plumosus* var. *robustus.*

larícinus. Shrub with woody much branched sts.: lvs. awl-shaped, to 1 in. long: fls. clustered: berries ⅙ in. across. S. Afr.

Lútzii: an unidentified trade name.

madagascariénsis. Shrub to 1 ft.: lvs. lanceolate, ⅝ in. long, so arranged as to resemble a pinnate lf.: fls. creamy-white, 4 together: berries scarlet. Madagascar.

medeoloìdes: *A. asparagoides.*

myriócladus. Nearly erect shrub to 6 ft.: lvs. thread-like, ¼ in. long: fls. in racemes to 1 in. long. Natal.

myrtifòlius: *A. asparagoides* var.

nànus: *A. plumosus* var.

officinàlis: see *Asparagus, Garden.*

plumòsus. Fern A. Tall climbing, the long fern-like strands cut for decoration: lvs. needle-like, to ¼ in. long, bright green: fls. whitish, 1–4 together: berries purple-black, ¼ in. across. S. Afr. Var. **comorénsis** is a robust form. Var. **compáctus** is dwarf as is also var. **nànus,** Dwarf A. Var. **robústus** is a strong-growing sort. Var. **tenuíssimus** has wiry sts.—Popular in its various forms.

retrofráctus. Shrub to 6 ft., slightly climbing: lvs. thread-like, 1 in. long: fls. white, in umbels. S. Afr.

scándens. Climbing to 6 ft.: lvs. linear and curved, to ½ in. long: fls. greenish-white, nodding, 1–2 together: berries scarlet, ⅙ in. across. S. Afr. Var. **defléxus** is a smaller form with deflexed branches.

schoberioìdes. Erect, to 3 ft.: lvs. flat, 3-angled: berries red. China, Japan.

spinòsus: listed name.

Spréngeri. Climbing to 6 ft.; lvs. linear, 1 in. long: fls. in racemes, pinkish, fragrant: berries bright red, ½ in. across. S. Afr. Var. **compáctus** is a dwarf form and **variegàtus** had variegated lvs.

tenuíssimus: *A. plumosus* var.

tetragònus. Climbing to 20 ft., roots tuberous: lvs. 3–4-angled, to ⅝ in. long: fls. white or pink, in racemes to 3 in. long, fragrant. S. Afr.

verticillàtus. Climbing to 15 ft., somewhat woody: lvs. thread-like, to 2 in. long: fls. 1–4 together: berries red, ¼ in. across. Persia to Siberia.

virgàtus (*A. elongatus*). Erect, to 6 ft.: lvs. needle-like, to ¾ in. long, dark green: fls. greenish-white, solitary: berries orange-red, ⅙ in. across. S. Afr.

ASPARAGUS, GARDEN or ESCULENT (*Asparagus officinalis* var. *altilis*). A developed or ameliorated cultivated form of the native *Asparagus officinalis* of the seacoasts of Europe and Asia, hardy perennial, grown for its edible spring shoots; it has somewhat run wild near habitations in places; the indigenous plant in its native countries is short-branched and more or less prostrate at base whereas the domestic asparagus (var. *altilis*) is strongly erect, to 3 feet or more. The genus comprises also many ornamental subjects: see *Asparagus*, preceding this article.

The edible asparagus is a universal favorite in the spring and is extensively cultivated. A plantation should yield well for ten years or more, but this longevity is dependent on good land deeply and thoroughly prepared in the beginning, fertile and enriched every year with good manure or concentrated fertilizer or both. Thickly planted garden beds are likely to run out sooner by overcrowding, and also by lack of tillage and other care.

Asparagus is propagated only by seeds, which are sown in drills 18–30 inches apart depending on the value of land and the method of tillage; thin to 3 or 4 inches in the drill or row. Till frequently, to keep the plants vigorous and keep the bugs away. The following spring the plants may be set in the permanent plantation; that is, the plants are yearlings. Seedlings vary considerably, and only the strongest should be saved for planting. Varieties are several; but the size and vigor depend largely on land, tillage and general care. Mary Washington, Martha Washington, Colossal and Palmetto, are well-known kinds.

Plants are set permanently about 18–24 inches apart in rows 3 feet or more asunder; in field culture with horse tillage and particularly when plants are to be banked, the rows are often 6–8 feet apart; 4–5 feet is a good distance for most home places. Sometimes beds are planted much thicker, but very large succulent stalks are not to be expected. In the kitchen-garden a row at one side but where tillage may be given and 75 to 100 feet long should supply the usual family. The plants should be set deep, usually 6–8 inches in a furrow but not covered more than 2 or 3 inches at first; the furrow or trench is filled as the plants grow. Cutting should not be begun to any extent, in most regions, until the plants have grown two years. At three years the bed is usually ready for a full cutting. If a knife is used for cutting asparagus, make sure that it is given a slanting direction so that younger shoots beneath the surface will not be severed.

Keep the plantation free of weeds; till in early spring before the plants are up; till after cutting ceases and continue until the tops become too large. In regions of severe freezing let the old plants stand over winter to hold the snows and thus prevent deep freezing and alternate freezing and thawing. When feasible, it is desirable to disk in the dead plants in the spring to help maintain the humus supply of the soil.

The beetle is controlled by spraying or dusting with arsenicals after the cutting season is past; sometimes a row is allowed to grow to attract the beetles, on which they may be poisoned; hand-picking is practicable on small home plantations; let poultry run in the patch. The beetles hibernate in rubbish about the place.

Asparagus is blanched by hilling up or banking, much as is celery. The natural green shoots are of better quality. The tenderness is a question of fertile soil, rapid growth and frequent cutting.

ASPÀSIA. *Orchidaceæ.* Epiphytic orchids with 1–2-lvd. oblong 2-edged pseudobulbs, differing from Odontoglossum in having the lip united to the column to the middle, and resembling Brassia in habit. Cent. Amer. to Brazil. Cult. as for Odontoglossum, in a moist atmosphere and shady position.

epidendroìdes. Lvs. lanceolate usually narrowly so, rarely to 1 ft. long: fls. 2–10, about 1½ in. across, in loose racemes; sepals and petals greenish-yellow transversely streaked with brown; lip white or yellowish with purplish-brown spots. Nicaragua to Panama.

principíssa. To 17 in. high: fls. 2–7, to nearly 3 in. across, in loose racemes; sepals and petals greenish with chocolate-brown longitudinal lines; lip white tinted with rose. Costa Rica, Panama.

ASPEN: *Populus.*

ASPÉRULA. WOODRUFF. *Rubiaceæ.* Herbs with square sts., whorled lvs. and small funnelform 4-lobed fls. in forking cymes in early summer; native in Eu., Asia and Australia.

Woodruffs are grown in borders or rock-gardens where they thrive in shady situations in moist soil, although *A. orientalis* does well in the open flower-garden. Propagated by seeds and by division of the roots and clumps.

Athòa: *A. Gussonei.*

azùrea-setòsa: *A. orientalis.*

ciliàta. Per. to 2 ft.: lvs. usually in 4's, linear-lanceolate, to 1¼ in. long, acute, margins revolute, setose-ciliate, midrib often setose beneath: fls. white, tube as long as lobes, infl. a paniculate cyme. Cent. and E. Eu.—Very similar to *A. tinctoria*, differing in the setose-ciliate lvs. and longer corolla-lobes.

cynánchica. Per. to 1 ft.: lvs. in 4's, linear, to ⅔ in. long: fls. white or pink, few in paniculate cymes, tube longer than lobes. Eu., Asia.

galioìdes: *A. glauca.*

glaùca (*A. galioides*). Erect per. to 3 ft., sts. tèrete, glabrous, swollen at nodes: lvs. linear-acute, in whorls of 6–10, to nearly 1 in. long, glaucous beneath, margins revolute and minutely serrulate-spiculate, apex apiculate: fls. white, about ⅒ in. long, in corymbose panicles. E. Eu.

Gússonei (*A. suberosa. A. Athoa*). Low tufted per.: lvs. opposite, in pairs, ovate-oblong to linear-lanceolate: fls. pinkish-white, inconspicuous. Sicily.

hexaphýlla. Per. to 2 ft. or more: lvs. in 6's, linear: fls. white, tube 3 times as long as lobes. S. Eu.

hírta. Hairy per. to 8 in.: lvs. in 6's, linear: fls. pinkish, small, tube slightly longer than lobes. Pyrenees.

humifùsa. Per., decumbent, much branched: lvs. in 6's, narrow-linear: fls. cream-colored, tube about length of lobes. S. E. Eu.

lævigàta. Per. to 1½ ft.: lvs. in 4's, oval: fls. white, very small. S. Eu.

longiflòra. To 1½ ft.: lvs. in 4's, linear or linear-lanceolate: fls. pink or white, tube 2–3 times longer than lobes. Eu.

longifòlia: *Galium longifolium.*

lùtea. Probably per., to 3 in., woody at base, sts. erect or ascending: lvs. linear-lanceolate, in 4's, serrulate-apiculate: fls. yellowish, to ⅛ in. across, in small terminal clusters. Greece.

odoràta. SWEET W. Per. to 8 in., spreading, herbage fragrant: lvs. in 8's, lanceolate: fls. white. Eu., Asia.

orientàlis (*A. azurea-setosa*). Branched ann. to 1 ft.: lvs. in 8's, lanceolate: fls. blue, ⅜ in. long, in terminal head-like clusters subtended by leafy bracts. Eu., Asia.

scutellàris. Per. to 1 ft.: lvs. filiform, covered with translucent dots, margins revolute: fls. pale yellow, solitary, axillary and terminal on short peduncles. Albania.

suberòsa: *A. Gussonei.*

tinctòria. DYERS W. Per. to 2 ft., with reddish roots: lvs. in 4's and 6's, linear, margins revolute, glabrous: fls. white or reddish. Eu.

ASPHODEL: *Asphodelus;* also *Asphodeline lutea.* **Bog-:** *Narthecium.*

ASPHODELÌNE. JACOBS-ROD. *Liliaceæ.* Herbs with fleshy roots, simple sts., and white or yellow fls. in dense long racemes. Name in five syllables.

Hardy and of easy cultivation in any soil, useful for border or wild-garden. Propagated by division, and by seeds when available.

Balánsæ. To 2 ft.: lvs. all basal, linear, to 10 in. long: fls. white, about ½ in. long. Cilicia.

brevicaùlis. To 2 ft.: lvs. 3–6 in. long, linear: fls. greenish-yellow, in lax racemes to 8 in. long, scape leafy to one-half its length. Asia Minor.

libúrnica. To 2 ft.: lvs. to 4 in. long, sts. leafy only a third or half the way to raceme: fls. yellow, in lax racemes, bracts small, to ¼ in. long. Greece, Austria, Italy, Dalmatia.

lùtea (*Asphodelus luteus*). ASPHODEL of the ancients. To 4 ft., with leafy sts.: lvs. linear, to 1 ft. long: fls. yellow, fragrant, 1 in. long. Medit. region.

taùrica. To 2 ft.: lvs. 8–9 in. long, narrowly linear, erect, sharp-pointed: fls. white, in dense cylindrical racemes, leafy to base of infl. Asia Minor, Greece.

ASPHÓDELUS. ASPHODEL. *Liliaceæ.* Fleshy-rooted herbs with basal lvs. and white funnel-shaped fls. in racemes terminating leafless scapes.

Of easy culture in the open, in the border or wild-garden. Propagated by division.

álbus (*A. delphinensis*). Per. to 4 ft.: lvs. 3-angled: fls. ¾ in. long. Medit. region.

delphinénsis: *A. albus.*

lùteus: *Asphodeline lutea.*

ramòsus. Per. to 5 ft.: lvs. sword-shaped: fls. in a branching infl. Medit. region.

taúricus: *Asphodeline taurica.*

tenuifòlius. Per.: lvs. 3-angled: scape long, much branched or panicled, bracts pale yellow. Medit. region, Canary Isls.

ASPIDÍSTRA. *Liliaceæ.* Per. herbs with thick roots, stiff and shining basal lvs., and dark bell-shaped fls. borne singly at surface of ground and obscured by foliage (and therefore not often observed).

Popular florists window-box and porch plants. They withstand hard usage, dull light and poor soil. Propagated by division in early spring.

elàtior (*A. lurida*). Lvs. to 2½ ft., oblong-elliptic, to 4 in. across, evergreen: fls. purple-brown, 1 in. across. China. Var. **punctàta** has larger fls. which are pale green spotted with purple inside. Var. **variegàta** has lvs. striped green and white.

lùrida: *A. elatior.*

ASPIDIUM: *Cyrtomium, Dryopteris, Polystichum.*

ASPIDOSPÉRMA. *Apocynaceæ.* Trees with hard wood, native in S. Amer. and W. Indies, having simple lvs., small fls. in many-fld. terminal panicles, and fr. of 2 roundish or oblong follicles; one species has been planted in S. Calif.

Quebrácho-blánco. Tall tree with trunk to 3 ft. thick and white wood: lvs. oval-lanceolate, to 3 in. long and 1 in. wide, entire, leathery and shining: fls. white: fr. to 3 in. long. Argentina.

ASPLÈNIUM. SPLEENWORT. *Polypodiaceæ.* A large genus of ferns, some of them native in the N. and therefore hardy; but most cult. kinds are grown in the greenhouse, usually evergreen with simple, deeply cut or compound fronds; sori attached to upper side of veinlets. Some of the species are now treated under Athyrium.

They require no special handling, but under glass should not be too much exposed to strong sunshine; if kept too wet they may lose color in the slow season. See *Ferns.*

acrostichoìdes: *Athyrium thelypteroides.*

angustifòlium: *Athyrium pycnocarpon.*

Belángeri. Fronds evergreen, long and narrow, to 1½ ft. long and 4 in. wide, 2-pinnate, pinnules ¼ in. long, entire, often bulblets at the axils. Malaya.

Brádleyi. Fronds evergreen, oblong-lanceolate, 1½–8 in. long, 1-pinnate with the pinnæ oblong-ovate, obtuse, incised or pinnatifid, ¼ to 1 in. long, stipe chestnut-brown. N. Y. to Ga. and Okla.

bulbíferum. MOTHER S. Fronds to 4 ft. long and 1 ft. broad, 2–3-pinnate, pinnæ to 1½ in. long, lobed or divided, with bulbs or plantlets on upper surface. New Zeal., Australia, Malaya. Var. **láxum** is smaller with finer foliage.

ebenèum: *A. platyneuron.*

Fìlix-fémina: *Athyrium Filix-femina.* Var. **califórnicum:** *Athyrium Filix-femina* var. *californicum.* Var. **cyclosòrum:** *Athyrium Filix-femina* var. *sitchense.*

gemmíferum. Fronds to 2 ft. long and 8 in. wide, simply pinnate, pinnæ to 6 in. long, slightly toothed. Afr., Madagascar.

Goeringiànum: *Athyrium Goeringianum.*

Hemionìtis. Fronds 6 in. long and wide, hastate, with 2 lateral lobes and triangular terminal lobe. Spain, Canary Isls.

lánceum: *Diplazium lanceum.*

longíssimum. Fronds to 8 ft. long, simply pinnate, pinnæ to 4½ in. long, slightly toothed, rooting at tips, stipes blackish, to 1 ft. long. Malaya.

lùcidum. Fronds leathery, to 3 ft. long and 14 in. wide, simply pinnate, pinnæ to 6 in. long, wavy-toothed, stipes grayish, scaly, to 1½ ft. long. New Zeal.

montànum. Fronds triangular-ovate, 1–2-pinnate into ovate toothed or cut pinnæ, on stalks dark brown at base. Conn. to Ga. and Ark.

Nìdus (*A. Nidus-Avis*). BIRDS-NEST-FERN. Fronds simple, bright green, stiff, erect, to 4 ft. long and 8 in. wide, entire, wavy or slightly lobed. Asia, Polynesia.

Nìdus-Àvis: *A. Nidus.*

párvulum: *A. resiliens.*

platyneùron (*A. ebeneum*). EBONY S. Hardy: fronds to 15 in. long and 3 in. wide, pinnate, stipes purplish-brown. Me. to Ga., Tex., Kans., and Colo.; S. Afr.

pycnocárpon: *Athyrium pycnocarpon.*

resíliens (*A. parvulum*). Fronds linear-elliptic, to 10 in. long, simply pinnate into elliptic entire or slightly crenate pinnæ, the stipes blackish and shining. Pa. to Fla. and Mex.; S. Amer.

Rùta-murària. Fronds ovate-lanceolate to deltoid, to 3 in. long, 2–3-pinnate into narrowly cuneate or roundish-obovate pinnæ, toothed at the apex, with green stipes. E. U. S. and Eurasia. (The American and Old World plants are sometimes separated as subspecies).

thelypteroìdes: *Athyrium thelypteroides.*

Trichómanes. MAIDENHAIR S. Hardy: fronds evergreen, simply pinnate, clustered, to 8 in. long and ¾ in. wide, pinnæ about ½ in. long, slightly toothed. N. Amer., Eu., Asia. Var. **vespertìnum:** *A. vespertinum.*

vespertìnum. Tufted, evergreen with numerous fronds, to 11 in. long and 1 in. wide, pinnæ oblong, deeply crenate, stipes purplish-brown, shining. S. Calif.

víride. Fronds to 8 in. long and ½ in. wide, simply pinnate into ovate deeply crenate pinnæ. N. N. Amer., Eu., Asia.

vivíparum. Fronds to 2 ft. long and 8 in. wide, 2-pinnate, pinnæ about ¼ in. long, often bulb-bearing. Mauritius, Bourbon.

ASPRELLA: *Hystrix.*

ASPRIS: *Aira.*

ASSONIA: *Dombeya.*

ASTARTÈA. *Myrtaceæ.* Australian heath-like shrubs with small opposite lvs. and small pink or white fls. solitary in the axils; one species occasionally planted in S. Calif.

fasciculàris. To 10 ft.: lvs. linear, ¼ in. long, sometimes clustered. W. Australia.

ASTÈLIA. *Liliaceæ.* Tufted per. herbs native in New Zeal., Australia and Pacific Isls., with linear mostly basal lvs. and small unisexual fls.; one species is grown in the open in S. Calif.

Cockàynei. Differs from *A. nervosa* in lvs. 1–1½ in. wide, silky on both sides and often villous, and fls. in smaller less branched panicles. New Zeal.

nervòsa. Lvs. to 8 ft. long and 1½–4 in. wide, leathery, many-nerved, margins recurved: fls. dark green, fragrant, to ½ in. across, in much branched panicles. New Zeal.

ÁSTER. STARWORT. MICHAELMAS DAISY. *Compositæ.* Herbaceous leafy-stemmed perennials, rarely annuals, with alternate lvs. and fl.-heads usually clustered, sometimes solitary, blooming in summer and autumn; rays numerous, flattish, white, blue, red or purple; disk-fls. mostly yellow; pappus of bristles. Asters of many kinds are characteristic of the N. American autumnal flora. Some of them, as *A. novi-belgii*, have been much modified under cult. The species here listed are perennials.

Most perennial asters thrive best in a medium rich soil. The named garden forms are increased usually by division or cuttings as seeds do not reproduce true to type. The more common native asters may be propagated by seed sown in spring for bloom the following year, or by division in either autumn or spring. They are adapted to rear borders, for colonizing, and for bold clumps. The China aster of flower-gardens is a different plant: see *Callistephus*.

àcris. To 3 ft., rough-hairy: lvs. linear, entire, to 1½ in. long: heads clustered, to 1¼ in. across; ray-fls. blue. S. Eu. Var. **nànus** is very dwarf, not over 15 in.

acuminàtus. To 3 ft., slightly pubescent: lvs. broad-oblong, to 6 in. long, sharp-toothed: heads clustered, to 1½ in. across; ray-fls. white or purplish. Lab. to Ga.

Áliceæ: probably *Erigeron Aliceæ.*

alpìnus. Rock A. To 10 in., pubescent: lvs. spatulate to linear-lanceolate, to 2 in. long, entire: heads solitary, 1½ in. across; ray-fls. blue or violet. Mts. of Eu., Asia, W. N. Amer. Vars. in the trade are: **álbus,** fls. white; **dolomíticus,** dark lavender; **gigantèus,** robust with larger fls.; **himalàicus,** lilac; **Leichtlínii,** bright blue; **magníficus,** white, said to be larger than *albus;* **ròseus,** bright rose; **rùber,** rosy-purple; **speciòsus,** heads to 4 in. across; **supérbus,** larger than type and more showy; **Wólfii,** plant taller, sparsely pubescent, fls. blue. Alps.

altàicus. To 3 ft., sts. green, grooved: lvs. linear-oblong, to 2 in. long, sessile, obtuse, entire: ray-fls. blue, 20–30, in solitary heads to ⅔ in. across. Cent. Asia.

amelloìdes: *A. Amellus.*

Amélius (*A. amelloides*). Italian A. To 2 ft., rough-hairy: lvs. oblong or oblong-lanceolate, nearly entire: heads clustered, to 1¾ in. across; ray-fls. purple. Eu., Asia. Var. **bessarábicus** (*A. bessarabicus*) has larger deeper purple fls. Var. **élegans** is lower and free-flowering. Var. **ibéricus** (*A. ibericus*) has bright dark blue fls.

amethýstinus. To 5 ft., rough-hairy: lvs. linear-lanceolate, to 2 in. long, entire: heads clustered, to 1 in. across; ray-fls. blue or violet. Vt. to Neb.

Ándersonii. To 15 in.: lvs. mostly basal, linear, to 8 in. long, entire: heads solitary, to 2 in. across; ray-fls. purple or blue. Calif.

ápricus. To 8 in., pubescent: lvs. oblong, to 2 in. long: heads usually solitary; ray-fls. purple. B. C. to Colo. Var. **Pikeànus** has large blue-lavender fls., to 10 in. high.

asteroìdes: probably *Sericocarpus asteroides.*

azùreus. To 4 ft., rough-hairy: lvs. ovate to lanceolate, entire, to 6 in. long, the lower cordate and long-stalked: heads numerous, ½ in. across; ray-fls. bright blue. Ont. to Ga. and Tex.

Bàtesii. Per. to 2 ft., much branched: lvs. linear, to 1¼ in. long and about ⅛ in. wide, sessile, spine-tipped, hispidulous-strigose: ray-fls. sky-blue, disk-fls. flesh-colored, heads to ⅝ in. across, bracts bristle-tipped. Neb.

Bellidiástrum (*Bellidiastrum Michelii*). To 1 ft.: lvs. in a basal rosette, toothed: heads single; ray-fls. white. S. Eu.

Bergeriànus: *Felicia Bergeriana.*

bessarábicus: *A. Amellus* var.

Bígelovii (*A. Townshendii. Machæranthera Bigelovii*). Bien. to 3 ft., pubescent: lvs. oblong or lanceolate, coarsely toothed: heads clustered, to 2½ in. across; ray-fls. violet. Colo. to Ariz.

brachýtrichus. To 10 in.: lvs. obovate, to 2¼ in. long: heads solitary, to 2 in. across; ray-fls. violet. China.

cabúlicus: *Microglossa albescens.*

cærùleus: listed name for a blue-fld. form.

Cánbyi. To 2 ft.: lvs. oblanceolate, to 8 in. long: heads clustered, to 1½ in. across; ray-fls. red-purple or rose. Ida. to New Mex.

capénsis. Shrubby per., st. woody at base: lvs. usually opposite, oblong to suborbicular, base obtuse or cuneate, hairy, margins reflexed: ray-fls. bluish, in solitary heads. S. Afr. Var. **rotundifòlius** (*A. rotundifolius*) may not differ from type, although some authors consider it an ann.

caroliniànus. More or less woody, diffuse or climbing, to 4 ft., soft-pubescent: lvs. elliptic to lanceolate, 2–4 in. long: heads few or solitary on branchlets; ray-fls. pink or purplish. S. C. to Fla.

cassiarábicus. To 2 ft., pubescent: lvs. ovate, toothed: heads clustered; ray-fls. pink. Russia. Var. **grandiflòrus** is listed.

caucásicus. To 2 ft.: lvs. ovate to oblong-lanceolate, to 2 in. long, slightly toothed: heads solitary, about 1½ in. across; ray-fls. purple. Caucasus.

Chamissònis: *A. chilensis.*

Chápmanii. To 3 ft., unbranched, glabrous: lvs. linear, to 1 ft. long, entire: heads solitary, to 1 in. across; ray-fls. violet. Fla.

chilénsis (*A. Chamissonis*). To 3½ ft.: lvs. lanceolate, to 5 in. long, entire: heads clustered, to 1 in. across; ray-fls. white, lavender or bluish. Calif.

cognàtus. To 1½ ft., shrubby: lvs. elliptic or oblong, to 1¼ in. long, spiny-toothed: heads solitary, to 2 in. across; ray-fls. blue or violet. Desert, Calif.

cóncolor. To 2½ ft., st. little branched: lvs. linear-oblong to ovate, to 2 in. long, acute, densely canescent on upper sides and usually so beneath: ray-fls. lilac, in numerous heads forming an elongate raceme. S. New England to Fla. and La.

conspícuus. To 2 ft., pubescent: lvs. ovate to obovate, ½ in. long, toothed: heads in corymbs, to 1 in. across; ray-fls. violet. B. C. to S. D.

cordifòlius. Blue Wood A. To 5 ft., much branched: lvs. ovate to lanceolate, to 5 in. long, the basal cordate and long-stalked, pubescent: heads numerous, to ¾ in. across; ray-fls. violet or blue. N. S. to Ga. and Mo. Var. **versícolor,** with light pink fls., is listed.

corymbòsus: *A. divaricatus.*

Cúrtisii. To 5 ft., glabrous: lvs. varying from linear to ovate, toothed: heads panicled, 1 in. across; ray-fls. violet-blue. N. C., Tenn. to Ga.

decúrrens: *A. lævis.*

Delavàyi. To 3 ft.: lvs. ovate-lanceolate, toothed: heads solitary, to 4 in. across; ray-fls. blue-purple, disk violet-brown. China.

delicàtus: hort. name.

diffùsus: *A. lateriflorus.*

diplostephioìdes. To 3 ft., pubescent: lvs. lanceolate, to 3 in. long, entire: heads solitary, to 3 in. across; ray-fls. blue or pale purple. Himalayas. A listed name under this species is **Leichtlínii,** pale blue.

divaricàtus (*A. corymbosus*). White Wood A. To 2½ ft., glabrous: lvs. ovate-lanceolate, toothed, long-stalked: heads in corymbs, to 1 in. across; ray-fls. white. Que. to Ga. and Tenn.

Doúglasii. To 4 ft.: lvs. lanceolate to linear, to 6 in. long, entire or slightly toothed: heads in panicles, ½ in. across: ray-fls. light blue. B. C. to Calif. and Wyo.

dracunculoìdes (*Galatella dracunculoides*). Much branched, very leafy: lvs. linear-lanceolate: heads in corymbs; ray-fls. blue. S. Eu., W. Asia.

Drúmmondii. To 5 ft., pubescent: lvs. ovate or ovate-lanceolate, toothed, to 4 in. long, basal cordate: heads numerous, to ½ in. across; ray-fls. blue. Ohio to Minn. and Tex.

dumòsus. To 3 ft.: lvs. linear or spatulate, to 3 in. long, entire: heads numerous, ½ in. across; ray-fls. blue to white. Mass. to Fla. and La.

Èatonii. To 3 ft.: lvs. linear, entire: heads numerous, ½ in. across; ray-fls. lavender to whitish. B. C. to Colo.

elongàtus. To 2 ft., woody at base, rigidly hispid, much branched: lvs. oblong-lanceolate to linear, to 1¾ in. long, 1-nerved, often entire and glandular-pubescent, thin: heads on long leafless stalks. S. Afr.

ericoìdes. Heath A. To 3 ft.: lvs. spatulate to linear, to 3 in. long, toothed: heads numerous, ½ in. across; ray-fls. white or pinkish. Me. to Fla. and Mo. Var. **villòsus** (*A. pilosus*) is pubescent.

Fárreri. To 1½ ft., pubescent: lvs. linear or linear-lanceolate, to 6 in. long, entire: heads solitary, to 3 in. across; ray-fls. deep blue. Tibet.

Féndleri. Tufted per. to 1 ft.: lvs. linear, to 1¼ in. long, sessile: ray-fls. violet, disk yellow, heads to ¾ in. across, bracts and peduncle glandular. Kans. to Colo. south to Tex. and New Mex.

filifòlius (*Diplopappus filifolius*). Shrub to 3 ft.: lvs. linear-filiform, 3–5-nerved, glandular-punctate, glabrous: heads solitary, to 1 in. across; ray-fls. purple. S. Afr. Var. **elongàtus** as listed is probably *A. elongatus.*

floribúndus: *A. novi-belgii.*

fluviátilis. Per. to 3½ ft.: lvs. lanceolate-linear, to 4 in. long, slightly clasping or sessile, entire to denticulate: ray-fls. purple, disk yellow, heads to 1 in. across. Ia. to Colo.

folìaceus. To 3 ft.: lvs. lanceolate, to 4 in. long, nearly entire: heads few, 1 in. across; ray-fls. violet. N. N. Amer. Var. **fróndeus** is *A. frondeus.*

Fórrestii. To 1 ft.: lvs. mostly basal, obovate-lanceolate, to 4 in. long, entire, dark green: heads solitary, to 3 in. across; ray-fls. purple-violet, disk rich orange. Mts., Tibet, Yunnan.

Frèmontii. To 1 ft.: lvs. oblanceolate, to 4 in. long, entire: heads in small corymbs; ray-fls. purple. B. C. to Colo.

Frìkartii. Hybrid between *A. Thomsonii* and *A. Amellus*: 2 ft.: heads solitary, to 3 in. across, fragrant; ray-fls. violet-blue.

fróndeus (*A. foliaceus* var. *frondeus*). To 3 ft.: lvs. oblanceolate, to 8 in. long, entire: heads solitary or few, to 1 in. across. B. C. to Colo.

fruticòsus (*Diplopappus fruticulosus*). Shrub to 3 ft., densely branched: lvs. broadly linear, entire: heads solitary, 1 in. across; ray-fls. purple. S. Afr.

Garibáldii is referred to *A. alpinus*.

grácilis. To 1½ ft., corymbosely branched: lvs. ovate to linear-oblong, petioled, to 3 in. long, minutely scabrous: ray-fls. 9–15, violet, heads about ¾ in. across, numerous. N. J. to Ky. and S. C.

gracíllimus: hort. name for a form with small white fls. turning blue.

grandiflòrus. To 2½ ft., hairy, much branched: lvs. oblong to linear, to 2 in. long, entire: heads solitary, 2 in. across; ray-fls. deep violet. Va. to Fla.

Greàtai. To 2½ ft., pubescent: lvs. obovate, to 8 in. long, toothed above middle: heads numerous; ray-fls. light purple. Calif.

Harrowiànus. Shrub to 5 ft.: lvs. lanceolate, to 5 in. long, toothed: heads in corymbs; ray-fls. pale purplish-blue. China.

hespèrius. To 3 ft., somewhat hairy: lvs. lanceolate, to 4 in. long, nearly entire: heads numerous; ray-fls. white or violet. Calif.

himalàicus. To 1½ ft., pubescent: lvs. obovate or oblong, to 2 in. long, entire or toothed: heads solitary, 1½ in. across; ray-fls. lilac-blue. Himalayas.

horizontàlis. Per. to 3 ft.: lvs. lanceolate-acute, to 3½ in. long: heads to ¾ in. across, very abundant, in somewhat spreading panicles; ray-fls. pink to purplish. Probably W. Medit. region.

hýbridus: hort. name of uncertain application, but often applied to a garden race of dwarf forms in a wide assortment of colors and to which many varietal names have been given. The plant known as var. **lùteus** is *Solidaster luteus*.

ibéricus: *A. Amellus* var.

incìsus: *Calimeris incisa*.

japónicus. Per. to 14 in., erect, pilose: lvs. elliptic, to 2½ in. long, entire, many-nerved, margins long-ciliate: heads to 1¼ in. across; ray-fls. purplish. Japan.

Kúmleinii. To 1½ ft., st. often yellowish: lvs. oblong, 1 in. long, sessile: heads to ½ in. across; ray-fls. bluish-violet. Wis. to Tex.

læ̀vis (*A. decurrens*). To 4 ft., glabrous: lvs. ovate to lanceolate, to 5 in. long, entire or toothed: heads numerous, 1 in. across; ray-fls. blue or violet. Me. to La.—Modified in cult., and often grown in tropics. Var. **subalpìnus** is listed as a dwarf mt. form to 2 ft.

lanceolàtus: a confused name; plants so listed may usually be referred to *A. paniculatus* or *A. salicifolius*.

lateriflòrus (*A. diffusus*). To 5 ft.: lvs. ovate to linear-oblong, to 5 in. long, toothed: heads numerous, ⅓ in. across; ray-fls. white or pale purple. N. S. to N. C. and Tex. Var. **horizontàlis** has long wide-spreading branches.

ledophýllus (*Eucephalus ledophyllus*). To 2½ ft.: lvs. lanceolate, to 2 in. long, entire or slightly toothed, tomentose beneath: heads solitary or clustered; ray-fls. violet. B. C. to Ore.

likiangénsis. Dwarf, glandular-hairy, to 9 in., bearing 1 head: lvs. mostly basal, lanceolate to ovate or obovate, to 1 in. or more long and ½ in. broad: heads large; ray-fls. blue-purple, about ¾ in. long. Yunnan, China.

linariifòlius (*Ionactis linariifolius*). To 2 ft., very leafy, hairy: lvs. linear, to 1½ in. long, entire, stiff: heads several, 1 in. across; ray-fls. violet or rarely white. Me. to Fla. and Tex.

Linósyris: *Linosyris vulgaris*.

Lípskyi. Differs from *A. subcæruleus* in the more robust habit and larger lilac fls. Tibet.

longifòlius (*A. virgineus*). To 3 ft., much branched: lvs. lanceolate or linear-lanceolate, to 8 in. long, entire: heads numerous, 1 in. across; ray-fls. violet or pale purple. Lab. to Mont.

Lowrieànus. To 4 ft., glabrous or nearly so: lvs. ovate-lanceolate, to 6 in. long, base cordate, serrate or incised, petioles frequently winged: ray-fls. light blue, heads to 1¼ in. across. Conn. to Ky. and to Ont.

lùteus: the material in cult. so named is probably *Solidaster luteus*.

Maàckii. To 2 ft., hairy: lvs. lanceolate, to 2½ in. long, nearly entire: heads solitary, large; ray-fls. bluish. Japan.

macrophýllus. To 3 ft., rough: lvs. cordate-ovate to oblong, to 10 in. long, toothed: heads numerous, about 1 in. across; ray-fls. lavender. Canada to Minn. and N. C.

méritus. Ascending to 1½ ft.: lvs. narrowly-elliptic to lanceolate, to 2¼ in. long, acute sessile, serrulate, base of larger lvs. cuneate: ray-fls. violet, heads to 1 in. across. S. D. to B. C.

mìser: a name of uncertain botanical standing; the plants so named in the trade may be *A. vimineus*.

multiflòrus. To 7 ft., rough: lvs. linear or linear-oblong, to 1½ in. long, entire: heads crowded, ⅛ in. across; ray-fls. white. Me. to Ga. and Ariz.

nebraskénsis. Per. to 2½ ft.: lvs. oblong-lanceolate, to 3 in. long, acute, sessile, entire: heads few, to 1¼ in. across; ray-fls. purple. Neb.

nemoràlis. To 2 ft., slender, st. puberulent: lvs. oblong-lanceolate or narrower, acute, to 3 in. long, dentate or entire, sessile: fls. violet or purplish, to 1½ in. across. Newf. to N. J. and west.

nòvæ-ángliæ. New England A. To 5 ft., very leafy, hairy: lvs. lanceolate, to 5 in. long, entire: heads crowded, to 2 in. across; ray-fls. deep purple. Que. to S. C. and Colo. —Color forms listed are **álbus, ròseus, rùber** and **violàceus.**

nòvi-bélgii (*A. floribundus. A. thyrsiflorus*). New York A. To 3 ft., glabrous: lvs. oblong to linear-lanceolate, to 6 in. long, nearly entire: heads numerous, about 1 in. across; ray-fls. bright blue-violet. Newf. to Ga.—Many of the named hort. asters belong here, largely of European origin. Var. **nànus** is listed.

oblongifòlius. To 2 ft. or more, pubescent, much branched: lvs. oblong to lanceolate, somewhat clasping, entire, acute, to 2 in. long: fls. violet to rose-pink. Pa. south and west. Var. **rigídulus** has more rigid and hispidulous lvs. and is of lower stature.

occidentàlis. To 3 ft.: lvs. linear-lanceolate, to 8 in. long, entire or with few teeth: heads in corymbs, ½ in. across; ray-fls. violet. Alaska to Calif.

Órcuttii. Bushy per. to 3 ft., woody at base: lvs. obovate to oblong, to 2 in. long, glabrous, spiny-toothed: heads solitary, to 2½ in. across; ray-fls. lavender. Calif.

oregànus. To 2 ft.: lvs. linear or linear-lanceolate, to 3 in. long, entire: heads clustered, ⅓ in. across; ray-fls. purplish or white. B. C. to Nev.

oreóphilus. Probably per., to 18 in., pubescent: lvs. spatulate to oblong-linear, to 2½ in. long, obtuse, sessile, pilose beneath: heads usually 3–7 in erect fastigiate corymb, to 1¼ in. across; ray-fls. violet, bracts of involucre obtuse. China.

orientàlis: *Inula britannica*.

paludòsus. To 2½ ft., scarcely branched: lvs. linear, to 6 in. long, entire: heads few, to 2 in. across; ray-fls. deep violet. Swamps, N. C. to Fla. and Tex.

paniculàtus. To 8 ft., much branched, nearly glabrous: lvs. lanceolate to linear, to 6 in. long, slightly toothed: heads numerous, ¾ in. across; ray-fls. white or tinged violet. N. B. to Mont. and Mo.

pàtens. To 3 ft., rough, branched: lvs. ovate-oblong, to 3 in. long, entire: heads solitary, 1 in. across; ray-fls. purplish-blue. Me. to Fla. and Tex.

Páttersonii (*Machæranthera Pattersonii*). To 8 in., bien., hairy: lvs. spatulate, to 2½ in. long, slightly toothed: heads solitary or few, 1 in. across; ray-fls. purple. Mts., Colo.

paucicapitàtus (*Eucephalus paucicapitatus*). To 1½ ft.: lvs. elliptic-oblong, 1 in. long: heads usually solitary, 1½ in. across; ray-fls. white turning pink. Wash.

peregrìnus: *Erigeron peregrinus*.

pilòsus: *A. ericoides* var. *villosus*.

Pórteri. To 1 ft., glabrous: lvs. linear or oblanceolate, to 4 in. long: heads numerous; ray-fls. white. Colo. Var. **supérbus** is an improved form.

præ̀cox: hort. form with purple rays and orange disk.

ptarmicoìdes (*Unamia alba*). White Upland A. To 2 ft.: lvs. linear-lanceolate, to 6 in. long, nearly entire: heads corymbose, to 1 in. across; ray-fls. white. Mass. to Colo.

pulchéllus: hort. name; perhaps *Erigeron pulchellus*.

punìceus. To 8 ft., with reddish hairy sts.: lvs. lanceolate, to 6 in. long, toothed or entire: heads numerous, to 1½ in. across; ray-fls. violet-purple to white. Swamps, Newf. to Minn. and Ga.

Púrdomii. Per. to 6 in.: lvs. mostly basal, few, ovate to obovate-elliptic, to 1½ in. long, distinctly petioled, briefly setose-pubescent on each side, margin 2–3-toothed: heads to 2½ in. across; ray-fls. pale violet. China.

pyramidàlis: listed form with light blue fls. tinged rose.

pyrenæ̀us. To 1½ ft., rough-pubescent: lvs. oblong-lanceolate, toothed: heads solitary or few, 2½ in. across; ray-fls. lilac. S. Eu.

Rádula. To 2 ft.: lvs. lanceolate, to 3 in. long, toothed: heads several, to 1½ in. across; ray-fls. violet. Swamps, Newf. to W. Va.

Róbinsonii: listed name.

ròseus. The material so named in the trade is probably a form of *A. novi-belgii*. True *A. roseus* from Caucasia is a per. to 15 in., with lvs. narrowly linear, entire and sessile.

rotundifòlius: *A. capensis* var.

sagittifòlius. To 5 ft.: lvs. ovate-lanceolate, to 6 in. long, toothed, the lower cordate or sagittate at base: heads crowded, ¾ in. across; ray-fls. light blue or purplish. N. C. to Ga. and Mo.

salicifòlius. To 5 ft., much branched, glabrous: lvs. lanceolate or linear-lanceolate, to 4 in. long, entire or slightly toothed: heads numerous, 1 in. across; ray-fls. violet-purple to white. Me. to Fla. and Tex.

salviæfòlius. Alpine: lvs. pubescent: fls. white, large, single. Japan.

Schrèberi. To 3 ft.: lvs. cordate-triangular to lanceolate, to 7 in. long, toothed: heads corymbose, to 1 in. across; ray-fls. white. N. Y. to Mich. and Va.

seríceus. To 2 ft., much branched: lvs. oblong, to 1½ in. long, entire, silvery-pubescent: heads numerous, 1½ in. across; ray-fls. violet-blue. Ill. to Tex.

Shórtii. To 4 ft.: lvs. cordate-ovate to lanceolate, to 6 in. long, nearly entire, pubescent beneath: heads numerous, 1 in. across; ray-fls. violet-blue. Pa. to Ga. and Tenn.

sibíricus. To 2 ft.: lvs. oblong to lanceolate, 1–3 in. long, toothed: heads solitary, to ¾ in. across; ray-fls. violet. N. Asia, N. Eu. Var. **alaskénsis** is listed.

sinénsis of lists is *Callistephus chinensis*.

spectábilis. To 2 ft.: lvs. oval to linear-oblong, to 5 in. long, nearly entire: heads several, 1½ in. across; ray-fls. bright violet. Mass. to Del.

Stràcheyi. Stoloniferous, dwarf: lvs. obovate-spatulate, to 2 in. long, toothed or cut: heads solitary, ¾ in. across; ray-fls. lavender-blue. Himalayas.

subcærùleus. To 1 ft., pubescent, unbranched: lvs. oblong, entire or toothed: heads solitary, to 2 in. across; ray-fls. pale blue. India. A listed form with lavender fls. is **Leichtlínii.**

subcordàtus cærùleus: hort. form with lavender-blue heads.

subséssilis. Erect to 3 ft. or more, much and stoutly branched: lvs. ovate-oblong, to 3 in. long, sessile, entire, acute, often clasping: heads small, many, very short-peduncled. Mo. to Ala.

supérbus: probably *A. alpinus* var.

surculòsus. CREEPING A. To 1½ ft.: lvs. linear-lanceolate, to 3 in. long, somewhat dentate, lower ones petioled: ray-fls. violet, heads to 1½ in. across. Ky. to Ga. Var. **álbus** is listed.

tatáricus. To 7 ft., hairy: lvs. lanceolate or ovate-lanceolate, the basal to 2 ft. long, entire: heads numerous, 1 in. or more across; ray-fls. blue or purple. Siberia.

tenuifòlius. To 2 ft.: lvs. linear, to 6 in. long, entire: heads few, to 1 in. across; ray-fls. pale purple to white. Salt marshes, Mass. to Fla.

Thómsonii. To 3 ft., hairy: lvs. broad-ovate, to 4 in. long, coarsely toothed: heads few, to 2½ in. across; ray-fls. lilac. Himalayas. Var. **nànus** is listed.—Plants grown under this name may be forms of *A. novi-belgii*.

thyrsiflòrus: *A. novi-belgii*.

tibéticus. To 1 ft., hairy: lvs. lanceolate to oblanceolate, to ½ in. long, often petioled, entire: ray-fls. bright blue, heads 1–3, to 2 in. across. W. Himalayas and Tibet.

tortifòlius. To 2 ft., shrubby, white-pubescent: lvs. linear to lanceolate, to 3 in. long, spiny-toothed: head solitary, to 2¾ in. across; ray-fls. purple or violet. Desert, Calif., Utah.

Tównshendii: *A. Bigelovii*.

Tradescántii. To 5 ft., much branched: lvs. linear-lanceolate or lanceolate, to 6 in. long, toothed or entire, glabrous: heads numerous, ½ in. across; ray-fls. white. Me. to Va. and Mo.

Tránchii: hort. name for a stout late purple-fld. plant.

tricéphalus. Closely allied to *A. himalaicus* but taller and with red instead of white pappus. Himalayas.

trinérvius. To 3 ft.: lvs. lanceolate-ovate, to 4 in. long, toothed, rough: heads corymbose, ½ in. across; ray-fls. blue or purple varying to white. Himalayas. Var. **congéstus** has denser corymbs. Japan.

Tripòlium. To 3 ft., glabrous: lvs. linear-lanceolate, entire: heads corymbose; ray-fls. blue. Eu.

turbinéllus. PRAIRIE A. To 3 ft., much branched: lvs. lanceolate, to 3 in. long, entire: heads usually solitary, 1 in. across; ray-fls. violet. Ill. to Neb. and La.

umbellàtus (*Doellingeria umbellata*). To 8 ft.: lvs. lanceolate, to 6 in. long, entire: heads corymbose, ¾ in. across; ray-fls. white. Newf. to Ga. and Ia.

undulàtus. To 3½ ft., rough-pubescent, much branched: lvs. ovate-cordate to lanceolate, to 6 in. long, entire or wavy-margined: heads numerous, ¾ in. across; ray-fls. pale blue or violet. N. B. to Fla. and La.

versícolor. To 3 ft., glabrous: lvs. oblong-lanceolate, slightly toothed: heads corymbose, ½ in. across; ray-fls. violet or white. Probably N. Amer.

vestìtus. To 2 ft., densely tomentose: lvs. narrow-lanceolate, to 2 in. long: heads corymbose, small; ray-fls. white. Yunnan.

vimíneus. To 5 ft.: lvs. linear-lanceolate, to 5 in. long, entire or nearly so: heads numerous, ⅓ in. across; ray-fls. white to purplish. Ont. to Fla. and Ark.

virgíneus: *A. longifolius*.

Weìnholtzii: listed name.

yunnanénsis. To 2½ ft., pubescent: lvs. obovate or lanceolate, to 8 in. long, slightly toothed: heads solitary or 2–3, to 2½ in. across; ray-fls. violet-blue. Yunnan.

ASTERAGO: *Solidaster*.

ASTER, BEACH: *Erigeron glaucus*. **China:** *Callistephus*. **Golden:** *Chrysopsis*. **Stokes:** *Stokesia*. **Tree:** *Olearia*.

ASTÍLBE (*Hoteia*). *Saxifragaceæ*. Strong herbaceous perennials with 2–3-ternately compound lvs. having toothed or cut lfts. and bearing panicles of white or pink fls.; Cent. and E. Asia and E. U. S. Often confused with the herbaceous spirea group, especially Aruncus, but those plants have many stamens and several to many separate pistils while the astilbes have usually only 8–10 stamens, and 2–3 pistils distinct or variously united. There are many variables and hybrid astilbes offered by florists; these are sometimes forced under the name Spiræa. The name has three syllables.

Astilbes are of easy cultivation and grow best in rich soil with plenty of water. Propagated by division or by seeds. They may be grown in the open border or forced under glass. It requires from ten to fourteen weeks to bring them into bloom when forced and they will need abundant moisture.

Árendsii. A series of hybrids of *A. Davidii* with different species is in the trade under this collective name; fls. range in color from purplish to nearly white. Var. **pyramidàlis,** of pyramidal habit; var. **ròsea magnífica** is listed as having rose-colored fls. in large panicles.

astilboìdes (*Spiræa astilboides*). To 3 ft.: lvs. distinctly 2–3-pinnate; lfts. ovate, rounded at base, to 2½ in. long, sharp-toothed, hairy: fls. white, crowded in dense spikes, forming a panicle; petals very narrow. Japan.

biternàta (*A. decandra*). To 6 ft.: lvs. to 2 ft. across; lfts. ovate, cordate to rounded at base, sharp-serrate, to 5 in. long: fls. numerous, yellowish-white, the fertile ones with minute petals or none. Mts., Ky. and Va. to Ga.

chinénsis. To 2 ft.: lfts. doubly toothed, longer and narrower than in *A. astilboides:* fls. white, in narrow branching panicles. China. Dwarf forms are listed as **pùmila** and **hùmilis.**

críspa: listed as a dwarf plant to 6 in. tall.

Dàvidii (*A. chinensis* var. *Davidii*). To 6 ft., hairy: primary divisions of lvs. pinnate, the lfts. elm-like, to 1½ in. long, coarsely toothed: fls. rose-pink with dark blue anthers, densely clustered in long narrow panicles to 2 ft. long. China.

decándra: *A. biternata*.

filipéndula: see *Filipendula*.

grándis. To 6 ft.: lvs. ternately pinnate or 3-pinnate; lfts. ovate, doubly toothed, to 4 in. long, somewhat hairy: fls. creamy-white, crowded in panicles to 3 ft. long, with spreading branches. Cent. China.

hùmilis: *A. chinensis* var.

hýbrida: a name of uncertain application for garden forms.

japónica. To 3 ft.: lvs. 2–3-ternate; lfts. narrow- to lanceolate-ovate, sharp-toothed, wedge-shaped at base: fls. small, white, in erect terminal and axillary panicles; petals broad and obtuse. Japan. Listed names are **Mòerheimii,** an improved form, and **rùbens,** rosy-crimson.

koreàna: listed name of unknown botanical standing.

Lemòinei. A race of garden hybrids in which *A. astilboides* has entered, having feathery panicles of white pink-stamened fls.

lobàta: see *Filipendula rubra*.

Mòerheimii: see *A. japonica*.

palmàta: see *Filipendula purpurea.*

rivulàris. To 5 ft., with creeping rhizome: lvs. 2-ternate; lfts. ovate, toothed, to 3 in. long: fls. yellowish-white, in large panicles, the divisions spike-like. Nepal, W. China.

ròsea. Hybrid between *A. chinensis* and *A. japonica:* similar to *A. japonica* in habit but fls. pinkish. The best known forms are Peach Blossom with lighter pink fls., and Queen Alexandra with deeper pink fls.

rubélla. Hybrid with *A. Davidii* parentage, having rose-colored fls.

simplicifòlia. Not over 1 ft.: lvs. simple, ovate, deeply lobed or cut, 3 in. long: panicle slender, narrow, with star-like white fls. Japan. Var. **cárnea** has dark red fls.: var. **ròsea** has rose fls.

sinénsis: *A. chinensis.*

supérba: listed name of a garden form.

Thúnbergii. To 2 ft.: lvs. 2–3-pinnate; lfts. ovate, to 3½ in. long, toothed, hairy: fls. white often becoming pink, in spreading panicles. Japan. Var. **Mòerheimii** is probably *A. japonica* var.

tomentòsa: probably *Spiræa tomentosa.*

Ulmària: see *Filipendula Ulmaria.*

ASTRÁGALUS. Milk Vetch. *Leguminosæ.* Herbs with alternate pinnate lvs. and purple, white or yellow papilionaceous fls. mostly in spikes or racemes: pods leathery, fleshy or papery, not much swollen. Occasionally planted in the border or rock-garden for ornament. Propagated by seeds or division in spring.

aculeàtus. Per., branches prostrate, numerous from woody st., forming mat to 2 ft. across: lfts. 5–7, linear-oblong, long-mucronate: fls. purple, to ¼ in. long, usually 2–7 on a peduncle. Big Horn Mts., Wyo.—A true alpine.

adsúrgens. Per. to 1½ ft., grayish: lfts. 1 in. long: fls. bright purple, in spikes: pod 2-celled, sessile, pointed. B. C. to Kans.

alopecuroìdes. Per. to 5 ft., pubescent, erect: lfts. ovate-oblong, 1 in. long, acute: fls. yellow, in dense ovate to cylindrical spikes: pod erect, inclosed in woolly calyx, ovoid, pubescent and without grooves. Siberia, Cent. Eu.

alpìnus (*Tium alpinum*). Per. to 15 in., often decumbent: lfts. to ½ in. long: fls. violet, in short racemes: pod 1-celled, black-pubescent. Mts. of N. Eu., Asia and N. Amer.

apilòsum (*Tium Michauxii*). Per. to 3½ ft., st. simple, glabrous: lvs. to 6 in. long, lfts. 15–35, oblong-elliptic, to ⅝ in. long: fls. white, to ⅝ in. long, drooping, in lax racemes to 4 in. long: pod linear-falcate, to 1¼ in. long, glabrous, erect or ascending. N. C. to Fla.

aristàtus: *A. sempervirens.*

austrìnus (*Hamosa austrina*). Ann. or bien. to 16 in., often decumbent: lfts. to ⅓ in. long: fls. purplish, in head-like racemes. Tex. to Mex.

bisulcàtus (*Diholcos bisulcatus*). Per. to 2½ ft., often decumbent: lfts. to 1 in. long: fls. purple, in dense spike-like racemes: pod 1-celled, 2-grooved on upper side. Sask. to Colo.

Blàkei. Similar to *A. alpinus* but taller and more erect, with whitish or bluish-purple fls.: pod pubescent, inflated, somewhat 3-sided, to 1 in. long. Me., Vt.

cæspitòsus: see *A. gilviflorus.*

cerámicus (*A. pictus. Phaca picta*). Per. to 8 in., gray-pubescent: lfts. to ¾ in. long: fls. yellowish-white, in few-fld. racemes: pod elliptic-acute, mottled, to ¾ in. long. Colo. to New Mex.

Cìcer. Ann., procumbent, sts. to 1½ ft. long: lfts. to 1 in. long: fls. yellowish, in spikes: pod ovoid, inflated, bristly. Eu.

crassicárpus (*Geoprumnon crassicarpum*). Per. to 15 in., often decumbent, pubescent: lfts. to ½ in. long: fls. violet-purple, in short racemes: pod subglobose, to ¾ in. thick, stipitate. Minn. to Tex.

dánicus: *A. hypoglottis.*

Drúmmondii (*Tium Drummondii*). Per. to 2½ ft., pubescent: lfts. ½ in. long: fls. cream-colored, in racemes to 4 in. long: pod 1-celled, stalked, glabrous, grooved. Sask. to Colo.

Echìnus. Shrub, much branched and spiny: lfts. 5–7 pairs, oblong-lanceolate, to ¼ in. long, woolly, spiny: fls. in globose heads. Asia Minor.

falcàtus. Per. to 2 ft.: lfts. elliptic-oblong, 16–20 pairs, acute to mucronate: fls. greenish-yellow, in spikes: pod pendent, curved, 2-celled, appressed-pilose. Siberia.

flexuòsus (*Homalobus flexuosus*). Per. to 1½ ft., sts. flexuous or decumbent: lfts. to ½ in. long: fls. purple, in racemes: pod cylindrical, acute, strigose, to ¾ in. long. Plains Sask. to New Mex.

frígidus (*Phaca frigida*). Per. to 2 ft.: lfts. to 1 in or more long: fls. yellowish-white, in short racemes. Eu.

galegifórmis. Erect or prostrate per.: lfts. 12–15, elliptic: fls. in long lax racemes: pod oblong, acute, incurved. Caucasus.

gilviflòrus (*Orophaca cæspitosa*). Tufted per. to 4 in., silvery-pubescent: lvs. trifoliate, lfts. ⅔ in. long: fls. yellowish, few in axils: pod less than ½ in. long, oblong, acute, strigose. Man. to Wyo.

glycyphýllos. Per. to 3½ ft., sts. prostrate or ascending, glabrous: lfts. 4–6 pairs, large, oval: fls. yellow, in raceme whose peduncle is about half as long as lf.: pod cylindrical, acute, glabrous. Cent. Eu., W. Asia.

goniàtus. To 10 or 12 in., zigzag and more or less decumbent, from a cespitose rootstock: lfts. 15–21, linear-oblong to elliptic, sometimes retuse, about ⅓ in. long, stipules lanceolate: fls. purple, in a short spike: pod ovoid, to ⅜ in. long, villous, 2-celled. Minn. south and west.

hypoglóttis (*A. danicus*). To 6 in., ascending, from a straggling rootstock: lfts. to 19 and more, oblong or narrower, ½ in. or less long, obtuse, stipules broad and connate: fls. blue-purple, in spikes 1 in. long: pod erect, ovoid, covered with appressed white hairs. Eu.—The plant cult. under this name may be *A. goniatus.*

mexicànus (*Geoprumnon mexicanum*). Per., spreading or decumbent: lfts. to ½ in. long: fls. yellowish-white tipped with blue, in short racemes. Ill. to Tex.

Michaùxii: see *A. apilosum.*

missouriénsis (*Xylophacos missouriensis*). Per. to 5 ft.: lvs. to 5 in. long, silky-pubescent, lfts. to ½ in. long or less: fls. violet-purple, few in short loose spikes: pod 1-celled, sessile, cylindrical-oblong, acute, leathery, to 1 in. long. Sask. to Kans. and N. Mex.

monspessulànus. Per. to 10 in., sts. trailing: lfts. broadly-elliptic, 18–25 pairs, to ⅓ in. long: fls. purple or violet, in short racemes on long ascending peduncles: pod subcylindrical, acute, almost glabrous. Eu., N. Afr.

narbonénsis. Per. to 3 ft., erect, white-villous: lfts. in 15–20 pairs, linear-oblong: fls. pale yellow, to 1 in. long: pod globose-pyramidal, villous, 2–4-seeded. France, Spain.

Onóbrychis. Per. to 1½ ft., sts. decumbent or ascending, gray-pubescent: lfts. to ½ in. long: fls. bright violet, about 1 in. long, in short racemes: pod oval-oblong, villous, short. Eu., W. Asia.

píctus: *A. ceramicus.*

Púrshii. Mat-forming per., white-woolly: lvs. to 2½ in. long, lfts. 9–19, to ½ in. long: fls. white or white and blue, to 1 in. long, in clusters of 3–5: pod oblong, woolly, to ¾ in. long, beak absent. Rocky Mts. Var. **tínctus** has purple fls.

Rùbyi. The plant offered under this name is an Oxytropis, probably *O. tenella,* which see.

sempérvirens (*A. aristatus*). Spiny procumbent subshrub: lfts. ¼ in. long: fls. white or pinkish, in few-fld. heads: pod inclosed in calyx. S. Eu.

sericoleùcus (*Orophaca sericea*). Broadly cespitose with prostrate branches to 3 in. long, very leafy: lvs. trifoliate, lfts. oblanceolate to cuneate-obovate, to ⅓ in. long, densely white-silky: fls. purple, about ¼ in. long: pod ovoid, hoary. Colo. to Neb. and Wyo.

Shortiànus (*Xylophacos Shortianus*). Per., st. to 4 in. long: lfts. to 1 in. long, silky-hairy: fls. blue or violet, in short racemes: pod sessile, lanceolate, curved and beaked. Neb. to Wyo. and Ariz.

spatulàtus (*Homalobus cæspitosus*). Tufted per.: lvs. simple or with 3–5 lfts., linear-oblanceolate, to 2 in. long, appressed silky-hairy: fls. about ⅓ in. long, in short racemes of 2–10 or more: pod about ½ in. long, finely strigose. Neb. to Sask. south to Colo. and Utah.

taùricus. Matted per., silky-pubescent: lfts. linear, 5–6 pairs: fls. purple, small, in loose racemes: pod about ¼ in. long, appressed-hairy, oblong-conical. S. E. Eu.

tridáctylicus (*Orophaca tridactylica*). To 2 in. high, densely white-silky: lvs. trifoliate, lfts. oblanceolate, to ¾ in. long and usually less: fls. purple, often becoming yellowish with age, to ⅓ in. long: pod globose-ovoid, hoary. Colo.

utahénsis (*Xylophacos utahensis*). Pink Lady-Fingers. Per., st. to 4 in. long: lfts. to ⅓ in. long: fls. violet or purple, in dense racemes: pod ovoid, to ¾ in. long, villous, sessile, 1-celled. Mont., Wyo., Utah.

ASTRÁNTIA. Masterwort. *Umbelliferæ.* Herbs with palmately lobed or dissected lvs., indifferent small polygamous fls. in umbels which have leafy involucres, and nearly cylindrical frs.; a few species are sometimes planted in borders for variety. Propagated by seeds and division.

Bièbersteinii. Per. to 1 ft. or less: lvs. 3-parted, the middle section more or less 3-lobed, oblong, serrate: fls. whitish, calyx-lobes pinkish, as long as petals. Caucasus.—By some authors treated as a variety of *A. major*, differing in its smaller and more obtuse basal lf.-segms. and its oblanceolate involucral bracts.

carniólica. Per., similar to *A. major* but only 1 ft. high and the bracts subtending the umbels much shorter than fls. Eu.

grácilis. Per. to 8 in.: lvs. 5-parted: fls. whitish, the umbels subtended by whitish bracts. Eu.

màjor. Per. to 3 ft.: lvs. mostly basal, with 3–5 deep toothed lobes: fls. pinkish, rose or white, the umbels subtended by showy bracts which are longer than fls. and are often tinged purplish. Eu.—Adapted to stream-side planting.

ASTRAPÆA: *Dombeya.*

ASTRÍDIA. *Aizoaceæ.* Succulent shrubs with 3-cornered lvs. and terminal short-stalked fls., solitary or few; separated from Mesembryanthemum on characters of seed.

máxima (*M. maximum*). To 1 ft.: lvs. to 2 in. long, crowded, half-moon-shaped, 3-angled but flattened, clasping, obtuse, glaucous, dotted: fls. rose, ¾ in. across.

ASTROCÀRYUM. *Palmaceæ.* More than 40 species of strongly armed monœcious feather-palms from Mex. to Brazil, the infl. among the lvs., acaulescent to rather tall trees, trunk solitary or plant soboliferous: lvs. with more or less spiny petiole and rachis; pinnæ acuminate or obliquely truncate, mostly plicate, white or much lighter colored underneath, margins aculeate: spadix rather closely or simply branched; staminate fls. in dense spikes at end of branches, pistillate few and below: fr. drupe-like, oblong, ovoid, obovoid or globose, often aculeate, 1-seeded. Probably none of the species is planted in the continental U. S. unless merely under test and not distributed. See *Palm.*

ASTRÓPHYTUM. Star Cactus. *Cactaceæ.* A few small Mexican species with condensed, cylindric, globular or flattened body and a few prominent ribs or wings that often give it a star-like shape: spines weak or wanting: fl. large, reddish with yellow center, soon fading, borne on the top of the plant. Treatment as for Echinocactus. See *Cacti.*

Astèrias (*Echinocactus Asterias*). Plant depressed, 1 in. high and 3 in. broad; ribs 8, areoles prominent, circular; spineless: fls. yellow, 1 in. long. N. Mex.

capricórne (*Echinocactus capricornis*). Plant somewhat globose to nearly cylindric, to 8 and 10 in. high; ribs 7 or 8; spines several, to 2 in. long: fls. about 2½ in. long, spreading wide open, lemon-yellow at center and orange in bottom. Listed vars. include **aùreum, crassispìnum, màjor, mìnor, níveum** and **senìle.**

myriostígma (*Echinocactus myriostigma*). Bishops-Hood. Plant globose or cylindric, about 2 in. high; ribs mostly 5; spines absent: fls. about 2 in. long, outer segms. with brown tips. Listed vars. include **coahuilénse, columnàre, potosìnum, quadricostàtum, tamaulipénse, tetragònum,** and **tulénse.**

nùdum: listed name.

ornàtum (*Echinocactus ornatus. Echinopsis Haageana*). Plant nearly globose to cylindric, to 1 ft. or more high, white-floccose; ribs 8; spines several or many and about 1 in. long and sharp: fls. lemon-yellow, to 3½ in. broad. Listed vars. include **albéscens, columnàre, flavispìnum, glabréscens, glaucéscens, Mirbéllii, spiràle** and **vìrens.**

potosìnum: *A. myriostigma* var.

stellàtum: listed name.

ASYSTÀSIA. *Acanthaceæ.* Herbs or shrubs native in tropics of Old World, with opposite entire lvs. and tubular 5-lobed fls. in terminal racemes, spikes or panicles; one species grown as a ground-cover in S. Fla. and the tropics.

bélla: *Mackaya bella.*

coremandeliàna (*A. gangetica*). Procumbent or clambering per. to 4 ft. and more: lvs. ovate, to 3 in. long: fls. purple to yellow or white, 1 in. or more long, in racemes to 6 in. long. Malaya to Afr.; nat. in W. Indies, clambering in bushes and on fences.

gangética: *A. coromandeliana.*

ATALÁNTIA. *Rutaceæ.* Trees or shrubs native from India to Australia, sometimes grown as a proposed stock for citrus fruits and for interest, having simple lvs. and petioles jointed at base of lf., 3–5-celled ovary, and fr. resembling a small orange. For cult. see *Citrus Fruits.*

buxifòlia: *Severinia buxifolia.*

citroìdes. Small spiny tree: lvs. oval, emarginate, alternate: fr. about ¾ in. across, with glandular skin and pulp-vesicles. Indo-China.

ATAMOSCO: *Zephyranthes.*

ATHAMÁNTA. *Umbelliferæ.* Per. herbs from the Medit. region and Asia: lvs. pinnately parted: fls. white, in umbels subtended by linear involucral bracts: frs. linear, cylindrical and hairy.

Matthìolii. To 10 in.: lf.-segms. thread-like: rays of umbel 20–25, woolly. S. E. Eu.

ATHANÀSIA. *Compositæ.* S. African small glandular shrubs or subshrubs with small yellow-fld. heads in corymbose infl.; heads composed entirely of disk-fls. with pappus absent or of very minute scales or hairs.

ánnua: *Lonas inodora.*

parviflòra. Shrub to 4 ft., densely leafy, young branches loosely pubescent: lvs. pinnatipartite from the middle with only few linear lobes, to 2½ in. long: heads sulfur-yellow, 3–4-fld., to nearly ⅛ in. across, in dense much branched corymbs.

ATHROTÁXIS. *Taxodiaceæ.* Large densely branched evergreen trees, of 3 species in Tasmania, allied to Cryptomeria, with small scale-like or lanceolate lvs. and small woody globose cones. Sometimes grown in warm climates, as Calif.; cult. under *Conifers.*

cupressoìdes. Lvs. rhombic-ovate, to ⅛ in. long, obtuse: cones to ½ in. across.

laxifòlia. Lvs. ovate-lanceolate, ¼ in. long, acute or obtuse: cones ¾ in. across.

selaginoìdes. Lvs. lanceolate, to ½ in. long, spiny-pointed: cones to 1 in. across.

ATHÝRIUM. *Polypodiaceæ.* Foliage similar to that of Asplenium, with which genus this has been united, the distinguishing characteristic being in the shape and position of the sori; widely distributed, mostly in the tropics, a few cult. See *Ferns.*

acrostichoìdes: *A. thelypteroides.*

alpéstre. Fronds tufted, from a short rootstock, to 3 ft. long, bipinnate, elliptic-lanceolate to ovate-lanceolate, pinnæ oblong or lanceolate, with segms. sharply toothed: sori circular, small, seemingly without an indusium; spores blackish and reticulate. Eu., Asia, Iceland, Newf. Var. **americànum** (*A. americanum* and *A. alpestre* var. *gaspense*). Differs from *A. Filix-femina* in the very narrow more distant pinnæ and the lack of indusia. Alaska to Calif., Que.

americànum: *A. alpestre* var.

angustifòlium: *A. pycnocarpon.*

cyclosòrum: a variety or subspecies of *A. Filix-femina.*

Fìlix-fémina (*A. cyclosorum. Asplenium Filix-femina*). Lady-Fern. Hardy, bright green: fronds to 3 ft. long, bipinnate, pinnæ deeply toothed or cut. Eu., Asia, W. N. Amer.—The E. American plants represent two species or varieties (*A. angustum* and *A. asplenioides*) differing in technical characters. Geographical vars. are *californicum* and *sitchense.* Some of the hort. vars. derived from the European type are **Cràigii,** dwarf and crested, **críspum, Frizélliæ, grándiceps, laciniàtum, latifòlium, multífidum, plumòsum, pulchérrimum, setígerum, Victòriæ** with pinnæ forked to base and crested at tips.

Fìlix-más: listed name, probably a mistake for *A. Filix-femina* or *Dryopteris Filix-mas.*

Goeringiànum (*Asplenium Goeringianum*). Hardy:

fronds deciduous, usually drooping, to 1½ ft. long, pinnate, the pinnæ toothed or cut. Japan. Var. **píctum** has stipes purplish, fronds with central gray band.

pycnocárpon (*A. angustifolium. Asplenium angustifolium* and *pycnocarpon*). Fronds to 2½ ft. long, simply pinnate, the pinnæ to 5 in. long, nearly entire. Que. to Ga., La. and Kans.

sitchénse: a variety or subspecies of *A. Filix-femina.*

thelypteroìdes (*A. acrostichoides. Asplenium acrostichoides* and *thelypteroides*). Fronds to 3 ft. long, deeply bipinnatifid, pinnæ toothed, on long straw-colored stipes. N. S. to Ga. and Mo.; E. Asia.

ATRAGENE: *Clematis.*

ATRAPHÁXIS. *Polygonaceæ.* Deciduous subshrubs with small lvs., white or pinkish fls. in terminal racemes, and fr. an achene; native in Asia, Greece, N. Afr.

They thrive on rather dry soil in sunny positions. Propagated by seeds in spring, by layers, and by cuttings of young wood in early summer under glass.

buxifòlia. To 2 ft. or more: lvs. obovate-cuneate, obtuse, margin crisp, to nearly 1 in. long, yellowish-to brownish-green: fls. rose-pink. Cent. Russia to Caucasia.

frutéscens (*A. lanceolata*). To 3 ft.: lvs. oblong to lanceolate, to 1¼ in. long, grayish-green: fls. whitish, in racemes to 3 in. long. Aug.–Sept. S. Russia to Cent. Asia; hardy far N.

lanceolàta: *A. frutescens.*

ÁTRIPLEX. SALTBUSH. *Chenopodiaceæ.* Mealy or scurfy herbs or shrubs with alternate or opposite lvs. and small greenish unisexual fls. in clusters; often native in salty situations.

One species, the orach, is grown for greens. Seeds are sown in drills in early spring and the seedlings thinned out in the row. Others are grown for ornament and as forage plants in desert regions.

Brèweri. Shrub to 6 ft.: lvs. ovate-oblong, silvery-gray to 1½ in. long. S. Calif.—Planted for hedges.

Hálimus. Shrub to 6 ft.: lvs. broad-ovate or ovate-oblong, to 2½ in. long, silvery. S. Eu.

horténsis. ORACH. Ann. to 6 ft.: lvs, triangular-ovate or arrow-shaped, the margins toothed or wavy, varying in color from pale yellowish-green to dark red. Asia.—The following hort. vars. are listed: **atrosanguínea** with dark red lvs.; **cupreáta** with red foliage and dark violet stalks; **ròsea** with light red foliage and darker sts. and veins.

lentifórmis. QUAIL-BUSH. Shrub to 10 ft.: lvs. ovate or arrow-shaped, silvery, to 1½ in. long. Calif., Ariz.

semibaccàta. Diffuse or spreading grayish per. to 3 ft.: lvs. oblong, to 2 in. long, toothed or entire. Australia; nat. in Calif. and Ariz.—Somewhat grown for forage.

ÁTROPA. *Solanaceæ.* A few Old World herbs, one economically important as the source of atropine and other drugs: lvs. alternate, entire: fls. bell- or funnel-shaped: berries purple, poisonous, in an enlarged calyx.

Belladónna. BELLADONNA. Per. to 3 ft.: lvs. ovate, to 6 in. long: fls. blue-purple or dull red, about 1 in. long, solitary or in pairs, nodding, axillary: berry nearly globular, ½ in long, shining black. Eu., Asia.

ATTALÈA. *Palmaceæ.* About 20 species of Attalea are known in the western hemisphere, a similar number of Orbignya, and about 40 species of Scheelea. These three genera are much alike in stature and frs. but are readily distinguished by the staminate fls.: these fls., although abundant, are seldom noted by planters, and therefore the plants in cult. may not be accurately determined. It is supposed that *Attalea Cohune* is planted in S. Fla., but this is doubtful. This species was founded by Martius on frs. alone and the tree at that time was not known or described. It has lately been supposed to be an Orbignya. Probably most of the trees of this group seen in plantations in the tropics are Scheeleas. The Attalea group comprises heavy pinnate monœcious or diœcious palms, producing eventually a massive single trunk and very long erect and outwardly arching lvs.; fls. in heavy interfoliar clusters within very large woody spathes; fr. nut-like, 2–3 in. long, with fibrous covering.

AUBRIÈTA. *Cruciferæ.* About 15 species of choice little mat-forming perennials prized for the abundant lilac-magenta to bright purple spring bloom: pods or silicles short-oblong to globose. Native in south-central Eu. and Asia Minor. Closely allied to and resembling Arabis, but differing in the style much more slender than the ovary and often as long. The name was originally spelled *Aubrieta*, not *Aubrietia.*

Propagation is by seeds, sown a season in advance of blooming, by division of the mats or clumps, and by layers of the trailing shoots. Aubrietas thrive well in half shady exposure, the foliage covering spaces between rocks and along borders.

aùrea-variegàta: hort. name, probably for form of *A. deltoidea.*

Bougainvíllei: see *A. deltoidea.*

Cámpbellii: see *A. deltoidea.*

cilícica: *A. Pinardii.*

Colúmnæ. To 6 in., green, loosely hairy, not much spreading: lvs. long-spatulate, to ½ in. long: fls. pale purple, large, to 1 in. across, on short sts. not exceeding foliage: fr. to ¾ in. long, ellipsoidal, stellate-hairy, style as long as ovary. Italy. Var. **croática** (*A. croatica*) has obovate- to rhombic-cuneate lvs. and infl. exceeding the foliage, style of fr. less than half as long as ovary. Northwestern Balkan Peninsula.

croática: *A. Columnæ* var.

deltoídea. To 6 in. or occasionally to 1 ft., spreading, bushy and compact: lvs. rhombic- to obovate-cuneate: fls. rose-lilac to purple, to ¾ in. across, calyx cylindrical, infl. usually much exceeding foliage: fr. to ¾ in. long, broadly elliptic, somewhat swollen, covered with simple and forked hairs, styles usually only to ⅓ as long as ovary. Sicily, Greece to Asia Minor. Var. **græca** (*A. græca*) is larger and more bushy than typical form with larger petals and calyces and pods with styles ½–¾ as long as ovary.—Many names in the trade are probably hort. variants or intervarietal hybrids of this species and include: *Bougainvillei, Campbellii, Eyrei, gloriosa, grandiflora, Hendersonii, Leichtlinii, Marschallii, Moerheimii, purpurea, rosea, tauricola, variegata, violacea.*

Èyrei: see *A. deltoidea.*

gloriòsa: see *A. deltoidea.*

grácilis (*A. deltoidea* var.). To 4 in., sts. slender and prostrate, forming thin carpets or tufts: lvs. narrowly lanceolate, entire, to ⅓ in. long: fls. ⅝ in. across, calyx saccate: fr. narrowly linear, flat, to 1 in. long or more, finely stellate-hairy to glabrescent, style to ¼ in. long. Greece, Albania.—Variants with toothed lvs. and densely hairy frs. are known, but may not be in cult.

græca: *A. deltoidea* var.

grandiflòra: see *A. deltoidea.*

Héndersonii: see *A. deltoidea.*

hýbrida. True *A. hybrida* (*A. gracilis* × *A. intermedia*) differs from typical *A. gracilis* in the lvs. toothed and the many-fld. infl. much exceeding the foliage. Material so listed in the trade, however, may be hort. forms of *A. deltoidea.*

Leichtlínii: see *A. deltoidea.*

Márschallii: see *A. deltoidea.*

Mòerheimii: see *A. deltoidea.*

olýmpica (*A. deltoidea* var.). To 6 in., hairless or nearly so, tufted: lvs. long-spatulate, entire or sometimes rhombic to obovate and toothed: fls. to 1 in. across: fr. broadly oblong to lanceolate, to ¾ in. long, flat, stellate-hairy to glabrous, style about ¼ in. long. Asia Minor.

Pinárdii (*A. cilicica*). To 8 in.: lvs. linear-oblong to spatulate, to 1½ in. long, entire or remotely toothed, long-petioled: fls. to 1 in. across: fr. narrowly linear, to 1¼ in. long, flat, style to ⅓ in. long, stellate-hairy. Asia Minor.

purpùrea: see *A. deltoidea.*

ròsea: see *A. deltoidea.*

tauricola: see *A. deltoidea.*

variegàta: see *A. deltoidea.*

violàcea: see *A. deltoidea.*

AUCÙBA. *Cornaceæ.* Evergreen shrubs native in Asia, with opposite simple lvs., small purple diœcious fls. in terminal panicles, and fr.

a berry-like drupe. The name is sometimes but was not originally spelled Aukuba.

Aucubas are grown in a cool greenhouse and out-of-doors in mild climates for the ornamental foliage. They thrive in a partially shaded position in moist well-drained soil. Propagated by cuttings of half-ripened wood, seeds, or the varieties by grafting.

crotonifòlia. Lvs. croton-like, green spotted with white. Probably a var. of *A. japonica.*

glaùca nàna: catalogue name, probably for a form of *A. japonica.*

himalàica. To 15 ft.: lvs. lanceolate or broader, to 8 in. long, finely toothed: fr. orange to scarlet. Himalayas; to be planted only far S.

japónica. To 15 ft.: lvs. dark green and shining, ovate or oblong, to 7 in. long, coarsely toothed above middle: fr. scarlet, rarely yellow or white. Himalayas to Japan; hardy in D. C. Var. **variegàta** (var. *maculata*), Gold-Dust Tree, has yellow-spotted lvs. Var. **dentàta** has smaller coarsely toothed lvs. Var. **longifòlia** (var. *angustifolia*), narrow lvs. to 5 in. long. Var. **macrophýlla,** large broad lvs. Var. **picturàta** (var. *latimaculata*, var. *aureo-maculata*) has a large yellow blotch in center of lf. Var. **punctàta** is a synonym of var. *variegata.* Var. **serratifòlia** (*A. serratifolia*) has lf.- margins serrate.

serratifòlia: *A. japonica* var.

AUDIBERTIA: *Salvia.*

AUDIBERTELLA: *Salvia carnosa.*

AUDOUÍNIA. *Bruniaceæ.* One heath-like shrub in S. Afr., **A. capitàta** (*Diosma capitata*), suitable for Calif. and under glass, with treatment as for Diosma: to 2 ft., branches erect and more or less whorled: lvs. small and sessile, linear, imbricate: fls. crimson, in long spike-like terminal crowded heads.

AULIZA: *Epidendrum ciliare.*

AUREOLÀRIA. *Scrophulariaceæ.* N. American herbs parasitic on the roots of Quercus, with entire or bipinnatifid lvs. and yellow fls. with spreading lobes, on axillary peduncles or in a terminal leafy raceme or panicle; sometimes transferred from the wild.

flàva (*Gerardia* and *Dasistoma flava*). Per. to 4 ft., gray-downy: lvs. oblong to ovate-lanceolate, to 6 in. long, sinuate-dentate to entire, rarely pinnatifid: fls. yellowish-orange, to 2 in. long, glabrous outside with spreading lobes. July–Aug. Me. to Wis., Ga. and Miss.

pediculària (*Gerardia* and *Dasistoma pedicularia*). Ann. or bien. to 4 ft.: lvs. pinnatifid two-thirds to midrib: corolla to 1½ in. long, pubescent outside, with spreading lobes. Aug.–Sept. Me. to Fla. and Mo.

virgínica (*Gerardia* and *Dasistoma virginica*). Per. to 4 ft.: lvs. deeply pinnatifid, to 6 in. long, pubescent: fl. 1½ in. long, glabrous outside. June–Aug. N. H. to Fla. and La.

AURICLE: an ear-shaped part or appendage, as the projections at the base of some leaves and petals.

AURICULA. A favorite spring cool-season perennial of European fanciers, little grown in North America. It is *Primula Auricula* (which see), in many forms and colors, but some of the races may be of hybrid origin with other species. It is grown mostly in pots or boxes under frames; propagation is by seeds in general and for the production of new varieties, and by offsets or division for the perpetuation of particular varieties. Seeds sown in early spring should give blooming plants the following spring, but some of the seeds may not germinate until the second year. In the North plants may be carried over winter in a cold greenhouse.

AVÈNA. Oats. *Gramineæ.* Mostly ann. grasses, having flat lvs. and long-pointed mostly awned and hanging spikelets in loose panicles; native in temp. regions of the world and grown for the grain, forage, hay and occasionally for ornament. The panicles may hang in all directions (all-sided) or to one side only. They are sown in early spring or sometimes in autumn in mild climates. See *Grasses.*

barbàta. Slender Wild Oat. Differing from *A. fatua* in the more slender panicles and in technical characters of the florets. Eu.; nat. on Pacific Coast.

brèvis. To 3 ft.: panicle one-sided; spikelets with 2 awns; oat short and broad. Eu.

elàtior: *Arrhenatherum elatius.*

fátua. Wild Oat. To 4 ft., tufted: lvs. to 8 in. long and ⅓ in. wide: panicles to 1 ft. long, all-sided, the spikelets drooping and with awns to 1½ in. long. Eu., Asia; nat. in N. Amer.

flavéscens: *Trisetum flavescens.*

nùda. Naked Oat. Differs from *A. sativa* in the grain separating from the hull; panicle close. Probably cultigen.

satìva. Common Oat. To 4 ft., tufted: lvs. to 1 ft. long and ½ in. wide: panicles to 1 ft. long, the branches all-sided or from one side in the forms known as Side Oats, awns to ¾ in. long or lacking; grain of fr. permanently inclosed in hull. Cultigen.

stérilis. Animated Oat. To 3 ft.: panicles to 1 ft. long, awns to 2 in. or more long and twisted, the florets moving by hygroscopic action. Medit. region.—Much of the seed planted under this name is *A. fatua.*

strigòsa. Much like *A. sativa* but differing in technical floral characters: spikelets prickle-pointed. Eu.

AVENS: *Geum.*

AVERRHÒA. *Oxalidaceæ.* Evergreen trees with alternate pinnate lvs., small fragrant fls., and large fleshy berry-like edible fr.; native in trop. Asia.

They can be grown only in regions free from frost, and thrive on deep rich soil in a moist climate. Propagated by seeds or by budding.

Bilímbi. Bilimbi. To 50 ft.: lfts. 24–25: fls. red-purple: fr. greenish-yellow, to 4 in. long, with 5 obscure angles. Known only in cult.

Carambòla. Carambola. To 30 ft.: lfts. 5–9: fls. white marked with purple: fr. yellow or golden-brown, to 5 in. long, with deep ribs. Malayan region and spread in tropics.

AVIGNON BERRY: *Rhamnus infectoria.*

AVOCADO. The large pear-shaped or oblong or nearly globular fruit of *Persea americana* (which see), a tropical or subtropical American evergreen broad-leaved tree; other species may be involved in their origin.

The avocado is of considerable importance in southern California and southern Florida as a market fruit and a special literature has developed. It is grown in orchard plantings, the trees standing 20–30 feet apart either way, on well-drained fertile open land. Spacing distance varies with the vigor of the variety and the richness of the soil. The tree reaches a height of 30 feet or more. Transplanting is commonly undertaken in spring and early summer, a ball of earth being removed with the tree. In two or three years most varieties begin to bear.

Named varieties are propagated on seedling avocado stocks by shield-budding and side or cleft-grafting in autumn or spring. Skill is required in choosing budwood at just the proper stage of maturity so that the "eyes" will not fail. Either budding or grafting the avocado is a more exacting technique than with citrus or most temperate zone fruits.

Pollination presents a special problem with the avocado because the period of pollen shedding of one group of varieties does not overlap the time of receptivity of the pistils of that group. Plantings should include several varieties chosen for their pollen value. Orchards may be grown under mulch or with cultivation and cover-crops.

For shipment the fruit is nested in excelsior in well-ventilated small crates. In California, Fuerte (December to July) is the leading commercial variety. Nabal, Taft, Queen are excellent summer and autumn varieties. Important Florida varieties are the Collinson, Lula and Trapp. Yield varies widely from year to year, depending largely on weather conditions at blooming time which is March and April. Averaging over several years, under good auspices 150 pounds to a tree is considered a conservative estimate for trees ten years old and over under California conditions. Average yields in Florida have been 80 pounds to a tree or less.

The avocado varieties are of several groups, as West Indian, Guatemalan, Mexican. The first comprises the tenderest varieties and can be grown only in the warmer parts of Florida. These kinds, as Trapp, Pollock, Simmonds, ripen late summer to early winter. The Guatemalans or their hybrids, represented by Lula, Taft, Taylor, Wagner, are hardier and can be grown in central peninsular Florida; they ripen from early winter to spring. The Mexican group is about as hardy as the sweet orange, in the varieties Puebla, San Sebastian, Gottfried; the ripening season is June to October.

AWL-SHAPED: narrow and sharp-pointed; gradually tapering from base to a slender or stiff point.

AWN: a bristle-like part or appendage.

AXIL: upper angle that a petiole or peduncle makes with the stem that bears it.

AXÓNOPUS. *Gramineæ.* Ann. and per. grasses of warm regions, having flat lvs. and small spikelets borne in narrow one-sided spike-like racemes; one species is grown in pastures, in the S. See *Grasses.*

compréssus (*Anastrophus compressus*). CARPET-GRASS. Per. to 2 ft., stoloniferous: lvs. to 4 in. long and ¼ in. wide: racemes to 2 in. long, in clusters of 2–5 toward top of sts. Va. to La., trop. Amer.

AÝLOSTÈRA. *Cactaceæ.* A small genus of S. American cacti closely allied to Rebutia and by some authorities retained therein, but differing in the ovary bristly, styles and stamens fused to the tube.

deminùta (*Rebutia deminuta*). Cespitose, globose, to 2½ in. tall; tubercles in 11–13 rows; spines about ¼ in. long, usually 10–12, white or brown: fls. dark orange-red, to 1¼ in. long, stamens pink, stigma 8-lobed, white. Argentina.

Fièbrigii (*Rebutia Fiebrigii*). Usually solitary, depressed-globose to subcylindrical, to 2½ in. diam.; tubercles in about 18 rows, somewhat spiralled, to ¼ in. high; radial spines 25–40, about ⅜ in. long, white; centrals 2–5, to ¾ in. long, white tipped brown: fls. bright yellowish-red, to 1½ in. long, stamens white, stigma pale yellow, 6-lobed. Bolivia.

Kupperiàna (*Rebutia Kupperiana*). Sts. depressed-globose, to 4 in. high and 3½ in. diam., gray to glaucous gray; tubercles in about 20 rows, to ⅙ in. high, acute; radial spines about 20, brown to gray; centrals 3–4: fls. not known. Bolivia.

pseudodeminùta (*Rebutia pseudodeminuta*). Differs from *A. deminuta* in its longer brown spines and golden-orange fls. Argentina. Var. **Schneideriàna** is listed. Var. **Schumanniàna** has flexible brown spines to 1 in. long.

Spegazziniàna (*Rebutia Spegazziniana*). Cespitose, globose to cylindrical, about 1½ in. diam., yellowish-green; tubercles in 20–25 rows, spiralled; spines about 1/12 in. long, radials many, centrals 1–2, yellowish-brown: fls. dark red, to nearly 1¾ in. across, stigma white. N. Argentina.

spinosíssima (*Rebutia spinosissima*). Densely cespitose and cushion-forming, sts. depressed-globose, to 1¾ in. diam., radial spines white, numerous; centrals 5–6, whitish, tipped brown: fls. pale brick-red, to 1¼ in. diam., stamens and stigma white. N. Argentina.

AYO: *Tetrastigma Harmandii.*

AZADIRACHTA. *Meliaceæ.* Probably not planted here outside test grounds: see *Melia.*

AZALEA: *Rhododendron.* **Alpine-:** *Loiseleuria.*

AZALEASTRUM: *Rhododendron arborescens.*

AZÀRA. *Flacourtiaceæ.* Evergreen trees and shrubs native in S. Amer., with alternate simple lvs., small fragrant fls. in axillary racemes and clusters, and fr. a berry.

Grown for ornament in warm regions and sometimes under glass. Propagated by seeds or ripened cuttings.

celastrìna. Much branched shrub to 9 ft.: lvs. round-oval, to 1½ in. long, slightly toothed, shining above: fls. golden-yellow, densely tomentose. Chile.

Gílliesii. To 15 ft.: lvs. broad-ovate, to 3 in. long, with coarse spiny teeth: fls. yellow. Chile.

integrifòlia. To 20 ft.: lvs. obovate or oblong, to 1½ in. long, entire: fls. yellow, in racemes. Chile.

microphýlla. To 12 ft.: lvs. obovate, to ¾ in. long: fls. greenish: fr. orange. Chile.

AZAROLE: *Cratægus Azarolus.*

AZÓLLA. *Salviniaceæ.* Moss-like floating plants, with pinnately divided leaf-like sts. and minute lvs.; widely scattered. Readily propagated by self-division.

caroliniàna. Plants about 1 in. long, greenish or reddish. N. Amer., trop. Amer.—Sometimes grown on the surface of aquaria and greenhouse tanks.

AZTÈKIUM. *Cactaceæ.* One species native in Mex. **A. Rítteri** (*Echinocactus Ritteri*). Plant 2 in. across and 1¼ in. high, simple at first but forming clumps, crown sunken and filled with white wool and short spines which soon fall; ribs 7–11, deeply separated, areoles with dirty white wool: fls. solitary in crown, white tinted rose toward tips, ⅓ in. long.

B

BABIÀNA. *Iridaceæ.* Low cormous herbs from S. Afr., the st. bearing several plicate lvs. and lilac, yellow, pink or red fls. in terminal clusters or racemes, the perianth with slender tube and equal segms. Sometimes grown in pots under glass or in the open in mild climates for spring bloom. Propagated by cormels and seeds.

álba: listed name of a white-fld. form.

dísticha. To 9 in.: lvs. sword-shaped, hairy, plicate: fls. pale lilac, with slender tube to 1½ in. long and limb to 1¼ in. long, the segms. clawed.

plicàta. Lvs. ensiform, to 6 in. long and ½ in. wide: fls. lilac to red, fragrant, in spike usually not as long as lvs.

pygmæ̀a (*Gladiolus nanus*). Lvs. lanceolate, to 4 in. long: fls. pale lilac, usually 2–6 in erect spike.

stricta. To 1 ft.: lvs. sword-shaped, hairy: fls. red or lilac, to 1½ in. long, the bracts hairy. Var. **rùbro-cyànea** has lilac limb and red throat. Var. **sulphùrea** (*B. sulphurea*), fls. pale yellow to white.

sulphùrea: *B. stricta* var.

BABY BLUE-EYES: *Nemophila.*

BABYS-BREATH: *Gypsophila paniculata.* **False:** *Galium Mollugo* and *aristatum.* **-Tears:** *Helxine.*

BÁCCHARIS. *Compositæ.* Shrubs with small white or yellowish diœcious heads in corymbs or panicles; florets all tubular; pappus of the fr. snow-white and showy: lvs. alternate, sometimes evergreen.

The species are sometimes transferred to grounds for their more or less persistent foliage, or the profuse white or yellowish bloom; *B. halimifolia* is valuable for seashore planting. Some of them require well-drained soil and a sunny position, and others are marsh plants. Propagated easily both by seed and by cuttings rooted under glass.

angustifòlia. To 8 ft.: lvs. linear, to 3 in. long, nearly entire, leathery. N. C. to Fla. and Tex., in brackish marshes.

Doúglasii. To 5 ft., sticky: lvs. lanceolate, to 4 in. long, nearly entire. Calif., in lowlands.

genistellòides. To 2½ ft.: lvs. very small and bract-like or scale-like, borne on prominently winged leaf-like branches. Peru, Brazil.

glomeruliflòra. To 10 ft.: lvs. spatulate, to 2 in. long, toothed above middle or entire, leathery and light green. N. C. to Fla., swamps and lowlands.

halimifòlia. GROUNDSEL-BUSH. To 12 ft.: lvs. oblong or obovate, to 3 in. long, coarsely toothed, the upper entire. Mass. to Fla. and Tex., along the coast and in marshes.

pilulàris. To 5 ft., evergreen: lvs. obovate, to 1 in. long, few-toothed or entire. Calif., Ore., on hills and dunes.

BACHELORS-BUTTON: *Centaurea Cyanus.*

BACKHOÙSIA. *Myrtaceæ.* Australian trees or shrubs with opposite lvs., fls. in cymes or umbels, and capsular frs.; planted occasionally in S. Fla.; related to Metrosideros.

citriodòra. Large tree: lvs. ovate or ovate-lanceolate, to 5 in. long, leathery, having strong citron odor when crushed: fls. small, in umbel-like clusters.

BÁCTRIS. *Palmaceæ.* Spiny small and mostly gregarious feather-leaf palms of the western hemisphere, many species, with small more or less succulent frs. in a close globular or oblong cluster under a broad spiny spathe. None of the species is regularly planted within the continental U. S.

BAÉCKEA. *Myrtaceæ.* Heath-like shrubs of the Melaleuca relationship with small opposite entire lvs. and small white or pink fls.; mostly Australian and one planted in S. Calif.

virgàta. To 12 ft.: lvs. linear-lanceolate or narrow-oblong, to 1 in. long: fls. in loose umbels in upper axils. Australia, New Caledonia.

BAEL FRUIT: *Ægle Marmelos.*

BAÈRIA. GOLDFIELDS. *Compositæ.* California, mostly annuals with opposite lvs. and many-fld. yellow heads of ray- and disk-fls.; pappus of scales or awns or lacking. Grown in the flower-garden for spring and summer bloom, and propagated by seeds.

aristàta (*Actinolepis* and *B. coronaria. Hymenoxys californica. Shortia californica*). Sts. weak, to 10 in. long: lvs. 1–2-pinnate into linear segms.: heads ½ in. across.—Used for edgings and as an everlasting.

aristòsa: a minor form of *B. chrysostoma.*

chrysóstoma (*B. gracilis*). Much branched, 4–12 in. high: lvs. linear to thread-like, entire: heads to 1 in. across.

coronària: *B. aristata.*

grácilis: *B. chrysostoma.*

macrántha. Sts. simple or nearly so, to 2 ft., from horizontal tuberous per. roots: lvs. linear, entire, to 5 in. or more long, ciliate and toothed: fls. to 1 in. across, slender-pedicelled.—Variable.

marítima. Spreading and much branched, with fleshy sts. to 1 ft. or more long: lvs. oblong-linear, about 1¼ in. long, entire or with broad teeth: heads to ½ in. across. Calif. to Vancouver Isl.

BAHIA LANATA: *Eriophyllum cæspitosum.*

BÀILEYA. *Compositæ.* Densely woolly herbs native in deserts and dry regions of W. N. Amer., having alternate lvs. and solitary heads of disk-fls. and yellow ray-fls. which become papery with age; pappus none.

multiradiàta. To 1½ ft., ann. or per., white-woolly: lvs. pinnatifid or upper entire: heads to 1¾ in. across. Calif., Tex., Mex.

BAILLÒNIA. *Verbenaceæ.* Two S. American deciduous woody plants with opposite or whorled sessile lvs. and somewhat 2-lipped fls. in racemes or spikes, the corolla 5-lobed: fr. a drupe in the persisting calyx. Adapted to Calif. and under glass.

júncea (*Diostea juncea*). Small tree or shrub to 20 ft. with rush-like branches and small opposite remote dentate lvs.: fls. lilac, in short dense spikes, the corolla ¼–⅓ in. long. Chile, Peru.

BALÀKA. *Palmaceæ.* Small palms of few species in the Fiji Isls., differing from Ptychosperma in very broad or half-rhomboid pinnæ, seed not furrowed and albumen not ruminate; not regularly planted in the continental U. S., the one sometimes called *B. Seemannii* being *Ptychosperma elegans.*

BALAÙSTION. *Myrtaceæ.* One shrub native in W. Australia, with decumbent or prostrate sts. to 1 ft. long. **B. pulchérrimum.** Lvs. opposite, linear, to ½ in. long, keeled or 3-angled, stiff, entire: fls. red, solitary in axils, petals about ½ in. across.

BALISIER: *Heliconia Bihai.*

BALLOON-BERRY: see *Rubus illecebrosus.* **-Flower:** *Platycodon grandiflorum.* **-Vine:** *Cardiospermum Halicacabum.*

BALLÒTA. *Labiatæ.* Pubescent per. herbs or subshrubs with toothed lvs. and small 2-lipped fls. in axillary clusters; native in the Old World and sometimes planted for ornament. Of simple requirements.

fœ́tida. Similar to *B. nigra* and perhaps a form of it, very ill-scented. Medit. region.

nìgra. BLACK HOARHOUND. To 3 ft.: lvs. ovate, to 2 in. long: fls. reddish-purple or whitish, to ¾ in. long. Eu.; nat. in E. N. Amer.

BALM: *Melissa.* **Bee-:** *Monarda didyma.* **Canary-:** *Cedronella canariensis.* **Field-:** *Nepeta hederacea.* **Fragrant-:**

Monarda didyma. **Horse-:** *Collinsonia.* **Molucca-:** *Molucella lævis.* **-of-Gilead:** *Populus candicans.*

BALSA: *Ochroma.*

BALSAM, Garden: *Impatiens Balsamina.* **-of-Peru:** *Myroxylon Pereiræ.* **-Root:** *Balsamorhiza.* **-Tree:** *Myroxylon.*

BALSAMINÀCEÆ. Balsam Family. Two genera; one widely distributed, of ann. and per. succulent herbs with simple lvs., very irregular bisexual fls. having 3 sepals one of which is large and petal-like, 5 unequal petals or 2 pairs united forming 3 petals, 5 stamens, 5-celled ovary, and fr. a caps. or berry. The genus Impatiens is grown for ornament, the other genus, Hydrocera, with a single species from Ceylon to Java, not being in cult.

BALSAMITA VULGARIS: *Chrysanthemum Balsamita.*

BALSAMOCÍTRUS. *Rutaceæ.* A few African usually spiny trees with mostly 3-foliolate lvs., sometimes grown for interest and as possible stocks for citrus fruits: stamens 10–20: fr. large and hard-shelled and often persistent. **B. Dáwei** reaches 50–60 ft.: mature lvs. with 3 lance-ovate stalked lfts.: fr. 4–6 in. diam., globose or nearly so, 8-celled, dropping from the pedicel when ripe.

BALSAMORHÌZA. Balsam-Root. *Compositæ.* Low per. herbs with thick roots, large mostly basal lvs. and few or solitary showy yellow heads of ray- and disk-fls.; pappus none; native in W. Amer. on mts., foot-hills and sandy regions, and sometimes planted for ornament; spring and summer bloomers.

deltoídea. To 2 ft., white-tomentose: basal lvs. cordate-ovate, to 1 ft. long, entire or toothed: rays to 1¼ in. long. B. C. to Calif.

hirsùta. To 2 ft., hairy: lvs. pinnately divided into toothed or cut segms.: heads to 1¾ in. across. B. C. to Calif. and Utah.

Hoòkeri. To 1½ ft., gray-pubescent: lvs. pinnately divided into toothed or cut segms.: heads to 2½ in. across. Calif. to Wash. and Utah.

macrophýlla. To 2 ft., hairy: lvs. pinnately divided into entire segms.: heads to 3½ in. across. Utah, Wyo.

sagittàta. To 2 ft.: lvs. cordate to sagittate, to 8 in. long, nearly entire, white-tomentose: heads 2 in. or more across. B. C. to Calif. and Colo.

terebinthàcea. To 14 in.: lvs. mostly basal, lanceolate, to 8 in. long, pinnatisect or incised-toothed, finely pubescent to glabrescent: fls. yellow. Ida., Wash., Ore.

BAMBOO. *Gramineæ.* Various giant long-lived woody grasses, mostly of the genera Arundinaria, Bambusa, Cephalostachyum, Chimonobambusa, Chusquea, Dendrocalamus, Phyllostachys, Pleioblastus, Pseudosasa, Sasa, Shibatæa, Thamnocalamus, as known in this country. The species of these genera are mostly Asian, but some of the Arundinarias are plants of the western hemisphere, two of them being native as far north as Missouri and Maryland. A few of them, as Chusqueas, are climbers.

The bamboos are adapted only to the southern parts of the country, although certain small kinds are hardy as far as Philadelphia or even northward. They usually do not produce seed in this country, and propagation is by division of the clumps and cuttings of the stolons. Bamboos require fertile soil and a uniform supply of clean underground water, and some of them thrive along water-courses. With age and thorough establishing of the roots, the clumps become conspicuous or even commanding objects. The larger kinds make good shelter-belts and groves.

BAMBOO, MEXICAN-: *Polygonum cuspidatum.*

BAMBÙSA. Bamboo. *Gramineæ.* Tall woody grasses, sometimes climbing, with cylindrical hollow sts., persistent lf.-sheaths, and spikelets borne in panicles, stamens 6; native mostly in tropics of Old World and not hardy in northern states. See *Bamboo.*

Alphónse Kárri: *B. nana* var.

angulàta (*B.* and *Arundunaria quadrangularis*). To 3 ft., st. 4-angled: lvs. to 7 in. long and 1 in. wide, hairy beneath. China.

angustifòlia: *Pleioblastus distichus.*

argéntea: see *Pleioblastus viridi-striatus.*

argénteo-striàta: see *Pleioblastus viridi-striatus.*

arundinàcea. To 100 ft., culms yellow, branches flexuose and spiny: lvs. to 8 in. long and ½ in. wide, nearly glabrous: infl. a large panicle produced only once after which the plant dies. India.

aùrea: *Phyllostachys aurea.*

aùreo-striàta: see *Pleioblastus viridi-striatus.*

Castillòni: *Phyllostachys bambusoides* var.

chrysántha: *Sasa chrỳsantha.*

dísticha: *Pleioblastus distichus.*

falcàta: *Arundinaria falcata.*

fastuòsa: *Semiarundinaria fastuosa.*

flexuòsa: *Phyllostachys flexuosa.*

Fórtunei aùrea: *Pleioblastus viridi-striatus.*

gràcilis: *Pleioblastus Hindsii.*

Henònis: *Phyllostachys niger* var. *Henonis.*

japónica: *Pseudosasa japonica.*

kumasàca: *Shibatæa kumasaca.*

Laydéckeri: *Pleioblastus Chino.*

marmòrea: *Chimonobambusa marmorea.*

Metàke: *Pseudosasa japonica.*

mìtis: *Phyllostachys sulphurea.*

múltiplex. Per. to 12 ft., many erect thick terete sts., long internodes: lvs. linear-lanceolate, to 6 in. long, flat, glabrous, reddish-green: fls. erect, terminal in short spikes. Cochin-China.

nàna. To 10 ft., sts. yellow: lvs. to 3 in. long and ¼ in. wide, rough on edges, glaucous-blue. China, Japan. Var. **Alphónse Kárri** (*B. Alphonse Karri*) has sts. variegated yellow and green, lvs. mottled rose and green. Var. **variegàta** (*B. vittata-argentea*) has lvs. mottled with silvery-white.—Much of the material cult. as *B. nana* is *Sasa disticha.*

nìgra: *Phyllostachys niger.*

nùtans. To 45 ft., the culms glossy-green: lvs. to 1 ft. long and 1 in. wide, rough above and on edges, glabrous or hairy beneath. India.

palmàta: *Sasa senanensis* var. *nebulosa.*

pygmæ̀a. To 1 ft., sts. purple, slender and much branched: lvs. to 4 in. long and ½ in. across, pubescent, bright green above and glaucous beneath, margins serrate. Japan.—The smallest of the bamboos, a vigorous grower and used for carpeting.

quadrangulàris: *B. angulata.*

Ragamòwskii: *Sasa tessellata.*

Sìmonii: *Pleioblastus Simonii.*

striàta: *Phyllostachys sulphurea.*

sulphùrea: *Phyllostachys sulphurea.*

tessellàta: *Sasa tessellata.*

Thouársii: *B. vulgaris.*

Túlda. To 70 ft., the culms gray-green: lvs. to 13 in. long and 1½ in. wide, rough above and on edges, paler and usually hairy beneath. India.

Veìtchii: *Sasa Veitchii.*

ventricòsa: listed name of unknown botanical standing.

verticillàta: a name of doubtful botanical application.

Vilmorínii: *Pleioblastus distichus.*

viminàlis: *Shibatæa kumasaca.*

violéscens: *Phyllostachys violescens.*

virginiàna: listed name.

víridi-glaucéscens: *Phyllostachys viridi-glaucescens.*

víridi-striàta: *Pleioblastus viridi-striatus.*

vittàta-argéntea: *B. nana* var. *variegata.*

vulgàris (*B. Thouarsii*). Feathery B. To 50 ft., with yellow longitudinally banded sts.: lvs. to 10 in. long and 1½ in. wide, glabrous. Java and perhaps elsewhere. Var. **aùreo-variegàta** is listed.

BANANA. A tropical fruit extensively grown for local use and for export to temperate regions. It is a perennial herb but the stem and leaf-sheaths produce a trunk-like structure and the plant may attain a height of 20–30 feet with a crown of big long leaves and a heavy cluster of fruits. The common species is of two main races (sometimes regarded as two species), *Musa paradisiaca*, the plantain of which the fruit is edible when cooked, and var. *sapientum*, the true banana which is edible raw at maturity. Another species is the dwarf or Chinese banana, *Musa nana* (*M. Cavendishii*), which may be grown commercially in warm-temperate climates, as in Bermuda, the Canaries and the Hawaiian Islands. See *Musa*.

A single "trunk" bears but one bunch and then dies; in the meantime suckers (one or more) have arisen from the rhizome to continue the fruiting. A vigorous sprout or new trunk should bear in ten or twelve months (or later than that if the plant is grown for curiosity under cover). A plantation continues to bear indefinitely if diseases, insects and soil defects do not intervene. As the plantation gets older the rows become irregular as offsets are formed farther away from the original plant.

Inasmuch as the commercial bananas are seedless, propagation is by vegetative means. Pieces of the rhizome weighing 3–4 pounds, each with a bud or "eye," are used in establishing a new plantation. Rooted suckers may also be planted. Dwarf bananas (*M. nana*) may be set as close as 8–10 feet either way, but the ordinary large kinds should stand 14-20 feet apart in commercial plantations. The banana requires moist, deep and fertile soil but well drained, and protection from wind. Surplus suckers are removed to control the succession of fruiting and to space the fruiting trunks.

Within the continental United States the banana is infrequently a commercial fruit except the dwarf Chinese, although it is somewhat planted for home use, ornament and interest in Florida, along the Gulf Coast and elsewhere. The fruit is destroyed by frost, but new shoots arise from the crowns if the freezing is not too severe.

BANANA-SHRUB: *Michelia fuscata.*

BANEBERRY: *Actæa.*

BANFFYA: *Gypsophila transsylvanica.*

BANGALAY: *Eucalyptus botryoides.*

BÁNKSIA. *Proteaceæ.* Australian evergreen trees or shrubs with alternate lvs. and yellowish fls. borne in pairs in dense terminal spikes becoming woody and cone-like in fr.; sometimes grown in S. U. S. Propagated by cuttings under a bell-jar or with difficulty by seeds. See also *Pimelea.*

Báxteri. Tall shrub: lvs. to 4 in. long, divided to midrib into triangular lobes 1 in. long and ¾ in. wide at base, pale beneath: spikes globular, to 3 in. across. W. Australia.

Càleyi. Low shrub: lvs. oblong-lanceolate, to 6 in. long, prickly-toothed or cut: spikes nearly globular, to 3 in. long. W. Australia.

coccínea. Shrub to 15 ft.: lvs. obovate to orbicular, to 2½ in. long, stiff, prickly-toothed: spikes globular, 2 in. across. W. Australia.

collìna. Shrub to 12 ft.: lvs. linear, to 3 in. or more long, sharply toothed, white-tomentose beneath: spikes to 6 in. long.

ericifòlia. Shrub or tree to 14 ft.: lvs. narrowly linear, about ½ in. long, with entire revolute margins, notched or truncate at end: spikes to 10 in. long. New S. Wales.

grándis. Tree to 40 ft.: lvs. to 1 ft. long, divided to midrib into triangular lobes to 2 in. long and 1 in. wide at base, pale and tomentose beneath: spikes to 1 ft. long. W. Australia.

integrifòlia. Tree to 30 ft.: lvs. scattered, oblong to lanceolate, to 8 in. long and 1 in. wide, entire or sometimes toothed, white-tomentose beneath: spikes to 6 in. long.

littoràlis. Tree to 40 ft.: lvs. linear, to 8 in. long, usually toothed, white-tomentose beneath: spikes to 10 in. long. W. Australia.

marginàta. Shrub to 15 ft.: lvs. oblong-lanceolate, to 2 in. long, usually entire with recurved margins, white beneath: spikes to 3 in. long.

Meìssneri. Low spreading shrub to 3 ft. across: lvs. linear, to ¼ in. long, crowded, revolute, white-hairy beneath: fls. to ¼ in. long, in ovoid spikes, style about ¾ in. long, hooked.

Ménziesii. Tree to 40 ft.: lvs. to 1 ft. long and 1 in. wide, truncate, rusty-tomentose beneath: spikes to 5 in. long. W. Australia.

nùtans. Shrub: lvs. narrow-linear, to 1 in. long, with entire revolute margins, glabrous: spikes to 2 in. long, sometimes nodding. W. Australia.

occidentàlis. Shrub to 5 ft.: lvs. linear, to 4 in. long, notched or toothed at end, margins recurved, white beneath: spikes to 6 in. long. W. Australia.

pulchélla. Shrub: lvs. linear, to ½ in. long, with entire revolute margins: spikes to 1½ in. long. W. Australia.

quercifòlia. Shrub to 6 ft., glabrous: lvs. oblong, to 4 in. long, truncate, deeply toothed or cut: spikes to 4 in. long. W. Australia.

rèpens. Prostrate shrub: lvs. to 1 ft. long, long-stalked, deeply pinnatifid, thick and stiff: spikes to 4 in. long. W. Australia.

serràta. Tree to 20 ft.: lvs. oblong-lanceolate, to 6 in. long and 1 in. wide, deeply toothed, tomentose beneath, leathery: spikes to 6 in. long.

speciòsa. Tall shrub, sts. dense, tomentose: lvs. pinnate, 8–12 in. long, lobes rounded to triangular, becoming larger toward base of lf., white-hairy beneath: fls. greenish, to 1 in. long, in dense oblong spikes to 5 in. long, style incurved at base.

sphærocárpa. Shrub to 4 ft., tomentose: lvs. linear, 1–3 in. long, with entire revolute margins: spikes globular, to 3 in. across. W. Australia.

verticillàta. Small tree: lvs. in whorls, oblong-lanceolate, to 3 in. long, margins recurved, white beneath: spikes to 8 in. long. W. Australia.

BANYAN: *Ficus benghalensis.*

BAOBAB: *Adansonia digitata.*

BÁPHIA (*Bracteolaria*). *Leguminosæ.* Thirty or more simple-lvd. African trees and shrubs, one of which is intro. for ornament in S. Fla.: fls. papilionaceous, in panicles or axillary racemes: pod linear-lanceolate, flattened, narrowed to apex. **B. racemòsa,** CAMWOOD, is a shrub, with oblong-lanceolate pointed entire lvs. to 2½ in. long: fls. white with purplish veins, the standard nearly ½ in. across, in short panicled leafy clusters: pods 2 in. long. Trop. and S. Afr.

BAPTÍSIA. FALSE or WILD INDIGO. *Leguminosæ.* Per. herbs with mostly digitate lvs. of 3 lfts., papilionaceous fls. in racemes, and short inflated pods; native in E. N. Amer. in dry lands, adapted to borders and wild-gardens. Propagated by division or seeds.

álba. To 3 ft.: lfts. oblong to lanceolate: fls. white, to ½ in. long, in long peduncled lateral racemes. N. C., west and south, extending northward.

austràlis. To 6 ft.: lfts. to 2½ in. long, oblanceolate to oval: fls. indigo-blue, to 1 in. long, in long terminal racemes, summer. Pa. to Ga. and Tex.

bracteàta. To 2½ ft.: lfts. to 4 in. long, oblanceolate to obovate, softly pubescent: fls. white or cream-colored, in spring. Mich. to Tex. east to Ga.

grandiflòra: trade name for *B. australis.*

leucántha. To 4 ft.: lfts. to 2 in. long, obovate to cuneate: fls. white, to nearly 1 in. long, in lateral racemes. June–July. Ont. to Fla. and Tex.

leucophæa. Probably not distinct from *B. bracteata,* but separated by some authors on the basis of lfts. narrowly oblanceolate-spatulate and villous.

mìnor. Distinguished by some authors from *B. australis* by the divaricate branches and lfts. ⅝–2 in. long. S. U. S.

perfoliàta. To 3 ft.: lvs. simple, orbicular, to 2 in. long, perfoliate: fls. yellow, in spring. Ga., S. C.

tinctòria. To 4 ft.: lfts. to 1 in. long: fls. bright yellow, in summer. Me. to Fla. and La.

versícolor: referable to *B. australis*.

villòsa. To 4 ft., plant pubescent throughout, especially when young: lvs. nearly sessile, lfts. to 4 in. long, entire, cuneate at base: fls. yellow, to 1 in. long, in lateral racemes to 1 ft. long. June–July. Va. to Fla. and Ark.

BARBADOS FLOWER-FENCE: *Poinciana pulcherrima*. -**Nut:** *Jatropha Curcas*. **Pride:** *Poinciana pulcherrima*.

BARBARÈA (*Campe*). WINTER-CRESS. UPLAND-CRESS. *Cruciferæ*. A few biennials and perennials in temp. regions, some of them becoming field and roadside weeds, a few kinds more or less grown as edible cress, and sometimes for ornament: they are erect branching herbs with small yellow fls. in terminal racemes, elongated erect or spreading pods or siliques, and pinnatified or lyrate lvs. See *Cress*.

plantagínea. Bien. similar to *B. vulgaris* but larger in all its parts: lvs. oblong, toothed or somewhat lyrate, the lateral lobes toothed: pods 1½ in. long. Asia Minor.

prǽcox: *B. verna*.

rupícola. Per., forming mats or sods: st. to 1 ft.: radical lvs. with large cordate terminal segm. or part, cauline pinnatifid: fls. large, the pedicels longer than sepals. Corsica, Sardinia.—Grown for ornament.

vérna (*B. præcox*). EARLY or BELLE ISLE CRESS. Bien., probably sometimes per., to 2 ft.: lvs. irregularly pinnatifid, the segms. of the radical ones mostly 4–8 pairs: pod at maturity 1½ in. or more long, sharply 4-angled, on pedicel nearly or quite as thick as itself, the beak or point short and thick. Eu.; sometimes run wild.—Blooms in very early spring.

vulgàris. Per. or perhaps bien. to 2 ft.: lvs. with 1–3 pairs of segms.: pod 1 in. or less long, obtusely angled, on relatively thin pedicels, the beak commonly very thin. Eu.; extensively nat. in N. Amer. and occasionally a noxious weed in new meadows and cult. land.—Blooms later. Double-fld. and variegated-lvd. forms are known.

BARBERRY: *Berberis*. **Holly:** *Mahonia Aquifolium*.

BARKERIA: according to recent practice treated as a well marked section of the polymorphic genus *Epidendrum*, which see.

BARKHOUSIA: *Crepis*.

BÁRKLYA. *Leguminosæ*. One tree to 60 ft. native of Queensland and intro. in S. Calif. **B. syringifòlia.** Lvs. simple, broad-cordate, to 4 in. long: fls. golden-yellow, small, regular, in dense racemes to 9 in. long forming terminal panicles.

BARLÈRIA. *Acanthaceæ*. Herbs or shrubs with opposite entire lvs. and funnelform 5-lobed fls. solitary or in spikes or heads, with large often showy bracts; native in Old World tropics and grown under glass or in the open in warm climates. Propagated by cuttings of young wood over heat.

cærùlea. To 4 ft.: lvs. ovate, to 6 in. and more long: fls. blue, to 2 in. long, in dense spikes to 3 in. long; bracts veiny, large, entire. India.

cristàta. To 3 ft.: lvs. oval, to 3½ in. long: fls. blue, 2 in. long, in dense spikes; bracts with long spiny teeth. India.

strigòsa. To 3 ft.: lvs. ovate, somewhat leathery and strigose: fls. blue, to 2 in. long, in terminal spikes. India.

BARLEY: *Hordeum vulgare*.

BARÓSMA. *Rutaceæ*. S. African heath-like shrubs with mostly opposite leathery lvs. and 5-parted fls. solitary or clustered; one species intro. in S. Calif. Propagated by cuttings of mature wood.

ovàta. To 2 ft., much branched: lvs. ovate or obovate, to ½ in. long, shining: fls. white, ⅙ in. long, solitary.

pulchélla (*Diosma pulchella*). To 4 ft., much branched: lvs. ovate to ovate-oblong, to ½ in. long, scattered, glossy, margins revolute: fls. purplish-white, ⅛ in. long, in racemes at ends of branches or occasionally solitary in axils.

BARRINGTÒNIA. *Lecythidaceæ*. Evergreen trees of the Old World tropics, having large lvs. crowded at ends of branches and white or reddish fls. with many protruding stamens, borne in spikes or racemes; the following planted in tropics and intro. in S. Calif.

speciòsa. To 50 ft.: lvs. obovate, to 15 in. long, entire, shining: fls. with white petals 2 in. long and longer purplish stamens: fr. 4-angled, 3 in. across, with 1 large seed, style and calyx-lobes persistent. India.

BARTONIA: *Mentzelia*.

BARTSCHÉLLA. *Cactaceæ*. One species from Lower Calif., distinguished from related genera by the circumscissile fr. **B. Schùmannii** (*Mammillaria Schumannii*). Sts. tufted, to 2 in. high; tubercles large; radial spines 9–15, to ½ in. long, central spines usually hooked: fls. near top of plant, purple or lavender, 1½ in. across.

BARYXYLUM: *Peltophorum*.

BASÉLLA. MALABAR-NIGHTSHADE. *Basellaceæ*. Two Asian twining herbaceous vines with fleshy ovate to ovate-lanceolate lvs. and small inconspicuous fls. in clusters on long thickened stalks; grown as pot-herbs in trop. regions. In the N. seeds must be started indoors under heat.

álba. Lvs. longer than broad: fls. whitish.

rùbra. Lvs. about as broad as long: fls. reddish.

tuberòsa: *Ullucus tuberosus*.

BASELLÀCEÆ. BASELLA FAMILY. Five genera of climbing or decumbent perennials from trop. Amer. and Asia, somewhat allied to the chenopods, having alternate fleshy lvs. and small regular bisexual fls. with 2 sepals, 5 petals and stamens, superior 1-celled ovary, and fr. inclosed by the corolla. Basella and Ullucus are sometimes grown for food and Boussingaultia for ornament.

BASIL: *Ocimum*.

BASKET-FLOWER: *Centaurea americana*, *Hymenocallis calathina*.

BASKET-OF-GOLD: *Alyssum saxatile*.

BASKET PLANTS are those of a more or less viney or trailing or diffuse habit that make a good appearance in hanging baskets and pots and that are of simple cultural requirements. The term is employed for those subjects customarily grown on porches and in windows rather than regularly in greenhouses. Some of them are annuals of simple culture. Others are perennials propagated by means of cuttings, as ivy (Hedera), vinca, strawberry-geranium, nasturtium, senecio, glechoma. Sometimes oxalis and spring bulbs are included. Basket plants do not constitute a cultural group, and need not be further considered separately. In growing basket plants one must be sure that caution is taken against excessive drying out.

BASSWOOD: *Tilia*.

BAST, CUBAN: *Hibiscus elatus*.

BATEMÁNNIA. *Orchidaceæ*. An American genus of epiphytes with few-lvd. pseudobulbs, plicate lvs. and lateral pendulous loosely-fld. racemes, with the broad base of the petals running down the long column-foot.

Cólleyi. Pseudobulbs compressed, ovate to oblong, obtusely 4-angled, 1–3-lvd. at summit: lvs. oblanceolate-elliptic or obovate-oblong, plicate: raceme lateral, to 6 in. long; fls. to 10; sepals and petals green without, dull brownish-purple within; lip 3-lobed, white or whitish-yellow dotted with red. Trinidad, British Guiana.

Búrtii: *Huntleya Burtii.*

BATOCYDIA UNGUIS: *Doxantha Unguis-cati.*

BATODENDRON: *Vaccinium arboreum.*

BATRACHIUM: see *Ranunculus.*

BAUÈRA. *Saxifragaceæ.* Evergreen shrubs of Australia and Tasmania, often somewhat heath-like in foliage, with opposite 3-parted lvs. and white, pink or purple fls. solitary in the axils or clustered at ends of sts.

One attractive species is grown in the cool greenhouse and blooms throughout winter and spring. Propagated by cuttings of half-ripened wood in spring.

rubioìdes. To 6 ft. or more, often prostrate: lfts. oblong or lanceolate, to ½ in. long, toothed: fls. pink or white, ½ in. across.

BAUHÍNIA. *Leguminosæ.* Warm temp. and trop. trees or shrubs, often climbing, with simple lvs. which are usually 2-lobed or -parted, fls. in terminal or axillary cymes, and long flat pods; grown for ornament in warm countries. Propagated by seeds, suckers, and cuttings over heat.

aculeàta (*B. Ungula*). Tree-like shrub with spine-like stipules: lvs. glabrous, subcordate at base, the 2 lobes ovate and 3-nerved and parted about one-fourth the way down: petals lanceolate and crenate, stamens 9 or 10: pods narrow, flat. Colombia.

acuminàta. Shrub to 6 ft.: lvs. lobed less than half way: fls. white, in racemes: pods to 5 in. long. India, Malaya, China.

álba: *B. variegata* var. *candida.*

cándicans: probably *B. candida* is meant (*corniculata*).

cándida: *B. corniculata, B. variegata* var.

corniculàta. Erect shrub: lvs. lobed nearly one-half depth of lf., lobes obtuse: fls. white, 2½–3 in. long, with narrow long-clawed petals and prominent colored stamens. Brazil, Paraguay.—The plant grown in Calif. as *B. candida* apparently belongs here.

corymbòsa. Climbing: lvs. lobed nearly to middle: fls. pinkish, in loose racemes. E. Asia.

forficàta. Shrub or small tree: lvs. forked into long narrow lobes: fls. white or cream-colored, 1–3 in the axils, with long narrow petals: pods to 10 in. long. Brazil.

Gálpinii. Shrub to 10 ft., half-climbing: lvs. 2-lobed: fls. brick-red, in few-fld. racemes: pods to 5 in. long. S. and trop. Afr.

grandiflòra: a name often applied to *B. variegata.*

Káppleri: *B. monandra.*

mexicàna. Pata-Vaca. Large shrub or small tree: lvs. forked one-half-way down, lobes spreading and acute: fls. small, in clusters, petals white, stamens very long. Mex.

monándra (*B. Kappleri*). Butterfly-Flower. Jerusalem Date. Shrub or small tree: lvs. broadly lobed about one-third their length: fls. pink with purple markings, in terminal racemes, having only 1 fertile stamen: pods to 9 in. long. Probably Guiana.

pícta. Erect: lvs. roundish-elliptic, the lobes nearly ovate and acutish: fls. white, in terminal racemes, petals oblong. Colombia.

purpùrea (*B. triandra*). Tree: lvs. broadly lobed about one-third their length: fls. red or white (var. **álba**), with long narrow petals. India, China.

racemòsa. Small bush-like tree with hanging branches: lvs. rather small, broader than long, with short very obtuse lobes: fls. yellow, small, in loose racemes. India.

tomentòsa. St.-Thomas-Tree. Shrub to 15 ft.: lvs. small, broadly lobed to one- or two-thirds their length: fls. yellow with a red or chocolate blotch on one petal, 1–3 in the axils: pods to 5 in. long. India, China, Afr.

triándra: *B. purpurea.*

Ungùla: *B. aculeata.*

Váhlii. Malu Creeper. Tall climber: lvs. very large, broadly lobed to one-third or one-fourth their length: fls. white becoming yellowish, in many-fld. terminal clusters: pods to 1 ft. long. Himalayas.

variegàta. Mountain Ebony. Orchid-Tree. Tree: lvs. broadly lobed to about one-third their length: fls. lavender to purple, with broad petals, few together in the axils: pods to 1 ft. long. India, China. Much planted in S. Fla. Var. **cándida** (*B. alba*) has white fls.

BAYBERRY: *Myrica.*

BAY, BULL: *Magnolia grandiflora, Persea Borbonia.* **Loblolly:** *Gordonia Lasianthus.* **Red:** *Persea Borbonia* and *palustris.* **Rose:** *Rhododendron.* **-Rum-Tree:** *Pimenta acris.* **Sweet:** *Laurus, Magnolia virginiana.*

BEAD-PLANT: *Nertera depressa.*

BEAD-TREE: *Adenanthera, Melia.*

BEAM-TREE, WHITE: *Sorbus Aria.*

BEAN. Various species of Phaseolus are commonly known as beans, as: common field, kidney or snap bean, *Phaseolus vulgaris;* lima bean, *P. limensis;* sieva or civet bean, *P. lunatus;* these species are annual twiners, but with bush or dwarf varieties. White Dutch Runner and Scarlet Runner, *P. coccineus,* are perennial but grown as annuals, also twiners with bush forms. All these plants are tender, to be planted only after the weather is warm and settled. Broad, Windsor or horse bean, *Vicia Faba,* is a stiffly erect hardy annual grown in North America, mostly in Canada, and especially in the maritime districts; it does not thrive in hot dry summers. Other kinds of beans are grown for ornament, for forage and special purposes. See *Dolichos, Glycine, Phaseolus, Vigna.*

The present statements about culture of beans apply to the phaseolus kinds mentioned above. In respect to their uses, they may be divided into three categories; viz., those used as string or snap beans, the entire pod being eaten; those used as shell beans, the full-size but immature beans being shelled from the pod and cooked; dry beans, or those eaten in their dry or winter condition. The same variety of bean may be used for all of these three purposes at different stages of its development, but there are varieties better suited to one purpose than the other.

Beans will grow in most soils, but the best results may be expected in ground well enriched and in good physical condition. Little is to be gained by planting bean seed before the soil has become warm. No vegetable seed decays quicker than beans, and the delay caused by waiting for the ground to become warm and free from excessive moisture will be more than made up by the rapidity of growth when finally they are planted. The beans may be dropped 2 inches deep in shallow drills, the seeds to lie 2 inches apart. Cover to the surface of the soil, and if the ground be dry, firm it with the foot or the back of the hoe. For the bush varieties, allow 2–2½ feet between the drill-rows. Pole beans are given more room, and support must be provided. The bush varieties may be planted at intervals of two weeks from the first planting until about two months before the average date of the first frosts in fall. Each planting may be on ground previously occupied by some early-maturing crop. Thus, the first to third plantings may be on ground from which has been harvested a crop of spinach, early radish or lettuce; after that, on ground where early peas have been grown; and the later sowings where beets or early potatoes have grown. String beans for canning are commonly taken from the last crop. One quart of seed will plant about 100 feet of drill.

Limas are the richest of beans, but the pole varieties often fail to mature in the northern states. The land should not be very rich in nitrogen (or stable manure), else the plants will run too much to vine and be too late. Choose a fertile sandy or gravelly soil with warm exposure, use some soluble commercial fertilizer to start them off, and give them the best of culture. Aim to have the pods set before the droughts of midsummer come. The pole limas are commonly planted in hills that are 2 to 4 feet apart in the rows; 1 quart of beans plants about 100 hills. Good trellises for beans are made by strong twine stretched between two horizontal wires, one of thich is drawn a foot above the ground and the other 6 or 7 feet high. Dwarf limas are more desirable for small gardens than the pole varieties, as they may be planted much closer, the bother of procuring poles and twine is avoided, and the garden will have a more sightly appearance; they are grown in rows that are about 2½ feet apart. But the dwarf limas and pole limas require a longer season than the common garden bush beans, and usually only one planting is made.

Beans are attacked by a good number of diseases and insects, for the control of which the grower should consult the latest bulletins and books.

BEAN: *Phaseolus.* **Asparagus:** *Vigna sesquipedalis.* **Black:** *Castanospermum australe.* **Broad:** *Vicia Faba.* **Castor-:** *Ricinus communis.* **Goa:** *Psophocarpus tetragonolobus.* **Horse:** *Vicia Faba.* **Hyacinth:** *Dolichos Lablab.* **Indian-:** *Catalpa bignonioides.* **Jack:** *Canavalia ensiformis.* **Lyon:** *Stizolobium niveum.* **Mescal:** *Sophora secundiflora.* **Potato:** *Apios americana.* **Sarawak:** *Dolichos Hosei.* **Screw:** *Prosopis pubescens.* **Soy:** see *Soybean.* **Sword:** *Canavalia gladiata.* **-Tree:** *Laburnum anagyroides.* **Velvet:** *Stizolobium.* **Wild:** *Apios americana.* **Yam:** *Pachyrhizus.* **Yard-long:** *Vigna sesquipedalis.* **Yokohoma:** *Stizolobium Hasjoo.*

BEARBERRY: *Arctostaphylos, Arctous.*

BEARD: a long awn or bristle-like hair, particularly when in tufts.

BEARD-TONGUE: *Penstemon.*

BEARS-BREECH: *Acanthus.*

BEARS-TAIL, CRETAN: *Celsia Arcturus.*

BEAUCÀRNEA. *Liliaceæ.* Tree-like plants in dry regions of Tex. and Mex. with tall trunks somewhat swollen at base, long linear stiff lvs. and small whitish fls. in panicles; sometimes retained in the genus Nolina; suitable for outdoor planting in warm dry regions. Cult. as for *Yucca.*

recurvàta (*Nolina tuberculata*). To 30 ft.: lvs. to 6 ft. long and ¾ in. wide, recurving. Mex.

BEAUFÓRTIA. *Myrtaceæ.* Stiff heath-like shrubs of W. Australia, with small opposite lvs. and mostly red sessile fls. in dense heads or short spikes; one species intro. in S. Calif. Propagated by cuttings of hardening shoots under glass.

decussàta. To 4 ft. with stiff branches: lvs. ovate, rarely to ½ in. long: fls. in spikes, the red stamens to 1 in. long, petals not exceeding calyx-lobes.

purpùrea. Small shrub: lvs. ovate- to linear-lanceolate, to ⅓ in. long: fls. small, in dense heads, stamens purple.

squarròsa. Differs from *B. decussata* in petals twice as large as calyx-lobes.

BEAUMÓNTIA. *Apocynaceæ.* A few woody vines from Java to E. India, with opposite lvs., very large showy funnelform fls. in terminal cymes, leafy lobed calyx, and long cylindrical fr.

One is grown in greenhouses in rich loamy soil; it should not be planted in pots; also planted out-of-doors in the South. Propagated by cuttings.

grandiflòra. HERALDS-TRUMPET. Lvs. oval or obovate, to 8 in. long: fls. white, trumpet-shaped, to 5 in. long and as broad, fragrant, spring-blooming. Himalayas.—Sometimes a small tree.

Jerdoniàna. Differs from *B. grandiflora* in the corolla funnelform rather than campanulate and the calyx-lobes narrow-lanceolate, not broad-ovate. India.

BEAUTY-BERRY: *Callicarpa.*

BEAUTY-BUSH: *Kolkwitzia amabilis.*

BEDDING is a more or less technical term to denote the growing of plants in beds or masses in distinction from placing them singly or in lines or "hills." It is commonly employed to designate the close massing of plants in the open ground for the making of striking displays of color or leafage; it is ordinarily a more or less temporary recourse for spring, summer or autumn show, although the name is sometimes given to assembled effects of perennials as of grasses and even of low evergreens. Sometimes the bed is of short duration even though the plants are perennial, as with the spring bulbs. It is evident that for temporary or seasonal effects the site must be well chosen and the ground carefully prepared so that results are obtained speedily and at the desired date.

In spring bedding the plants are commonly tulips, hyacinths, crocuses or other early-flowering bulbous plants. In this case, the ground is usually occupied later in the season by other plants. These later may be annuals, the seeds of which are sown amongst the bulbs as soon as the season is far enough advanced; or the annuals may be started in boxes and the plants transplanted amongst the bulbs as soon as the weather is fit. Heavy early over-planting of this kind, however, is likely to weaken the bulbs or prevent their proper maturation.

Summer bedding is often made with perennial plants carried over from the preceding year, or better, propagated for that particular purpose in February and March. Such plants as geranium, coleus, alyssum, scarlet salvia, ageratum and heliotrope may be grown for these beds. It is a common practice to use geranium plants which are in bloom in winter for bedding out in the summer, but such plants are tall and ungainly in form and have expended the greater part of their energies. It is better to propagate new plants by taking cuttings or slips late in the winter and setting out young, fresh, vigorous subjects. Many of the low-growing and compact continuous-flowering annuals are also excellent for summer bedding effects.

Bedding of another type attempts to make patterns or designs; it is carpet-bedding. Comparatively few subjects are adapted to this purpose, for the plants must be such as will stand shearing and have very strong and constant colors of foliage. The most popular bedding plants are coleus (particularly the yellow Golden Bedder), alternanthera, iresine, *Centaurea gymnocarpa*, and such succulent plants as the houseleeks. Some of the annual flowers may also be used for strong color effects, as *Lobelia Erinus* and sweet alyssum. Ordinarily the making of carpet-beds should be left to professional gardeners, since it requires much skill and care to make and keep the beds in perfect condition; and a ragged or imperfect carpet-bed is worse than no bed at all. Carpet-beds are really curiosities, and they have no more legitimate place in the general pictorial landscape design area than painted stones or sheared evergreens. Therefore, they should be placed by themselves at one side, where they do not interfere with the general design of the place. In public parks they make a very useful attraction when set off by themselves, the same as topiary work or other specialties.

Bold subtropical effects can be produced by planting in the open such subjects as palms, bananas, crotons, araucarias, caladiums and cannas as well as by castor-beans and other quick growers. Plants like bananas and palms, which are kept normally in pots, would better be left in the pots and plunged to the rims rather than turned out directly into the ground. To attain quick and continuous effects, it is advisable to set the plants rather close. As these plants are likely to be injured by strong winds, it is well to have subtropical beds in a somewhat protected place. Care must be taken to provide good water supply, for the effects are conditioned largely on luxurious growth and clean foliage.

BEDSTRAW: *Galium.*

BEECH: *Fagus.* **Australian:** *Eucalyptus polyanthemos.* **Blue:** *Carpinus caroliniana.*

BEEFWOOD: *Casuarina.*

BEET: *Beta.*

BEFÀRIA (*Bejaria*). *Ericaceæ.* Evergreen shrubs with alternate entire lvs. and white, yellow or red fls. in terminal racemes or corymbs; native Fla., Mex., S. Amer. and one species sometimes planted in Fla.

racemòsa. TAR-FLOWER. To 6 ft.: lvs. oval or oblong, to 2 in. long, leathery: fls. white, 2 in. across, in showy racemes to 8 in. long. S. Ga., Fla., in sandy soil and low places.

BEGGARS-TICKS: *Bidens frondosa.*

BEGGARWEED: *Desmodium purpureum.*

BEGÒNIA. *Begoniaceæ.* Many species and hybrids in a great trop. genus, around the world, comprising subjects ornamental for foliage, habit and bloom: sappy or succulent herbs or herb-like shrubs; a few of them are annuals: lvs. alternate, often large and colored or illustrated, usually oblique or lop-sided: fls. monœcious, white, pink, red, yellow, the ovary inferior and usually similarly colored. Begonias have given rise, under cult., to numberless forms and hybrids and many of them bear Latin names as if they were species, thus adding to the confusion of the nomenclature. Present-day florists' begonias are mostly of the *B. semperflorens* relationship. The following species are per. unless otherwise stated. Many kinds bearing only vernacular names are not included in this account.

Begonias are all tender plants, impatient also of dry and droughty conditions. They are glasshouse or lathhouse or window-garden subjects, requiring protection from burning sun, although many of the kinds are useful for bedding-out in protected areas. Three main horticultural classes may be recognized: the fibrous-rooted (or rootstock very small, if any), mostly tall and branching; the rhizomatous, with the stems or rootstocks running on the surface of the ground and the plants usually without erect branching stems, comprising species with conspicuously heavy ornamental foliage; the tuberous-rooted. *B. socotrana* is bulbous. The lines between these divisions are often more or less indefinite. The stem-bearing fibrous-rooted kinds grow readily from cuttings of the firm half-ripened wood, and rhizomatous species by division of the rootstocks. All the species are readily raised from seeds under cover; the heavy-leaved kinds propagate from leaf-cuttings, as the rex varieties. The tuberous kinds, which are summer bloomers, are grown mostly from seeds although the tuber may be divided; the tubers rest in winter. Tubers usually produce their best bloom two years or seasons from seed, although they may be dried off when flowers are past and growth is fully mature and used over again for several years. Seeds of begonias are small and they must be covered lightly and always treated with care in a protected seed-bed. The fibrous-rooted branching kinds contain the winter bloomers although many of them also bear colored and attractive leaves; it is well to keep fresh plants of them coming on each year.

ácida (*B. braziliensis* of hort.). Rhizomatous: lvs. basal, nearly orbicular, to 9 in. across, rugose, bright green, hairy: fls. creamy-white to faint pink, ⅝ in. diam., in loose clusters hanging on erect sts. Brazil.

acuminàta: *B. acutifolia.*

acutángula (*B. acutangularis*). Like *B. angularis*, but lvs. broader and larger, veins pale green, margins coarsely toothed.

acutangulàris: *B. acutangula.*

acutifòlia (*B. acuminata*). Fibrous: subshrubby to 3 or 4 ft.: lvs. oblong to ovate-acuminate, 2–3 in. long, serrate: fls. white, about 1 in. across, 3–5 on a peduncle. Jamaica.

álba perfécta: trade name for a tall fibrous-rooted plant with white fls.

álba scándens: see *B. scandens.*

álbo-pícta. Fibrous: shrubby, branched, compact: lvs. elliptic-lanceolate, not large, glossy-green and silvery-spotted: fls. rather small, greenish-white. Brazil.

Álleryi. Medium in size, bushy, hairy: lvs. ovate, dark green, toothed, purple-veined underneath: fls. pale pink: *B. metallica* × *B. gigantea.*

andìna. Medium size, brown-scurfy, branches drooping or spreading: lvs. fleshy, ovate, pointed, dull green: fls. white, Bolivia.

angulàris (*B. zebrina*). Fibrous: plant smooth, shrubby, to 8 ft.: lvs. long ovate-acuminate, green and glossy above with white veins, tinged reddish underneath: fls. white, ⅔ in. across, in large clusters. Brazil.

argénteo-guttàta. Fibrous: strong and branching, 2–4 ft., glabrous: lvs. ovate-acuminate, 4–6 in. long, angled or toothed, white-speckled: fls. white tinged pink, in axillary clusters. Cultigen; *B. albo-picta* × *B. olbia.*

argyrostígma: *B. maculata.*

ascotiénsis. Fibrous: lvs. ovate, 2 in. long, dentate, brown with green margin: fls. bright red, long-peduncled. Cultigen; supposed to be *B. fuchsioides* × *B. semperflorens.*

Bertínii: hort. name for a plant closely allied to *B. boliviensis*, differing in its less pendent light scarlet fls.

boliviénsis. Tuberous: st. 2–3 ft. high, somewhat hairy, becoming more or less drooping: lvs. lanceolate to narrow-ovate, acuminate, serrate, 3–5 in. long: fls. cinnabar-scarlet, fuchsia-like. Bolivia.—Has entered into some of the garden tuberous begonias (*B. tuberhybrida*).

Bowringiàna: *B. laciniata.*

braziliénsis: *B. acida; the true brasiliensis* is not in cult.

Búnchii: see *B. Feastii.*

cálla. Lvs. variegated with white, on new growth sometimes clear white like a small calla: one of the *B. semperflorens* group.

carminàta. Fibrous: rather tall, branching: lvs. ovate-acuminate, deeply toothed but not lobed, green: fls. in hanging clusters, rose-scarlet. Recorded as a cross between *B. coccinea* and *B. Dregei.*

caroliniæfòlia. Fibrous: st. thick and fleshy: lvs. palmate, divided into 6–8 long ovate stalked lfts.: fls. small and pink, on long peduncles. Mex.

Carrièrei: derivative from *B. semperflorens.*

cathayàna. Fibrous-rooted, to 18 in., erect: lvs. hanging, large, obliquely cordate, pointed, toothed, green above with crimson nerves, mottled crimson underneath: fls. vermilion. China.

Cáthcartii of hort. is *B. xanthina.*

cheimántha. Group name for the *B. socotrana* and *B. Dregei* hybrids, including Gloire de Lorraine raised in 1892, Glory of Cincinnati, Lady Mac, Melior.

Clárkei. Tuberous: st. erect to 2 ft., fleshy, puberulent: lvs. cordate-ovate, serrate: fls. large and bright red, in pendulous racemes. Bolivia at high altitudes.—Has contributed to the race of hort. tuberous begonias (*B. tuberhybrida*).

coccínea (*B. rubra*). Fibrous: sts. glabrous, becoming 3–4 ft., branching: lvs. thick, oblong to ovate, 4–6 in. long, reddish underneath: fls. large, wax-like and coral-red, in drooping clusters. Brazil.—Has given rise by variation and hybridization to many good forms, as Lucerna, President Carnot.

cómpta. Tall slender hort. begonia: lvs. long-pointed, grayish-green with gray center: fls. small, white, in large clusters.

conchæfòlia (*B. Warscewiczii*). Rhizomatous: lvs. ovate-cordate, 4–6 in. long, basal lobes overlapping, reddish and hairy underneath: fls. pink to nearly white, fragrant, on long peduncles. Cent. Amer.

corállina. Fibrous: related to *B. maculata* or a form of it, very free-flowering; 8–10 ft., needing support: lvs. cordate-lanceolate, glossy green: fls. coral-red, in drooping long clusters. Cultigen.—The name is also applied to a form of *B. coccinea.*

Crédneri. Medium size, bushy, soft-hairy: lvs. ovate, olive-green, reddish underneath: fls. pink: *B. Scharffiana* × *B. metallica.*

críspa: *B. manicata* var.; also a form of tuberous begonia.

cristàta: hort. name for a race of tuberous-rooted begonias having a crested outgrowth from the center of fl.

cýpræa: a form of *B. metallica.*

Dàvisii. Tuberous, acaulescent: lvs. ovate-cordate, thin-hairy, red underneath: fls. bright red, as well as peduncles. Peru.—Has contributed to the garden tuberous begonias (*B. tuberhybrida*).

decòra: hort. name for a tall fibrous-rooted begonia, with white odorous fls.

diadèma. Fibrous: sts. 2 ft., fleshy: lvs. deeply parted, maple-like, dentate, green blotched white: fls. very small, pink. Borneo.

dichótoma. Fibrous: upright, 2–3 ft., glabrous, st. thick: lvs. nearly orbicular to ovate, 3–12 in. long, serrulate and angled, bright green: fls. white, small, in long-peduncled clusters. Venezuela.

dichròa. Low, spreading: lvs. broad-ovate, pointed, glossy green: fls. large, orange, in dense clusters. Brazil.

Digwilliàna. Fibrous: nearly or quite erect, of intermediate stature: lvs. elliptic, 2–4 in. long, serrate, dark rich green: fls. rosy-scarlet, drooping. Cultigen; probably a hybrid from *B. fuchsioides.*

domingénsis. Subshrubby but low, with hard glabrous branches and hairy branchlets: lvs. small, ovate-acute, somewhat cordate and lobed, 1 in. or so long, glabrous above and hairy on nerves underneath: fls. white, small, in close cymes. Hispaniola.

dominicàlis. Fibrous: sts. glabrous, to 3 ft.: lvs. ovate-cordate, to 4½ in. long, acuminate, membranous: fls. white, to ¼ in. long, in much branched erect glabrous dichotomous cymes. Dominica.

Drègei (*B. parvifolia*). Tuberous or semi-tuberous: sts. ann. from the tuber, succulent, red, 1–3 ft.: lvs. ovate or rhombic, about 3 in. long, angled and more or less lobed, red-ribbed underneath: fls. few and white, on axillary peduncles. S. Afr. Var. **Macbéthii** (*B. Macbethii*) is mostly smaller and more slender, 1–1½ ft. high: lvs. smaller, deeply notched-lobed: fls. smaller. Probably a cultigen.

Drùryi: hort. form differing from *B. Haageana* in its white fls. and lvs. purple beneath.

Duchártrei. Fibrous: st. branched and hairy, 2–3 ft. and more: lvs. ovate-lanceolate, long-acuminate, 5–8 in. long, dentate, reddish underneath: fls. large, waxy-white and with red hairs, in long-stemmed compact clusters. Cultigen; apparently hybrid from *B. Scharffiana.*

echinosépala. Medium in size, hairy, sts. erect and much branched: lvs. ovate and pointed, coarsely toothed, green and glossy, purple underneath: fls. pink, hairy on outside. Brazil.

ecuadorénsis. Trade náme for a begonia grown from Ecuadorean seeds: st. upright: lvs. large, nearly palmate, green with whitish markings when young: fls. white to pink. Another *ecuadorensis* is *B. acida.*

Éngleri. Tall, succulent, somewhat branched: lvs. ovate, coarsely toothed, green with purplish veins: fls. clear pink. Trop. Afr.

Érfordii. Fibrous: dwarf and bushy, to 1½ ft.: fls. rose-carmine. Hybrid of *B. Schmidtiana* and a form of *B. semperflorens.*

Evansiàna. Tuberous: glabrous, branching, sts. to 2 ft., deciduous: lvs. ovate, acute and subcordate, lobed and denticulate, red underneath: fls. large, flesh-color. China, Japan.—Stands some frost; propagates by axillary bulblets.

Faureàna. Sts. erect: lvs. palmately parted to middle into 3 or 5 main divisions which are again parted or notched, marked silvery-white and brownish. Brazil.

Fèastii. Rhizomatous: lvs. nearly orbicular, thick, red underneath, hairy on edges: fls. light pink, long-peduncled. Hybrid of *B. manicata* and *B. hydrocotylifolia.*—A form with lf.-margins crested and frilled is *B. Bunchii.*

fimbriàta: reported as a tuberous begonia with fringed petals.

floribúnda: *B. multiflora.*

foliòsa. Fibrous: small smooth semi-shrubby very leafy plant to 1½ ft.: lvs. about ½ in. long, distichous on short shaggy branchlets, notch-lobed: fls. 1–3 together on slender axillary peduncles, white tinged rose, about ½ in. across. Colombia.—Good basket and conservatory plant.

Francònis. Ann., pubescent, erect, to 6 in.: lvs. small, unequally ovate, subcordate, to 2 in. long, crenate and ciliate, 7-nerved: fls. white or pinkish, axillary and few. Mex.

Froèbelii. Tuberous: lvs. cordate-acuminate, with fleshy purplish hairs: fls. bright scarlet, large, in tall branching drooping clusters (see *B. tuberhybrida*). Ecuador.

frutéscens. Trade name of a begonia of low spreading habit with red sts.: lvs. strongly undulate, green above, red beneath: fls. white with pedicels and peduncles red, in stiff terminal clusters.

fruticòsa: trade title for a set of the *Scharffiana* group, with leathery lvs. green to almost black on upper surface and red underneath: fls. white or tinted.

fuchsioìdes. Fibrous but with very short rootstock: st. slender, 2–3 ft., branchlets shaggy: lvs. ovate and lop-sided, to 1½ in. long, serrulate: fls. fuchsia-like, scarlet, ½–¾ in. across. Mex.—Good conservatory plant. Var. **coccínea.** Fls. transparent-scarlet.

gigantèa: *B. semperflorens* var. Another *B. gigantea* is a rhizomatous plant, probably of garden origin, with st. 2–3 ft. high: lvs. long-acuminate, to 1 ft. long: fls. many and small, white or pale pink.

Gîlsonii. Fibrous: st. shrubby, to 2 ft., more or less procumbent: lvs. large, lobed, pointed and somewhat fluted, dark green: fls. double or crested, light pink, on long erect peduncles. Cultigen.

glandulífera. To 2 ft., with a fleshy creeping rooting st.: lvs. obliquely cordate-ovate, to 6 in. long, serrulate, sparsely hairy underneath and on margins: fls. white, in long-stalked open clusters. W. Indies.

glaucophýlla. Rhizomatous: sts. glabrous, long and drooping or climbing on rafters: lvs. ovate and wavy, 3 in. long, glaucous, white-spotted above, purple underneath: fls. brick-red, to 1 in. across, in clusters. Brazil.—Sometimes erroneously called *B. scandens.*

goegoénsis. Rhizomatous, compact: lvs. erect, ovate-orbicular, peltate, blistered or puckered green above and handsomely blotched and veined, dull red underneath: fls. small, rose-pink. Sumatra.

grácilis. Tuberous: st. erect, mostly unbranched, smooth: lvs. heart-shaped, lobed and denticulate: fls. pink, in summer, on short axillary peduncles: bulblets in the lf.-axils may be used for propagation. Mex. Var. **álba,** fls. white; var. **compácta** of the trade is *B. semperflorens* Tausendschön; var. **ròsea** is listed: var. **luminòsa,** lvs. bronzy-red, fls. scarlet.

gunneræfòlia. Fibrous: tree-like but little if at all branched, sts. scaly and more or less woolly: lvs. large, to 16 in. across, nearly orbicular, dentate-notched or with small angle-lobes: fls. very small, whitish, in axillary clusters. Colombia.

Haageàna: *B. Scharffii.*

heracleifòlia. Rhizomatous, hairy: lvs. long-stalked, orbicular, to 1 ft. or more across, with 5–9 deep narrow dentate lobes that extend to the middle of the blade or beyond: fls. white or rose, small, to 1 in. across, on peduncles 2–4 ft. high. Mex.

hiemàlis. Group of hybrids between *B. socotrana* and Andean tuberous species, represented by varieties Emily Clibran, Flambeau, Optima, The Pearl.

hirtélla. Low and bushy, hairy: lvs. broad-ovate, green, small: fls. greenish-white. Brazil.

Hoùghtonii. Low and bushy, soft-hairy, resembling *B. Scharffii* but lvs. smaller, paler and often more strongly lobed, long-acuminate. Hort. plant, once identified with *B. urophylla.*

Hùgelii. Medium in size, white-hairy, erect: lvs. broad-ovate, large, dentate, shallowly lobed, reddish underneath: fls. white. Brazil.

hùmilis. Ann. to 15 in., erect and branching: lvs. thin, narrow-ovate and pointed, 2 in. long, oblique and subcordate, sparsely hairy, dentate and serrulate: fls. white, small, in open long-stalked clusters. Trinidad.

hydrocotylifòlia. Rhizomatous, hairy: lvs. roundish-cordate, repand and not lobed, short-stalked: fls. rose-colored, small but many, on peduncle to 1½ ft. high. Mex.

illustràta: small-lvd. form of *B. Rex.*

imperiàlis. Rhizomatous very hairy condensed low plant: lvs. cordate-ovate, 2–6 in. long, serrulate, green above and lighter along the veins, brown-green underneath: fls. white, about ½ in. across, on scapes or peduncles not exceeding the foliage. Mex.—Commonly grown as Otto Foerster. In var. **smarágdina** the lvs. are wholly bright green.

incàna (*B. peltata* of cult.). Fibrous, scurfy-tomentose on stalks and foliage: st. 1–2 ft. tall and mostly simple: lvs. broad-ovate to nearly orbicular, peltate, 4–9 in. long, entire or repand: fls. white, 1 in. across, in clusters on long peduncles. Brazil.

incarnàta. Fibrous: st. branching, erect, 2–3 ft.: lvs. oblong to ovate, 4–10 in. long and long-pointed, notched and semi-lobed, reddish-green underneath, often more or less spotted or feathered above: fls. rose-colored, to 1½ in. across, in hanging clusters. Mex.

Íngramii. Fibrous: to 3 ft., with horizontal blooming side branches: lvs. small, lance-ovate, serrate, green, tinted red in the sun: fls. rose, large for the group, as the plant is a hybrid of *B. nitida* and *B. fuchsioides;* free-blooming.

isóptera. Fibrous: st. branching, 1½–2 ft., glabrous: lvs. ovate-oblong, to 3½ in. long, strongly oblique, subcordate, margin undulate-dentate to denticulate: fls. pink, in cymes to 4 in. long. Java. Var. **hirsùta** has glandular-hairy petioles.

kewénsis. Tall, of hort. origin, sts. branching: lvs. ovate, acuminate, green: fls. greenish-white, in drooping clusters.

laciniàta (*B. Bowringiana*). Fibrous: sts. to 2 ft.: lvs. broad cordate-ovate, 5–8 in. long, glabrous or nearly so except on edges, angled to sharp-lobed to laciniate, purplish-black above and broad green band between margin and rib: fls. white, about 2 in. across, few on a long peduncle. China.

Lesoùdsii: reported as a form of Rex begonia.

lettónica. Rhizomatous: medium size, pubescent: lvs. large, ovate and acuminate, cordate, shallowly lobed, green above and reddish underneath, dentate and ciliate: fls. pink: *B. heracleifolia* × *B. nelumbiifolia.*

Lièbmannii. Rhizomatous: low, hairy; lvs. orbicular, erect, lobed, green blotched with silver, purplish underneath: fls. white and greenish, large, in short infl. Mex.

Lindleyàna. Erect, st. fleshy, red-hairy: lvs. ovate-acute, peltate, to 6 in. long, toothed and somewhat lobed: fls. in branching clusters, white. Guatemala.

Llóydii. Tuberous: drooping habit: fls. single and double, white and colored. Hort. name.

lobàta. Fibrous: lvs. pointed, spotted: fls. white. Hort. name.

lobulàta. Tall and erect, with few branches: lvs. broad-ovate, large, glossy green, shallowly lobed and finely toothed, brown-tomentose underneath: fls. white or pale pink, in erect clusters. Mex.

Lucérna: form of *B. coccinea*, or hybrid, with white-spotted foliage.

luminòsa: *B. gracilis* var.

luxùrians. Fibrous: sts., stalks and lvs. hairy: lvs. palmately compound, lfts. 7–17, lanceolate and serrate and 3–6 in. long and about 1 in. broad, upper surface reddish, under surface green: fls. small, cream-color, in long-peduncled clusters. Chile.

Macbéthii: *B. Dregei* var.

macrophýlla: *B. nelumbiifolia.*

maculàta (*B. argyrostigma*). Fibrous: plant smooth, sts. branched, 2–5 or more ft.: lvs. oblong to oblong-ovate, thick, 4–8 in. long, obtuse or nearly so, undulate, green and with circular white dots above, red underneath: fls. pale rose to white, about 1 in. across, in hanging clusters. Brazil.

magnífica: hort. name for a form of *B. Rex-cultorum* as well as for one of the *B. semperflorens* type; the true *B. magnifica* of Colombia, a smooth and shining suffrutescent rhizomatous species, is probably not in cult. with us.

malabárica. Low and bushy, pubescent: lvs. small, ovate, green, dentate: fls. light pink, drooping, in short clusters. Malabar, India.

manicàta. Rhizomatous: plant mostly glabrous except on lf.-margins and ribs: lvs. short-ovate, 4–8 in. long, fleshy, sinuate-dentate, shining green above, reddish underneath: fls. about ½ in. long, pink, the peduncles exceeding the foliage. Mex.—Runs into cristate and spotted forms under cult.; see also *B. Feastii.*

Mánnii. Low, with erect branching sts.: lvs. ovate and acute, green, reddish underneath, dentate: fls. pink, in short infl. W. Afr.

Margaritæ. Fibrous: sts. 1–2 ft. high, purple and hairy: lvs. ovate-acuminate, sinuate-dentate, green and purplish above, red underneath: fls. large, rose-colored, in clusters. Cultigen; *B. metallica* is said to be one parent.

Martiàna: form of *B. gracilis.*

metállica. Fibrous: sts. erect and shaggy, to 4 ft.: lvs. ovate, to 6 in. long, angled or lobed, margins sinuate-serrate, green and metallic-tinted above, lighter underneath: fls. blush-white to light rose, to 1½ in. across, in peduncled clusters. Brazil.

multiflòra (*B. floribunda*). Fibrous: tall, resistant; a form of *B. fuchsioides* or a derivative: fls. delicate pink.

narcissiflòra: hort. name for a class of tuberous begonias with fls. shaped like a single daffodil, yellow, pink and red.

nelumbiifòlia (*B. macrophylla*). Rhizomatous: lvs. round-ovate to nearly orbicular, to 18 in. long, peltate, not lobed, serrulate and ciliate, short-pointed, green both surfaces, mostly hairy on nerves: fls. white or pinkish, ½ in. or less across, on tall peduncle. Mex.

nígricans (*B. subpeltata nigricans* of hort. lists). Fibrous: erect, branched, 2–3 ft.: lvs. ovate, acuminate, to 9 in. long, angled-toothed, bristly-serrate, silvery-green and somewhat marked above with darker areas, red underneath, hairs often dark red: fls. rose, about 1 in. across, in peduncled clusters. Cultigen.

nítida. Fibrous: glabrous, sts. branched, 3–5 ft.: lvs. reniform-ovate, 4–6 in. long, crenate-dentate, green and glossy: fls. pink or rose, to 1½ in. across, in large peduncled clusters. Jamaica. Var. **odoràta álba** has smaller sweet-scented fls.

odoràta: *B. nitida* var.

ólbia. Fibrous: st. short and erect, mostly branched: lvs. ovate, to 5 in. long, dentate and somewhat angle-lobed, hairy and bronzy-green and white-dotted above, red underneath: fls. white, in short drooping axillary clusters. Brazil.

palmàris. Fibrous: much like *B. olbia* but lvs. not spotted and reinform-ovate, to 10 in. long and usually with about 3 triangular-acute lobes: fls. white, with serrate petals, more or less hidden in the foliage. Brazil.

palmàta: hort. name for a plant with cane-like growth and large palmate silver-striped lvs.

palmifòlia: hort. name for a plant with large lobed green lvs. and white fls. in clusters.

parvifòlia: *B. Dregei.*

Pèarcei. Tuberous: sts. branched, 1 ft. high: lvs. broad-ovate and cordate, acuminate, toothed, glabrous and green above, tomentose and pale red underneath: fls. bright yellow, large, in axillary clusters. Bolivia.—It has intro. the yellow color into the hort. tuberous begonias (*B. tuberhybrida*).

peltàta: *B. incana.*

péndula: hort. tuberous begonia with drooping branches, in colors.

phyllomanìaca. Fibrous: sts. erect, branching, producing, as do the lvs., many buds and leafy growths: lvs. narrowly cordate-ovate and long-acuminate, to 7 in. long, side-lobed and toothed, green both surfaces: fls. pale pink, ¾ in. across, in hanging clusters. Brazil.

pícta: hort. name for a fibrous-rooted begonia with small narrow lvs. spotted white and white fls. (*picta alba*); *picta rosea* has rose-colored fls. and often spotted foliage: both are probably forms of *B. coccinea.*

Póggei. Low, with erect sts.: lvs. ovate, acute, dull green, pinnately veined: fls. greenish with red wingless ovaries, in very short clusters. Trop. Afr.

prunifòlia: hort. name for a plant of the *Scharffiana* type, with foliage plum-colored underneath: fibrous: sts. branched, hairy: lvs. to 6 in. long, oblique-ovate, red-hairy on veins underneath: fls. white, in large pendent clusters.

Ràjah. Rhizomatous: lvs. angular-orbicular, papery, serrate, smooth above and with green ribs and brown-red intermediate areas, setose on veins underneath: fls. pink, small, on peduncles about as high as foliage. Malaya.

Réx. Rhizomatous: lvs. ovate, to 12 in. long, hanging on the hairy petiole, sinuate-dentate, reddish underneath and hairy on veins, metallic-green above with silvery zone about 1 in. wide midway between margin and outside of which is purplish: fls. pale rose, about 2 in. across, above the foliage. Assam.—Little known in hort.

Réx-cultòrum. The Rex begonias of hort., with variously marked, blotched or marbled not lobed lvs. that are sometimes helix-like or spiralled in center. Derivatives from *B. Rex* through variation or hybridization.—Known sometimes as "beefsteak-geranium."

Richardsiàna (*B. Richardsonii*). Tuberous: plant small and bushy: lvs. like those of *B. Dregei* var. *Macbethii* but more deeply cut: fls. small, white. S. Afr.

Ríchardsonii: *B. Richardsiana.*

ricinifòlia. Hybrid derivative from *B. heracleifolia:* rhizomatous: lvs. orbicular in outline, to 1 ft. and more across, the lobes usually not extending more than about one-third the depth of the blade, bronzy-green: fls. rose-pink, to 1 in. across, on tall peduncles.

robústa: hort. name for a fibrous-rooted plant of intermediate growth, probably an offshoot of *B. fuchsioides:* sts. red, reproduced continuously from the root: lvs. oblong-acuminate, lop-sided, to 3 in. long, dentate, reddish: fls. pink to red, the staminate to 1½ in. or more across.

rosæflòra. Tuberous: lvs. orbicular or reniform, 2–6 in. across, lobed, green but red-edged: fls. rose-red, 2 in. across. Peru, at high altitudes.—Has entered into the development of garden tuberous begonias (*B. tuberhybrida*).

ròsea gigantèa. Fibrous-rooted, erect: lvs. large, orbicular, glossy, with red spot at petiole: fls. deep rose to red, in large clusters. Hort.

Róssii: hort. name for a fibrous-rooted plant with bronzy foliage and light pink fls.

Róxburghii. Medium size, sparsely hairy, sts. slender and branched: lvs. broad-ovate, large, glossy green, paler underneath: fls. white, fragrant, in short infl. Himalayas.

rubélla: *B. rubellina.*

rubellìna (*B. rubella* of hort. lists). Rhizomatous: lvs. broad-ovate, shallowly lobed and pointed, to 8 in. long, dull green sprinkled with dark brown spots, petiole shaggy: fls. pink, about 1 in. across, long-peduncled. Cultigen.

rùbra: *B. coccinea.*

rùbro-vènia. Rhizomatous: low, with erect branching sts.: lvs. ovate, oblique, pointed, glossy green, often red or brown underneath, shallowly scalloped: fls. white and pink. Himalayas.

Sándersonii. Fibrous: st. glabrous, nearly or quite erect, the plant low and bushy: lvs. ovate-acuminate, to 3 or 4 in. long, doubly serrate, dark green: fls. bright scarlet, 1 in. or less long, drooping. Cultigen; probably a hybrid derivative from *B. fuchsioides.*

sanguínea. Fibrous: plant smooth and shining throughout, low, sts. several, 1½ ft. or more, red, leaf-bearing toward base: lvs. cordate-ovate, slightly peltate, to 6 in. long, entire, abruptly pointed, green above and blood-red underneath: fls. small, white, staminate to ¾ in. across, mostly above the foliage. Brazil.

scábrida. Tall, rough-hairy, erect, branching: lvs. broad-ovate, green, dentate: fls. small and many, white, in erect clusters. Venezuela.

scándens: a name commonly applied to the more scandent forms of *B. glaucophylla.* The true *B. scandens* has crenate-dentate lvs. and small white fls., from trop. Amer.; perhaps represented in the plant listed as *B. alba scandens.*

Scharffiàna. Fibrous: plant 1–3 ft., robust, hairy: lvs. broad-ovate, to 8 in. long, pointed, olive-green above and bright red underneath: fls. large, waxy-white with conspicuous red hairs, in heavy long-peduncled clusters. Brazil.

Schárffii (*B. Haageana*). Fibrous: plant red-hairy, st. shrubby, 2–4 ft.: lvs. ovate-cordate, to 10 in. long, wavy, nerves red above: fls. rose-pink, in large hanging showy clusters. Brazil.

Schmidtiàna. Fibrous: plant usually 1 ft. or less high, sts. hairy and red-tinged: lvs. ovate-acuminate, to 3 in. long, angled or shallow-lobed, dentate, reddish underneath: fls. white tinted rose, small. Brazil.

Schnítzeri: hort. name for a low branching semi-tuberous plant, perhaps a form of *B. Dregei;* fls. orange.

semperflòrens. Fibrous: variable plant, glabrous and more or less succulent, sts. little branching, to 3 ft. high: lvs. ovate to oval, 2–4 in. across, finely serrulate and ciliate, glossy-green and commonly red-tinged on ribs: fls. rose-red to nearly white, 1 in. across, in axillary clusters. Brazil.—In its vars. and derivatives, some of them hybrids, this plant is the prevailing type of florists and bedding begonias; some of the well-known offshoots are Carrierei, Chatelaine, Cincinnati, Erfordii, Gigantea Rosea, Gloire de Louveciennes, Melior, Triomphe de Lorraine, Vernon. See also *B. socotrana.*

sempérvirens: probably an error for *semperflorens.*

smarágdìna: *B. imperialis* var.

Snítcheri: apparently a *B. Rex-cultorum* offshoot.

socotràna. Bulbous: sts. ann., erect, to 1 ft., somewhat branched: lvs. orbicular, to 6 or 7 in. across, centrally peltate, margins rolled or scalloped: fls. rose-pink, to 2 in. and more across, in a long-peduncled small forking cluster. Socotra, Indian Ocean.—It has entered into garden kinds, largely through hybridization with *B. semperflorens,* in such forms as Cincinnati, Gloire de Lorraine and Gloire de Sceaux. See *B. cheimantha;* also *B. hiemalis.*

speculàta. Rhizomatous: lvs. broad-ovate to nearly orbicular, acuminate, to 8 in. across, triangular-lobed to one-quarter or one-half depth of blade, dull gray, speckled gray above and reddish underneath: fls. pink-white, about 1 in. across, on long peduncle. Cultigen.

subpeltàta: *B. nigricans.*

subvillòsa. Medium size, glandular-hairy and soft, succulent: lvs. ovate, green, dentate: fls. white, hairy on outside, in drooping clusters. Brazil.

Súnderbruchii. Rhizomatous: a form of *B. heracleifolia* with palmate bronze-green lvs. bearing silver bands along the nerves and purple underneath: fls. pinkish.

Sútherlandii. Tuberous or semi-tuberous, 1–2 ft.: lvs. lanceolate, lobed and serrate, green red-veined and margined: fls. orange or salmon. Natal.

Témplinii. Recorded as sport from *B. phyllomaniaca:* lvs. with ruffled and fringed margins and blotched white, yellow and reddish: fls. pink.

Teùscheri. Fibrous: st. strong and erect, branched, to 6 ft. high: lvs. large and fleshy, ovate-lanceolate, serrate, bright green with grayish blotches or dots, red underneath: fls. large, bright red, in axillary clusters. Malaya.

Thúrstonii. Fibrous: st. 2 ft. tall, smooth and glossy: lvs. orbicular-acuminate, red underneath: fls. pink, small, in erect clusters. Cultigen; reputed hybrid between *B. metallica* and *B. sanguinea.*

tuberhýbrida: the hort. tuberous begonias, a class name, the plants of various habit and color of bloom, the issue of such species as *B. boliviensis, Clarkei, Davisii, Pearcei, rosæflora, Veitchii,* with perhaps *B. Froebelii, gracilis* and others; some of them have low branching sts. and others only scapes.

ulmifòlia. Fibrous: sts., branching, shaggy-hairy, to 3 ft.: lvs. ovate-oblong and elm-like, to 5 in. long, double-serrate, somewhat hairy: fls. small, white, ½ in. or more across, many in peduncled clusters. Colombia.

undulàta. Much like *B. kewensis* but lvs. smaller and undulate: fls. white. Brazil.

urophýlla. Low, much like *B. Scharffii:* lvs. large, broadly cordate, dentate, long-pointed, green, veins chaffy: fls. white tinged bluish, in large clusters. Mex.

válida: a listed name.

Védderi. Seedling of *B. compta,* smaller, lvs. broader-based and shorter and lacking gray center.

Veìtchii. Tuberous, one of the elements in the garden tuberous begonias (*B. tuberhybrida*)*:* st. very short or practically none: lvs. nearly orbicular, lobed and cut, green: fls. cinnabar-red, 2½ in. across. Peru, high altitudes.

venòsa. Medium size, white-scurfy, sts. thick, covered by large thin stipules: lvs. reniform but not peltate, fleshy: fls. white. Brazil.

Verschaffeltiàna (*Verschaffeltii*). Rhizomatous: lvs. very large, ovate-acuminate, lobed, green: fls. rose, in large clusters. Cultigen; reported hybrid of *B. manicata* and *B. caroliniæfolia.*

vitifòlia. Fibrous: strong, to 4 ft.: lvs. large and grape-like, orbicular to reniform, lobed, serrate, pubescent, green above, rusty underneath: fls. small and white. Brazil.

Wàdei. Low, with stiff erect sts. which bear foliage on upper part: lvs. fleshy, oblong-ovate, green, convex: fls. few, pink. Philippines.

Wallichiàna. Fibrous: st. to 1 ft.: lvs. ovate-suborbicular, strongly oblique, to 3 in. long, obtuse or acute, dentate-serrulate, petioles sticky-pubescent: fls. pink, few in cymes to 2 in. long. India.

Warscewíczii: *B. conchæfolia.*

wellingtoniénsis: dark green foliage and pink fls.: *B. weltoniensis?*

weltoniénsis. Tuberous or semi-tuberous: st. reddish, to 3 ft.: lvs. small, ovate-acuminate, to 2 in. across, dentate, green and smooth: fls. pink, many on short peduncles. Cultigen; hybrid from *B. Dregei.* Vars. **álba** and **ròsea** are listed.

Wéttsteinii: hort. name for a fibrous-rooted begonia of intermediate stature, wavy green lvs. and bunches of brilliant red fls.

xánthina. Rhizomatous: habit of *B. Rex:* lvs. glossy-green above and purplish underneath: fls. bright yellow, tinged red outside, large. India.

zebrìna: *B. angularis.*

BEGONIÀCEÆ. Begonia Family. Some 500 species of per. and a few ann. herbs, sometimes shrub-like, mostly more or less succulent, affording many subjects prized for ornamental foliage and bloom. Some of them are somewhat tree-form although not many ft. high, others are lopping or scandent. Many of them are tuberous and not in foliage all the year. Nearly all the species are in the great genus Begonia. The other three genera (Begoniella, Hillebrandia, Symbegonia) are of very few species and not in general cult.

BEJARIA: *Befaria.*

BELAMCÁNDA. *Iridaceæ.* Chinese and Japanese perennials with stout rootstocks; often planted in gardens and of easy cult. in sunny locations in rich sandy loam; prized for the fls. and also for the ornamental black seeds. Propagated by seeds or division.

chinénsis (*B. punctata. Gemmingia chinensis. Pardanthus chinensis* and *sinensis*). Blackberry-Lily. To 4 ft.: lvs. borne on st., to 10 in. long and 1 in. wide: fls. orange spotted with red, to 2 in. across, peduncles about 1 in. long: caps. splitting in autumn, leaving a column of seeds resembling a blackberry. Nat. in U. S., and hardy N.

flabellàta. Differs from *B. chinensis* in its lower habit, lvs. more tightly condensed and imbricated: fls. light yellow with segms. orange spotted at base, peduncles about 1½ in. long. Japan.—May be distributed as *B. umbellata.*

punctàta: *B. chinensis.*

BELIS: *Cunninghamia.*

BELLADONNA: *Atropa Belladonna.*

BELLEVALIA: *Hyacinthus romanus.*

BELLFLOWER: *Campanula.* **Chilean:** *Lapageria rosea.* **Giant:** *Ostrowskia magnifica.*

BELLIDIASTRUM MICHELII: *Aster Bellidiastrum.*

BÉLLIS. *Compositæ.* Herbaceous annuals and perennials, growing in tufts or with branching sts.: lvs. alternate or all basal: heads solitary, the rays white or rose, disk-fls. yellow; pappus mostly lacking. Native in Eu. and the Medit. region.

English daisies are easily raised from seed sown in the spring for bloom the following year. The more special varieties are propagated by division in cool weather as the seeds do not reproduce true to type. The plants are favorites for edging and for colonizing in lawns; they should have fertile moist soil.

alpìna: *B. perennis.*

ánnua. Bien. or per. to 6 in.: lvs. rhombic-ovate to spatulate, to ¾ in. long, often long-petioled, margin ciliate and somewhat serrate: heads to ⅝ in. across, ray-fls. pure white or white tipped pink. N. W. Medit. region.—Similar in appearance to *B. rotundifolia* from which it differs in its pappus-less achenes.

bellidioìdes: *Bellium bellidioides.*

cæruléscens: *B. rotundifolia* var.

helichrysoìdes: *B. perennis* var.

integrifòlia. To 15 in., branched: lvs. spatulate to linear, entire: heads 1 in. across, rays usually violet. Ky. to Tex.—Much of the material so listed is referable to Brachycome.

minùta: presumably *Bellium minutum.*

monstròsa: *B. perennis* var.

perénnis (*B. alpina*). True or English Daisy. Per. to 6 in.: lvs. spatulate or obovate, in basal tufts: heads to 2 in. across, white or rose, in spring and early summer. W. Eu. A double form is var. **ranunculiflòra.** A taller form is var. **strícta.** Other listed forms are: **álba,** white; **helichrysoìdes.** pink with long incurved ray-fls.; **lùtea,** fls. cream-colored; **monstròsa,** fls. large; **ròsea,** fls. rose-pink; **tubulòsa.**

rotundifòlia. Lvs. ovate or broader, often subcordate, long-stalked, coarsely toothed: heads to 1¼ in. across, with mostly white or in var. **cæruléscens** blue rays. Algeria, Morocco.

BÉLLIUM. *Compositæ.* Small herbs with basal tufted lvs. and solitary heads of fls. with white rays and light yellow disk; pappus of bristles and scales; native in Medit. region and suitable for the rock-garden and similar places.

bellidioìdes. Per. to 4 in., stoloniferous: lvs. spatulate or rhombic with long petiole, the latter pubescent: ray-fls. usually white, occasionally pale pink, to ½ in. across. Var. **nivàle** (*B. nivale*) is a compressed form with very short st.

minùtum. Ann. to 3 in.: lvs. narrow-spatulate: heads ½ in. across.—Much of the material so listed is *B. bellidioides.*

nivàle: *B. bellidioides* var.

BELLOTA: *Cryptocarya.*

BELL-VINE, PURPLE: *Rhodochiton volubile.*

BELLWORT: *Uvularia.*

BELOPÉRONE. *Acanthaceæ.* Trop. American herbs and shrubs with opposite entire lvs. and tubular 2-lipped fls. in racemes or spikes with overlapping bracts; planted out in S. U. S. and also grown under glass as pot-plants.

califórnica. Chuperosa. Low spreading shrub to 4 ft., branches often leafless and canescent: lvs. ovate, to ⅝ in. long, early deciduous: fls. dull scarlet, to 1½ in. long, axillary, in short 4-rowed racemes. Colo. Desert, Calif. to Lower Calif.

guttàta. Shrimp-Plant. To 1½ ft.: lvs. ovate, to 2½ in. long, hairy: fls. white spotted with purple, 1¼ in. long, borne beneath broad reddish-brown imbricated showy bracts ¾ in. long, in dense spikes to 3½ in. long. Mex.—Is cult. also under the name *comosa*, but the true *B. comosa* (of Mex.) is a very different plant and apparently not grown in this country, with ovate acuminate lvs. and narrow acute floral bracts.

longispícua purpùrea: listed name, probably hort. form of *B. guttata*, said to be of more dwarf and floriferous habit with golden-brown bracts.

tomentòsa: listed as a plant 3 ft. high with drooping racemes of cream and purple fls. inclosed in rosy-copper bracts.

BELVEDERE: *Kochia scoparia.*

BENE: *Sesamum.*

BENINCÀSA. *Cucurbitaceæ.* Ann. hairy pumpkin-like tendriliferous vine grown, particularly by Chinese, for the large fr. which is used in the making of preserves and sweet pickles and said to be eaten raw in warm countries; probably only one species. Cult. as for pumpkin and squash.

cerífera: *B. hispida.*

híspida (*B. cerifera*). Wax or White Gourd (of India). Zit-Kwa. Tunka. Chinese Watermelon and Preserving Melon. Long-running vine: lvs. broadly cordate-ovate, angled or somewhat lobed and toothed: fls. yellow and veiny, corolla nearly rotate and to 3 in. across: fr. oblong to cylindrical, to 16 in. long, hairy and white-waxy, flesh white; seeds oblong-pointed, white, ⅓–½ in. long. E. Asia.—The plant has been grown erroneously as Cassabanana, which is *Sicana.*

BENSÒNIA. *Saxifragaceæ.* One species, **B. oregòna,** from S. W. Ore., similar to Mitella but differing by its much elongated styles and filaments. Per., with basal cordate lvs. to 2 in. long, 7-lobed, crenate-dentate: fls. cream-white, on leafless stalks to 10 in. high, racemes 15–20-fld.

BENTHAMIA: *Cornus.*

BENZOIN: *Lindera.*

BERBERIDÀCEÆ. Barberry Family. Ten genera of herbs and shrubs mostly in the north temp. zone, having alternate lvs., bisexual fls. solitary or in racemes, with sepals and petals usually imbricated in 2 rows, stamens as many as petals, superior 1-celled ovary, and fr. a berry or pod. Among the ornamental genera are Aceranthus, Achlys, Berberis, Caulophyllum, Diphylleia, Epimedium, Jeffersonia, Mahoberberis, Mahonia, Nandina, Podophyllum, Vancouveria, all plants for outdoor use.

BERBERIDÓPSIS. *Flacourtiaceæ.* One partially climbing shrub from Chile, grown out-of-doors in S. Calif. Propagated by seeds, cuttings of green wood in spring, or layers in autumn. **B. corállina.** Lvs. alternate, cordate-ovate, to 3 in. long, coarsely sharp-toothed: fls. crimson, ⅓ in. long, in terminal many-fld. racemes: fr. a berry.

BÉRBERIS. Barberry. *Berberidaceæ.* Spiny shrubs with yellow wood, simple deciduous or evergreen lvs., turning bright colors in autumn, yellow fls., and fr. a red, yellow or black berry; native in northern hemisphere and also S. Amer.; the deciduous species are mostly hardy in the northern and central states and in S. Ont.

Barberries are widely grown for hedges and as specimen bushes for their general beauty and for the attractive flowers in spring and the fruits in autumn and winter. The evergreen species are not hardy in the northern states. The evergreen kinds do best in moist well-drained light loam, but the deciduous species may have drier soils. They are all of easy cultivation. Propagated by seeds which should be separated from the pulp, sown in autumn and they should germinate the following spring; by layers, cuttings of young wood in early June planted in sand in a shaded hotbed, and rare kinds by grafting on common stocks; sometimes suckers may be removed from the parent plant.

actinacántha. Half-evergreen, to 4 ft.: lvs. obovate to orbicular or heart-shaped, to ½ in. long, with 2–3 spiny-serrate teeth along apical margin and spine-tipped, dark glossy green, leathery; spines 3–7-palmately branched and spreading: fls. yellow on red pedicels, fragrant. Chile.

acuminàta. To 6 ft.: lvs. to 7 in. long, narrowly lanceolate, minutely dentate-serrate, bright green above, paler below: fls. yellow, small, in fascicles of 8–15 on pedicels to 1¼ in. long: fr. red. W. China.—Similar to *B. insignis* with which it is sometimes confused.

ætnénsis. To 8 ft., spines 3-parted: lvs. to ¾ in. long, obovate, margins ciliate-serrate: fls. in erect 5–10-fld. racemes: fr. globose, red. Eu.—Differs from *B. vulgaris* in having erect infl.

aggregàta (*B. Geraldii*). Salmon B. Deciduous, to 10 ft., spines 3-parted: lvs. to 1 in. long, sharp-toothed: fls. pale yellow, in sessile panicles to 1½ in. long: fr. red, pruinose. W. China. Var. **Práttii** (*B. Prattii*) has longer often entire lvs. and longer panicles. Var. **recurvàta** has lvs. often entire and panicles to 4 in. long.

amurénsis. Deciduous, to 10 ft., spines 3-parted: lvs. to 3 in. long, densely ciliate-toothed: fls. in drooping racemes to 4 in. long: fr. bright red. N. E. Asia. Var. **japónica** (*B. Regeliana, B. Hakodate*) has broader lvs. and shorter racemes. Japan, Korea.

Aquifòlium: *Mahonia Aquifolium.*

aristàta (*B. floribunda. B. petiolaris*). Deciduous, to 10 ft., spines simple or 3-parted: lvs. to 2¼ in. long, spiny-toothed or entire: fls. bright yellow, in racemes to 4 in. long: fr. red or purple, pruinose. Himalayas.

asiática. Himalayan B. Evergreen, to 10 ft., with small spines: lvs. to 3 in. long, toothed or entire, whitish beneath: fls. in racemes to 2 in. long: fr. purple. Himalayas; adaptable far S.

atrocárpa. Evergreen, to 6 ft.: lvs. narrow, to 3 in. long, coarsely spiny-toothed, the teeth spreading divergently: fls. in clusters of 6–12: fr. jet-black. W. China.

Bèalei: *Mahonia Bealei.*

Beaniàna. To 8 ft., sts. with 3-parted spines to 1 in. long, grooved on under side: lvs. elliptic-lanceolate, usually serrate with 2–12 teeth on a side, spine-tipped, dark green above, in fascicles of 5 to 8: fls. yellow, to ¼ in. across, in erect panicles to 2 in. long: fr. to ⅜ in. long, distinctly ovoid, bright purple. W. China.

Bérgmanniæ. Evergreen, to 6 ft.: lvs. to 1½ in. long, coarsely toothed: fls. in clusters: fr. black, pruinose on reddish stalks. W. China. Var. **acanthophýlla** has longer lvs.

bidentàta. To 5 ft., branchlets terete and grayish, spines 3-parted: lvs. lanceolate, apex with 2 spine-tipped teeth, glaucous beneath, margins reflexed: fls. few in corymbs which are longer than lvs.: fr. violet, about ¼ in. long. Chile.

brachýbotrys: the plant in cult. under this name is probably a form of *B. vulgaris.*

brachýpoda: the plant grown under this name is *B. mitifolia.*

brevipaniculàta. Deciduous, to 6 ft., spines 3-parted: lvs. to 1¼ in. long, entire or nearly so, glaucous beneath: fls. pale yellow, in short panicles: fr. red, pruinose. W. China.

buxifòlia (*B. dulcis*). Magellan B. Evergreen, to 10 ft., spines 3-parted or simple: lvs. to 1 in. long, entire: fls. orange-yellow, solitary: fr. dark purple. Chile. Var. **nàna** is dwarf and compact, and var. **pygmæa** dwarf, tufted, unarmed.

canadénsis (*B. Fischeri*). Allegheny B. Deciduous, to 6 ft., spines 3-parted: lvs. to 2 in. long, toothed, grayish-white beneath: fls. bright yellow, in racemes to 1¾ in. long: fr. scarlet. Va. to Ga. and Mo.

candídula. Evergreen dwarf shrub: lvs. to 1¼ in. long, with few spiny teeth, white beneath: fls. solitary. China.

Chenaùltii. Hybrid between *B. verruculosa* and *B. Gagnepainii:* lvs. glossy, glaucous beneath.

chilénsis. Spines brown, 3-parted: lvs. shorter than spines, stiff and thick, broad-obovate to obovate-cuneate, coarsely spiny-toothed, glaucous underneath: fls. many, in nodding racemes: fr. globose, black, pruinose. Chile.

chinénsis (*B. Guimpelii. B. sinensis* of some. *B. serotina. B. spathulata*). Deciduous, to 10 ft., spines simple or 3-parted: lvs. to 1½ in. long, nearly entire, pale beneath: fls. in racemes to 3 in. long: fr. dark red. Caucasus. Var. **Langeàna** is *B. laxiflora* var.

circumserràta. Deciduous, to 3½ ft., sts. yellowish-red, spines 1–5-parted, to 1 in. long: lvs. obovate, to 1½ in. long, usually spiny-toothed, often whitish beneath, base wedge-shaped, apex rounded: fls. in clusters of 1–3, on peduncles to 1 in. long: fr. yellowish-red, to ⅝ in. long. N. W. China.

concínna. Deciduous or semi-evergreen, to 3 ft., spines 3-parted: lvs. to 1½ in. long, spiny-toothed, white beneath: fls. bright yellow, ½ in. across, solitary or in 2's: fr. red. Himalayas.

congestiflòra var. **hakeoìdes:** *B. hakeoides.*

corállina: *B. stenophylla* var.

Còryi: *B. Wilsoniæ* var. *subcaulialata.*

cratægìna. To 5 ft.: lvs. to 1½ in. long, oblanceolate, deciduous, usually entire: many-fld. racemes to 2 in. long: fr. bluish-black. Asia Minor.

crética. Deciduous, to 3 ft. or procumbent, spines 3-parted: lvs. about ¾ in. long, entire: fls. in short 2–7-fld. racemes: fr. purple-black. Greece; not hardy N.

Dárwinii. Evergreen, to 10 ft., spines 3–7-parted: lvs. to 1 in. long, spiny-toothed, glossy dark green above, paler beneath: fls. orange-yellow, in drooping racemes to 4 in. long: fr. dark purple. Chile; adaptable only far S. and Calif. Vars. **depréssa** and **nana** are dwarf forms.

diáphana. Kansu B. Deciduous, to 6 ft., spines simple or 3-parted: lvs. to 1¼ in. long, toothed or entire, glaucous beneath: fls. bright yellow, solitary or in clusters of 2–5: fr. red, slightly pruinose. W. China.

dictyophýlla. Chalkleaf B. Deciduous, to 6 ft., spines 3-parted: lvs. to 1 in. long, entire or toothed, white beneath: fls. pale yellow, solitary: fr. red. China.

dictyòta: a form of *Mahonia Aquifolium.*

Dielsiàna. Deciduous, to 10 ft., spines simple or 3-parted: lvs. to 2 in. long, entire or toothed: fls. in racemes to 3 in. long: fr. bright red. W. China.

dúlcis: *B. buxifolia;* also a form of *B. vulgaris.*

élegans: *B. Lycium.*

elegantíssima: listed name.

emarginàta. Hybrid between *B. vulgaris* and *B. sibirica*, with fls. in dense racemes and deep red frs.

empetrifòlia. Crow B. Evergreen, to 2 ft., branches often prostrate, spines simple or 3-parted: lvs. linear, to ¾ in. long, entire, spiny-pointed: fls. golden-yellow, solitary or in 2's: fr. bluish-black. Chile.

fasciculàris: *Mahonia pinnata.*

Féndleri. Deciduous, to 4 or 5 ft., with red-brown branchlets: lvs. obovate to oblanceolate, acute, to 1½ in. long, sometimes spinulose: fls. yellow tinged red outside, 6–10 in slender racemes. Colo., New Mex.

Físcheri: *B. canadensis.*

floribúnda: *B. aristata.*

Fórtunei: *Mahonia Fortunei.*

Frèmontii: *Mahonia Fremontii.*

Gagnepàinii. Evergreen, to 6 ft., spines 3-parted: lvs. narrow-lanceolate, to 4 in. long, spiny-toothed, pale beneath: fls. bright yellow, in clusters: fr. bluish-black, pruinose. W. China.

Geráldii: *B. aggregata.*

Gilgiàna. Deciduous, to 6 ft., spines 3-parted: lvs. to about 2 in. long, toothed, pubescent: fls. bright yellow, in racemes to 1 in. and more long: fr. deep red. China.

grácilis: the plant in the trade under this name is probably *Mahonia Aquifolium* var. *gracilis*, although there is a species in Mex. known as *Mahonia gracilis.*

Guímpelii: *B. chinensis.*

hæmatocárpa: *Mahonia hæmatocarpa.*

hakeoìdes (*B. congestiflora* var. *hakeoides*). Chilean B. Evergreen, to 12 ft., spines small: lvs. nearly orbicular, to 1 in. long, spiny-toothed: fls. in dense clusters: fr. bluish-black. Chile.

Hakodàte: *B. amurensis* var. *japonica.*

Henryàna. Shrub to 8 ft., sts. yellowish to brown: lvs. petioled, ovate-elliptical, entire or somewhat serrate; spines absent, or if present simple to 3-parted: fls. yellow, in peduncled racemes to 2½ in. long: fr. red, elliptical, to ⅜ in. long. Cent. China.—Differs from *B. vulgaris* in having brown, rather than gray, branchlets.

heterophýlla. Half-evergreen, to 5 ft., spines 3–7-parted: lvs. to 1 in. long, entire or with large spiny teeth: fls. solitary: fr. black, pruinose. Chile.

heterópoda. Turkestan B. Deciduous, to 6 ft., spines simple or 3-parted or wanting: lvs. to 2 in. long, entire or finely toothed, bluish-green: fls. orange-yellow, in short racemes, fragrant: fr. black, pruinose. Turkestan.

Hoòkeri. Evergreen: lvs. to 3 in. long, spiny-toothed, white beneath: fls. clustered: fr. black-purple. Himalayas. Var. **víridis** has lvs. green beneath.

ilicifòlia. Holly B. Evergreen, to 8 ft.: lvs. to 2 in. long, spiny-toothed at apex: fls. orange-yellow, in short racemes. S. Chile.—The plant cult. as *B. ilicifolia* is usually *Mahoberberis Neubertii* var. *latifolia.*

insígnis. Evergreen, to 6 ft., spines few: lvs. to 5 in. long, spiny-toothed, glossy: fls. golden-yellow, in clusters: fr. black. Himalayas; hardy only far S.

Jácquinii: *B. vulgaris.*

Jàmesonii. Evergreen: lvs. to 3 in. long, oblong, entire or few-toothed: fls. in panicles on short pedicels. Peru.

japónica: *B. Thunbergii* or *Mahonia Bealei;* see also *Mahonia japonica.*

Julìanæ. WINTERGREEN B. Evergreen, to 6 ft., spines 3-parted: lvs. to 3 in. long, spiny-toothed: fls. in clusters: fr. bluish-black, pruinose. China. Var. **nàna** is a dwarf form.

Knìghtii: *B. xanthoxylon.*

koreàna. Deciduous, to 6 ft., spines mostly simple: lvs. to 3 in. long, toothed, pale beneath: fls. in racemes 1 in. and more long: fr. bright red. Korea. Var. **atropurpùrea** may not differ from the typical form, in which the lvs. normally turn deep red in autumn.

latifòlia: *Mahoberberis Neubertii* var.

laxiflòra. Hybrid between *B. vulgaris* and probably *B. chinensis,* with fls. in racemes to 4 in. long. Var. **Langeàna** has purplish branchlets becoming grayish-brown.

lèvis: synonym of *B. atrocarpa;* the true species is probably not cult. and differs in lf. teeth fewer and pointing forward.

Liechtensteìnii: *B. Potaninii.*

Lýcium (*B. elegans*). Half-evergreen, to 10 ft., spines 3-parted: lvs. to 2 in. long, entire or toothed: fls. bright yellow, usually in racemes to 4 in. long: fr. purple, pruinose. Himalayas; adaptable only far S.

macracántha. Hybrid between *B. aristata* and *B. vulgaris:* to 10 ft. or more: lvs. mostly obovate, somewhat spinose-serrate: racemes with 10–20 fls.

macrophýlla: *B. vulgaris* var.

mentorénsis. Hybrid of *B. Thunbergii* and *B. Julianæ,* growing to 3 ft., with persistent spiny-toothed lvs., ovate-elliptic, about 1 in. long, mostly acute: fr. dark dull red.

mìnor: probably *B. Thunbergii* var.

mitifòlia. Deciduous, to 8 ft., spines 3-parted: lvs. to 2½ in. long, finely toothed, pubescent: fls. pale yellow, in spike-like racemes to 3 in. long: fr. red. China.

nepalénsis: *Mahonia nepalensis.*

nervòsa: *Mahonia nervosa.*

Neùbertii: *Mahoberberis Neubertii.*

Nèvinii: *Mahonia Nevinii.*

notábilis. Hybrid between *B. heteropoda* and *B. vulgaris:* lvs. obovate, toothed: fr. dark red, bloomy.

nummulària. To 10 ft., twigs purple, glaucous when young, terete, spines mostly simple, to 1 in. long: lvs. broadly obovate, to 1½ in. long, entire or few-toothed: fls. yellow, to ¼ in. across, in dense racemes to 2 in. long: fr. red, globose-ovoid, to ¼ in. long. Turkestan, N. Persia. Var. **pyrocárpa** has oblong-lanceolate to oblanceolate lvs. and is reported to be more commonly cult. than the type.

orthóbotrys. Similar to *B. vulgaris,* but the fls. somewhat corymbose and differing in technical characters. Persia.

parvifòlia. Half-evergreen, low, spines 3-parted: lvs. to ½ in. long, spiny-toothed or entire, pale beneath: fls. in dense clusters: fr. red, pruinose. W. China.

petiolàris: *B. aristata.*

pinnàta: *Mahonia pinnata.*

Poirétii. Deciduous, to 6 ft., spines simple, small: lvs. to 1½ in. long, entire, bright green above, pale beneath: fls. bright yellow, in racemes: fr. bright red. N. China, Siberia.

polyántha. Deciduous, to 12 ft., spines simple or 3-parted: lvs. to 1 in. long, spiny-toothed or rarely entire, glaucous beneath: fls. deep yellow, in drooping branched panicles to 5 in. long: fr. salmon-red. W. China.

Potanìnii (*B. Liechtensteinii*). Deciduous, spines simple or 3-parted: lvs. to 2½ in. long, spiny-toothed, white beneath: fls. in racemes to 1½ in. long: fr. red. W. China.

Práttii: *B. aggregata* var.

pruinòsa. Evergreen, to 10 ft., spines 3-parted: lvs. to 2 in. long, spiny-toothed, glossy dark green above, white beneath: fls. in clusters: fr. bluish-black, pruinose. China.

pùmila: *Mahonia pumila.*

Regelìàna: *B. amurensis* var. *japonica.*

rèpens: *Mahonia repens.*

replicàta. Evergreen, branchlets yellowish: lvs. to 1¼ in. long, margins revolute: fr. scarlet, turning black. China.

rubrostílla. To 6 ft., st. with 3-parted orange spines to nearly ¾ in. long: lvs. oblanceolate, margins spinose-dentate, tip briefly mucronate or obtuse: fls. rarely solitary, usually 2–4 in lax racemes: fr. ovate, to ⅝ in. long, bright red. Probably of hybrid origin.

rugídicans: listed name of unknown botanical standing.

sanguínea. Closely related to *B. Gagnepainii* but differing in the grooved branchlets and the pedicels and outside of fls. red. W. China.

Sargentiàna. Evergreen, to 6 ft., spines 3-parted: lvs. to 4 in. long, spiny-toothed, pale beneath: fls. in clusters: fr. bluish-black. China.

serótina: *B. chinensis.*

serràta: plants under this name may be *B. aristata* or *B. canadensis.*

sibírica. Deciduous, to 2 ft., spines 3–11-parted: lvs. to 1 in. long, spiny-toothed: fls. solitary or in 2's, nodding: fr. red. Siberia.

Sièboldii. Deciduous, to 5 ft., spines 3-parted: lvs. to 2½ in. long, ciliate-toothed: fls. pale yellow, in few-fld. racemes: fr. bright red. Japan.

sinénsis: *B. chinensis, B. Thunbergii.*

Soulieàna. Evergreen: lvs. to 4 in. long, usually spiny-toothed, pale beneath: fr. bloomy. Cent. China.

spathulàta: *B. chinensis.*

Stapfiàna: *B. Wilsoniæ* var.

stenophýlla. Hybrid between *B. Darwinii* and *B. empetrifolia:* lvs. narrow-lanceolate, to 1 in. long, revolute at margins, dark green above, pale beneath: fls. golden-yellow, in clusters: fr. black, pruinose. Var. **corállina** is a form having reddish-orange fls.; var. **Dárwinii** is listed as a form having orange fls. and var. **Írwinii** with yellow fls.

subcaulialàta: *B. Wilsoniæ* var.

Swàseyi: *Mahonia Swaseyi.*

Thúnbergii (*B. japonica. B. sinensis* of some). JAPANESE B. Deciduous, to 8 ft., spines mostly simple: lvs. variable, to 1¼ in. long, entire: fls. solitary or in clusters: fr. bright red. Japan; hardy and popular. Var. **atropurpùrea** has bronzy-red foliage. Var. **atrosanguínea** has lvs. becoming dark scarlet-red. Var. **compácta** is a slower growing and more densely branched form. Var. **lùtea** has yellow frs. Var. **Maximowíczii** has acute rather than obtuse lvs. Vars. **mìnor** and **nàna** are low forms. Var. **pluriflòra,** TRUEHEDGE COLUMNBERRY, is listed as being more erect, compact and leafy than the type. Vars. **trícolor** and **variegàta** are listed.

triacanthóphora. Evergreen, to 5 ft.: lvs. narrow, to 2 in. long, toothed, glaucous beneath: fls. whitish, in clusters: fr. blue-black. China.

trifoliolàta: *Mahonia trifoliolata.*

turcománica. To 14 ft., twigs subterete, spines simple or 3-parted: lvs. obovate-oblong, to 1¾ in. long, entire or sparsely serrate, obtuse: fls. bright yellow, in dense racemes to 3 in. long: fr. red. S. Asia Minor.

umbellàta: a confused name; much of the material in the trade appears to be *B. aristata,* although the name is also applied to a different plant from Chile and a third plant of the Himalayan region.

Vérnæ. Deciduous, to 6 ft., spines simple: lvs. variable, to 1 in. long, entire: fls. in dense racemes to 1½ in. long: fr. red. China.

verruculòsa. Evergreen, to 3 ft., spines 3-parted: lvs. to 1 in. long, spiny-toothed, margins revolute, glossy dark green above, glaucous beneath: fls. golden-yellow, solitary or in 2's: fr. black, pruinose. W. China. Var. **compácta** is listed.

viréscens. Deciduous, to 10 ft., spines simple or 3-parted: lvs. to 1 in. long, toothed or entire, glaucous beneath: fls. pale yellow, in few-fld. racemes: fr. purple, pruinose. Himalayas.

víridis: *B. vulgaris.*

vulgàris (*B. Jacquinii. B. viridis*). EUROPEAN or COMMON B. Deciduous, to 8 ft., spines 3-parted: lvs. to 2 in. long: fls. in racemes to 2 in. long: fr. red or purple. Eu.; nat. in N. Amer.—A host of the wheat rust. Hort. vars. are: **álba,** fr. whitish; **álbo-variegàta,** lvs. variegated with white; **argénteo-marginàta,** margins of lvs. white; **aùreo-marginàta,** margins of lvs. yellow; **atropurpùrea** (var. *purpurea*), lvs. deep purple; **dúlcis** (*B. dulcis*), fr. sweet; **lùtea,** fr. bright yellow. Var. **macrophýlla** is listed.

Wallichiàna. Evergreen, to 10 ft.: lvs. to 4 in. long, spiny-toothed, pale beneath: fls. in clusters: fr. black. Himalayas. Var. **latifòlia** is listed as a broad-lvd. form.

Wílsoniæ. Deciduous or half-evergreen, to 6 ft., spines 3-parted: lvs. to 1 in. long, entire, glaucous beneath: fls. golden-yellow, in dense clusters or panicles: fr. salmon-red. W. China. Var. **Stapfiàna** (*B. Stapfiana*) has infl. of 4–7 fls. Var. **subcaulialàta** (*B. subcaulialata, B. Coryi*) has lvs. whitish beneath and sometimes with few teeth, and strongly angled branchlets.

xanthóxylon (*B. Knightii*). Evergreen, spines 3-parted: lvs. to 4 in. long, spiny-toothed: fls. in clusters: fr. black. Java; hardy only far S.

BERCHÈMIA. *Rhamnaceæ.* Twining deciduous shrubs bearing alternate entire lvs. having conspicuous parallel veins, small fls. in terminal panicles, and drupaceous fr.

The species thrive in any soil but are not reliable far North. Propagated by seeds and root-cuttings in spring or by layers and cuttings of ripe wood in autumn.

kulingénsis. Vine to 10 ft. high: lvs. ovate to broadly lanceolate, to 2 in. long, acute, base subcordate, glabrous: fls. greenish, in panicles 3–8 in. long. China.

racemòsa. Lvs. ovate, subcordate at base, to 2½ in. long, somewhat glaucous underneath: fls. greenish, the panicles to 6 in. long: fr. red turning black, to ¼ in. long. Japan, Formosa.

scándens (*B. volubilis*). SUPPLE-JACK. Climbing to 15 ft. or more: lvs. elliptic to oblong-ovate, rounded at base: fls. greenish-white, in panicles to 1½ in. long: fr. bluish-black. Low woods, Va. and Ky. to Fla. and Tex.

volùbilis: *B. scandens.*

BERGAMOT: *Citrus Bergamia.* **Wild:** *Monarda fistulosa.*

BERGÈNIA (*Megasea*). *Saxifragaceæ.* Per. herbs with thick rootstocks from which the plants develop into large low clumps or colonies: lvs. large, thick, wavy, entire or toothed and with gland-bearing pits, the petioles sheathed at base: fls. large, pink or white, in spring, on scapes. The lvs. are ornamental and more or less evergreen. Cult. as for *Saxifraga.*

cordifòlia (*Saxifraga cordifolia*). To 20 in.: lvs. fleshy, orbicular-cordate, margin wavy-toothed, smooth and shining: fls. clear rose, in dense nodding cymes, on thick shiny scapes, partly hidden in the lvs. Siberia. Var. **purpùrea,** panicles taller, fls. deep reddish-purple.

crassifòlia (*Saxifraga crassifolia*). To 20 in.: lvs. smooth and shining, obovate, slightly toothed or entire: fls. rose, lilac or purple, in dense panicles standing well above the lvs. Siberia, Mongolia. Var. **orbiculàris** (*S. orbicularis*) has broad lvs. and rose fls.

Delavàyi (*Saxifraga Delavayi*). To 1 ft.: lvs. broadly obovate, to 6 in. long, short-petioled, occasionally denticulate at apex: fls. violet-purple, to ⅝ in. long, campanulate, usually 6–7 in slender racemes. Yunnan.

gigantèa: catalogue name.

Leichtlínii: *B. ligulata* var.

ligulàta (*Saxifraga ligulata*). To 1 ft.: lvs. obovate or orbicular, cordate at base, margins entire, ciliate: fls. white, rose or purplish, nodding, in racemes. Himalayas. Var. **Leichtlínii** has crimson lvs. and rose fls. Var. **ròsea,** fls. rose. Var. **speciòsa** (*M. speciosa*), fls. crimson or deep rose.

mèdia (*Saxifraga æmula*). Hybrid between *B. cordifolia* and *B. bifolia.*

purpuráscens (*Saxifraga purpurascens*). To 1 ft.: lvs. obovate or oblong, to 3 in. long, wavy-margined: fls. purple, nodding, in few-fld. panicles on purplish scapes. India.

speciòsa: *B. ligulata* var.

Stràcheyi (*Saxifraga Stracheyi*). To 1 ft.: lvs. obovate, margins ciliate: fls. pink or rose, in branching panicles. India.

BERGERÁNTHUS. *Aizoaceæ.* A few S. African plants formerly included in Mesembryanthemum (which see for cult.), nearly or quite stemless: lvs. standing cross-wise and more or less connate at base, somewhat glaucous and often dotted: fls. long-stalked; stigmas mostly 5.

múlticeps (*M. multiceps*). Tufted: lvs. flat above and keeled underneath, to 1½ in. or more long, ⅓ in. wide, shining green, not dotted: fls. yellow, 1–5 on a somewhat compressed scape, 2 in. across.

scàpiger (*M. scapigerum*). Lvs. to 3 in. long, ½ in. broad and ⅕ in. thick, glaucous and dotted: fls. 1–3, bright yellow tinged with reddish on back, 1 in. across, on peduncles to 2½ in. long.

vespertìnus (*M. vespertinum*). Root thick and fleshy: lvs. to 2½ in. long and ¼ in. wide, 3-angled, gray-green with darker pellucid dots: fls. 3–5, yellow, 1 in. across.

BERGEROCÁCTUS. *Cactaceæ.* One species in extreme S. Calif. and in Lower Calif., a segregate from Cereus: fls. with scale-bearing ovary: plant making colonies or patches, the branches cylindric or columnar, closely many-ribbed, with many yellow sharp spines: fls. small, pale yellow: roots somewhat tuberous. See *Cacti.* **B. Émoryi** (*Cereus* and *Echinocereus Emoryi*). Making large colonies or patches: branches or sts. erect, to 2 ft. and 2 in. or more diam.: fls. about ¾ in. long and broad, diurnal.—Sometimes planted in gardens in its native regions.

BERLANDIÈRA. *Compositæ.* Per. hairy herbs with alternate lvs. and heads solitary or in corymbs, of yellow ray- and disk-fls.; pappus none or of awns; native in S. U. S. and Mex.; sometimes transferred to grounds. They bloom in spring and summer.

lyràta. To 8 in., white-pubescent: lvs. lyrate-pinnatifid: heads solitary, 1 in. across. Plains, Kans. to Mex.

BERRY: pulpy, indehiscent, few- or many-seeded fruit; technically, the pulpy fruit resulting from a single pistil, containing 1 or more seeds but no true stone. Botanically, fruits of eggplant, tomato, grape are berries, but in pomology the term is commonly restricted to the bush-fruits, as currant, gooseberry, cranberry; blackberry, raspberry, strawberry, are not true berries.

BERSEEM: *Trifolium alexandrinum.*

BERTERÒA. *Cruciferæ.* A few species of ann. or per. herbs in Eu. and Asia, differing from Alyssum in the thick pods or silicles, and 2-cleft petals; one is sometimes grown in sunny places for ornament. **B. incána** (*Alyssum incanum*) is bien., strict, to 2 ft., grayish or hoary: lvs. oblong or lanceolate, to 2 in. long: fls. white, in terminal elongating racemes. Eu.; nat. in N. Amer.

BERTHOLLÈTIA. *Lecythidaceæ.* Large trop. American trees furnishing commercial Brazil- or Para-nuts, also called "Castanea," mostly the product of **B. excélsa.** To 100 ft.: lvs. oblong, leathery, to 2 ft. long, wavy-margined: fls. cream-colored, in spike-like racemes: fr. to 6 in. across, the dark brown walls thick and hard, containing 18–24 triangular nuts with single kernel. Brazil, Venezuela, Guiana.—Suited only for trop. climates, but small specimens are likely to be seen in collections of economic plants under glass. Propagated by seeds or layers.

BERTOLÒNIA. *Melastomaceæ.* Mostly Brazilian dwarf or creeping herbs with simple 3–9-nerved lvs., white, rose or purple fls. in racemes, and capsular fr.

Grown in greenhouses for the attractive foliage, which is purplish underneath and with various metallic colors above. They thrive in dense shade and a humid atmosphere. Propagated by cuttings over heat and by seeds.

maculàta. Lvs. broadly ovate, hairy, velvety-green above, the veins bordered with purple or magenta band: fls. rose.

marmoràta. Lvs. ovate-oblong, slightly hairy, streaked with white along veins: fls. purple. Var. **ænea** has coppery tinged lvs. only slightly spotted.

pubéscens. Lvs. ovate, with long white hairs and chocolate-colored band down center. Ecuador.

Sanderiàna: hort. name; probably a form of *B. maculata.*

BESCHORNÈRIA. *Amaryllidaceæ.* Small Mexican genus of evergreen subshrubs resembling Yucca and characterized by a tuberous rootstock, fleshy lanceolate lvs. and green or red funnelform fls. in tall racemes.

yuccoìdes. Lvs. to 2 ft. long, glaucous above and scabrous beneath: fl.-st. red, much branched, to 4 ft. high; fls. green, to 2 in. long, abundant, subtended by bright red bracts.

BÉSSERA. *Liliaceæ.* Small genus of Mexican bulbous plants, one of which is cult. as a showy ornamental. **B. élegans** (*Pharium elegans*), Coral-Drops, grows 2–3 ft. tall, one plant producing several slender naked scapes: lvs. 2 or 3, to 2 ft. long: fls. about 1 in. long, brilliant red usually marked with creamy-white, scentless, 5–10 of them drooping in a more or less irregular or lop-sided umbel terminating a scape. *Milla biflora*, a very different plant, has been grown under this name.

BESSEYA: *Synthyris.*

BÈTA. Beet. *Chenopodiaceæ.* Herbs with alternate lvs. and small greenish or reddish fls. in panicled spikes, one widely grown for the edible roots and lvs. **B. vulgàris.** Beet. Beet-Root. Sugar-Beet. Mangel. Bien. or ann. to 4 ft., with thick roots of various sizes, forms and colors, and ovate to oblong-ovate lvs. Cultigen. Var. **Cícla** (*B. chilensis*), Leaf-Beet, has much larger lvs. and no fleshy root, in Swiss chard the midribs much enlarged. Grown as a pot-herb and sometimes for the ornamental colored foliage.

Beets are of easy cultivation in any good garden soil. Seeds may be sown early in spring and at intervals of a few weeks throughout the summer to insure a steady crop. For very early use seeds may be sown in boxes or hotbeds in February and March and transplanted to the open when frost is out of the ground. Beets sown in late summer may be dug before cold weather and stored in the cellar in barrels packed in earth or sphagnum. The long-rooted varieties should be planted only in open well-tilled soil, else they will become misshapen.

BETONICA: *Stachys.*

BETONY: *Stachys.* **Wood-:** *Pedicularis.*

BÉTULA. Birch. *Betulaceæ.* Deciduous monœcious trees and shrubs native in the northern hemisphere, with alternate toothed lvs. and unisexual fls. borne in catkins, the staminate showing in autumn and remaining naked during the winter and opening in spring, the pistillate becoming cone-like with 3-lobed scales; cult. for ornament and for the timber which is used for making furniture and other articles. They inhabit lowlands, sandy or light-soil regions and mountains.

Birches are mostly short-lived trees suitable for northern climates. They thrive on moist sandy soil or some species in drier locations. Propagated by seeds sown at once or stratified, in sandy soil which is kept moist and shady. Seedlings should be transplanted when about one year old. Other methods of propagation are by layers, greenwood cuttings under glass, and grafting or budding or seedling stocks.

alaskàna: *B. papyrifera* var. *neoalaskana.*

álba: the material cult. under this name may be either *B. pendula*, *B. pubescens*, *B. papyrifera* or vars. of them.

álbo-sinénsis. Tree to 100 ft., bark exfoliating, orange-red, the branchlets somewhat glandular, not pubescent: lvs. ovate-oblong, to 2¾ in. long, apex acuminate, base obtuse truncate to subcordate, margin doubly serrate, glabrous and dark yellowish-green above, paler and somewhat pubescent at least along midrib below. China. Var. **septentrionàlis** has brownish-orange bark, lvs. to 3¼ in. long and more silky beneath. W. China.

Bhojpáthra: *B. utilis.*

costàta. Tree to 100 ft., with flaking papery bark: lvs. ovate, to 3 in. long, long-acuminate: cones ellipsoid, ¾ in. long. N. E. Asia.

cylindrostàchya. Tree to 60 ft.: lvs. ovate-oblong, to 6 in. long, slightly pubescent beneath: cones to 3½ in. long. Himalayas.

davùrica. Tree to 70 ft., with flaking and peeling purplish-brown bark, branchlets pubescent and glandular: lvs. ovate, to 3¼ in. long, acute or acuminate, more or less pubescent below and glabrous above at maturity: cones to 1¼ in. long. N. E. Asia, Japan.

Érmanii. Tree to 60 ft., bark exfoliating, grayish-white to reddish: lvs. triangular-ovate, to 4 in. long, light green beneath, acuminate, coarsely toothed: cones oblong, about 1 in. long. N. E. Asia, Japan.

excélsa: *B. lutea.*

fastigiàta: *B. pendula* var.

fontinàlis (*B. occidentalis*). Water B. Shrubby tree to 40 ft.: lvs. broad-ovate, to 2 in. long: cones about 1 in. long. Alaska to Ore. and Colo.

fruticòsa. Shrub to 15 ft.: lvs. ovate, to 2 in. long: cones oblong-cylindric, to 1 in. long. N. E. Asia.—Differs from *B. humilis* in lvs. more finely and sharply serrate and twigs less glandular as well as in the fr.

glandulòsa. Shrub to 6 ft.: lvs. nearly orbicular to obovate, to 1 in. long, pale beneath: cones cylindric, to ¾ in. long. N. Amer.

gróssa. Japanese Cherry B. Tree to 80 ft., bark dark gray to black, twigs glabrous, yellow-to chestnut-brown: lvs. ovate, to 4 in. long, acuminate, base subcordate, lower side glandular with silky veins, coarsely doubly serrate: cones to 1 in. long. Japan.

hùmilis. Shrub to 10 ft., with pubescent and glandular branchlets: lvs. usually ovate to elliptical, to 1¼ in. long, apex acute rarely obtuse, margin dentate-serrate to entire, glabrous above and below. Eu., N. Asia.

japónica: *B. mandshurica* var.

kenàica: *B. papyrifera* var.

laciniàta: *B. pendula* var. *dalecarlica.*

lénta. Cherry or Sweet B. Tree to 75 ft.: lvs. oblong-ovate, to 5 in. long, when young silky-pubescent beneath: cones ovoid-oblong, to 1½ in. long. Me. to Ala., in moist woods.

lùtea (*B. excelsa*). Yellow B. Tree to 90 ft., with flaking yellowish or silvery bark: lvs. ovate, to 5 in. long, glabrous or pubescent beneath: cones oblong, about 1 in. long. Newf. to Ga. and Tenn., mostly in moist woods.

macrophýlla: *B. papyrifera* var. *grandis.*

mandshùrica (*B. japonica* var. *mandshurica*). Tree to 60 ft., with white bark, twigs glandular: lvs. ovate to triangular-ovate, to 2½ in. long, apex acuminate, base mostly broadly cuneate, unequally serrate: cones cylindrical, pendulous. Manchuria, Korea. Var. **japónica** (*B. japonica* of cult.), Japanese White B., has lvs. truncate to subcordate at base and more broadly ovate-triangular. Japan, N. China. Var. **szechuánica** (*B. japonica* var. *szechuanica*) has lvs. tapering toward base, heavily glandular-punctate and glabrous to somewhat pubescent beneath, margins irregularly dentate-serrate. W. China.

Maximowicziàna. Monarch B. Tree to 100 ft., the bark flaking: lvs. broad-ovate, to 6 in. long, heart-shaped at base: cones cylindric, to 3 in. long. Japan.

nàna. Spreading branching shrub to 2 ft.: lvs. orbicular, to ½ in. long, when young sticky and pubescent beneath: cones ½ in. or less long. N. Asia, N. Eu., Alaska.

neoalaskàna: *B. papyrifera* var.

nìgra (*B. rubra*). River or Black B. Tree to 100 ft., with flaking papery bark: lvs. rhombic-ovate, to 3 in. long, whitish below: cones oblong-cylindric, 1½ in. long. Mass. to Fla. and Kans., by streams and in bottom-lands.

occidentàlis: the trade name may refer either to *B. fontinalis* or to *B. papyrifera* var. *occidentalis.*

odoràta: *B. pubescens.*

papyràcea: *B. papyrifera.*

papyrífera (*B. alba*, in part. *B. papyracea*). Canoe or Paper B. Tree to 100 ft., with white flaking papery bark, young branchlets pubescent and somewhat glandular, becoming glabrous and less noticeably glandular with age: lvs. ovate, to 4 in. long, apex acuminate, base cuneate or obtuse to heart-shaped, usually somewhat pubescent on nerves below but glabrous above, margin coarsely serrate: cones cylindrical, to 2 in. long. N. N. Amer., in light rocky lands. Var. **cordifòlia.** Small tree or shrub: lvs. broadly ovate, margin doubly serrate, veins pubescent beneath. Lab. to Minn. Var. **grándis** (*B. macrophylla*) has large heart-shaped lvs. Var. **kenàica** has bark tinged orange-brown and shorter cones. Var. **occidentàlis** (var. *Lyalliana*) has orange or dark brown bark. B. C. to Mont. Var. **neoalaskàna** (*B. alaskana*, *B. neoalaskana*) has resinous-glandular twigs. Sask. to Alaska.

péndula (*B. verrucosa*). European White B. Tree to 60 ft., with white bark peeling off in layers, the branches usually drooping: lvs. rhombic-ovate, to 2½ in. long: cones cylindric, about 1 in. long. Eu., Asia Minor. Some of the hort. vars. are: **dalecárlica** (*B. laciniata*), lvs. deeply lobed; **fastigiàta** (*B. alba pyramidalis*, *B. pyramidalis*), of columnar habit; **grácilis** (*B. alba elegans laciniata*), branches drooping, lvs. finely dissected; **purpùrea** (*B. alba atro-*

purpurea), lvs. purple; **trístis,** branches drooping and forming a round head; **Yoúngii** (*B. alba Youngii*), head irregular, branches drooping and very slender.

populifòlia. Gray B. Tree to 30 ft., with chalky bark: lvs. triangular-ovate, to 3 in. long, shining above, apex acuminate, base truncate rarely cuneate: cones cylindric, about 1 in. long. N. S. to Del., on light lands. Var. **laciniàta** has pinnately lobed lvs., **péndula** drooping branches, and **purpùrea** purple young lvs.

pubéscens (*B. odorata*). Tree to 60 ft., with white peeling bark: lvs. ovate, to 2 in. long, usually pubescent beneath: cones cylindric, 1 in. long. Eu., Siberia. Var. **urticifòlia** (*B. urticifolia*) has lvs. coarsely toothed or lobed. Var. **variegàta** has variegated foliage.

pùmila. Shrub to 15 ft.: lvs. orbicular to obovate, about 1 in. long, when young densely pubescent beneath: cones cylindric-oblong, 1 in. long. Newf. to N. J. and Minn.

purpùrea: *B. pendula* var.

pyramidàlis: *B. pendula* var. *fastigiata.*

rùbra: *B. nigra.*

urticifòlia: *B. pubescens* var.

ùtilis (*B. Bhojpathra*). Tree to 60 ft., with flaking dark brown bark: lvs. ovate, to 3 in. long, pubescent beneath: cones cylindric, 1 in. long. Himalayas.

verrucòsa: *B. pendula.*

BETULÀCEÆ. Birch Family. Six genera of deciduous mostly monœcious trees and shrubs, in the north temp. zone, having alternate simple lvs., staminate fls. in long drooping catkins, pistillate in short catkins or clusters, 2–10 stamens in the axils of bracts, 2-celled ovary, and fr. a small nut-like body. The family furnishes many ornamental subjects, valuable timber, some edible nuts, bark used for making canoes and writing paper. Alnus, Betula, Carpinus, Corylus and Ostrya are best known to hort.

BHANG: see *Cannabis.*

BIANCÆA: *Cæsalpinia.*

BICUCULLA: *Dicentra.*

BÌDENS. Bur-Marigold. Stick-Tights. Tickseed. *Compositæ.* Herbaceous ann. and per. mostly weedy plants, with opposite toothed, cut or divided lvs. and solitary or clustered heads, the rays white or yellow when present, the disk yellow; pappus of stiff bristles. Some species are grown from seed for ornament in the flower-garden; they are closely allied to Cosmos. Native wild species are weedy.

astrosanguínea: *Cosmos atrosanguineus.*

bipinnàta. Ann. to 5 ft.: lvs. 1–3-pinnate, segms. ovate to oblong, toothed or lobed, lower ones to 8 in. long: ray-fls. 3–4 or absent, yellow. R. I. to Fla. west to Neb. and Ariz.

chrysanthemoìdes: *B. lævis.*

coronàta (*B. trichosperma. Coreopsis trichosperma*). Ann. or bien. to 5 ft.: lvs. pinnately cut into lanceolate or linear segms.: heads to 2½ in. across, rays golden-yellow. Mass. to Ga. and Ky.

dahlioìdes: *Cosmos atrosanguineus.*

ferulæfòlia. Fern-leaved B. Ann., branching: lvs. 2-pinnate into narrow segms.: heads corymbose, less than 1 in. across; rays and disk bright yellow. Mex.

frondòsa. Beggars-Ticks. Ann. to 3 ft., st. often purplish: lvs. 3–5-pinnate, segms. lanceolate to oblong-lanceolate: ray-fls. usually absent, heads about ½ in. high, awns long. N. S. to Fla. west to B. C. and Calif.

grandiflòra: *B. serrulata.*

hùmilis. Dwarf, almost procumbent: lvs. irregularly 2-pinnately 5-parted, segms. narrow: heads yellow, solitary. Ecuador.—Probably a form of *B. triplinervia*, not in cult.

involucràta: *B. polylepis.*

lævis (*B. chrysanthemoides*). Ann. to 3 ft.: lvs. lanceolate, to 8 in. long, toothed: heads to 2½ in. across, rays golden-yellow. Mass. to Fla. and Mex.

leucántha: *B. pilosa* var. *radiata.*

pilòsa. Ann. to 3 ft. and more: lfts. usually 3, ovate to lanceolate, serrate: known in cult. in var. **radiàta** (*B. leucantha*), with white or yellowish rays. S. U. S. and S.

polylèpis (*B. involucrata*). Ann. or bien. to 3 ft.: lvs. pinnatisect to simple, segms. linear-lanceolate, incised or sharply serrate, long-acuminate: heads to 2 in. across, ray-fls. orange-yellow. Swamps, Ill. to Kans. south to Ark. and Tex., also in S. E. Pa. and Del.

serrulàta (*B. grandiflora*). To 4 ft., somewhat glaucous, branched: lvs. pinnately divided into narrow segms.: heads golden-yellow. Mex.

trichospérma: *B. coronata.*

BIENNIALS (abbreviated bien. in this book) are plants that live two years from seed, blooming only or mostly the second year. Some of the perennials are so short-lived that they become practically biennial in cultivation and may be so listed. Examples of plants that are actually or essentially biennial are common forms of red clover, parsnip, cabbage, foxglove, Canterbury bell, hollyhock, verbascum, snapdragon, pansy. Of most ornamental kinds, bloom may be obtained from seeds sown the previous midsummer, the seedlings being handled promptly to insure continuous growth.

BIFRENÀRIA. *Orchidaceæ.* S. American epiphytes with pseudobulbs bearing 1 leathery lf. and fls. in lateral racemes, the sepals and petals similar, the lateral sepals running down the column-foot to form a spur, the lip usually 3-lobed, with a callus or ridges. Suited to a temperate or cool greenhouse; see *Orchids.*

atropurpùrea. Pseudobulbs to 3 in. high, bearing a linear-lanceolate lf. to 10 in. long: fls. about 2 in. across, very fragrant, in 3–5-fld. racemes to 3 in. long, the sepals and petals wine-red with yellow center, the lip entire, whitish tinged with rose, with linear callus. June. Brazil.

aurantìaca (*Lindleyella aurantiaca*). Pseudobulbs to 2 in. high, bearing 1 plaited elliptic lf. to 10 in. long and 3 in. wide: fls. in 7–13-fld. racemes to 8 in. long, yellow spotted with purple, the lip with a brighter callus between the side lobes. Jan.–Mar. Trinidad, British Guiana.

Hárrisoniæ (*Lycaste Harrisoniæ*). Pseudobulbs to 3 in. high, bearing a narrow-elliptic lf. to 1 ft. long: fls. about 2¾ in. across, in short 1–3-fld. racemes, the sepals and petals yellowish tinged with red, the lip violet-red with yellow hairy callus, the base of the column prolonged into a spur-like part over 1 in. long. Mar.–May. Brazil.

velùtina: listed name.

vitellìna. Pseudobulbs to 1½ in. high, bearing 1 lf. to 1 ft. long and 1½ in. wide: fls. 1 in. across, in 5–8-fld. racemes to 8 in. long, orange-yellow with purple spot on lip. June–July. Brazil.

Wittiàna: listed name.

BIGNAY: *Antidesma Bunius.*

BIGNÒNIA. *Bignoniaceæ.* One evergreen climbing shrub with lvs. of 2 lfts. and a terminal tendril, funnelform fls. in axillary cymes, and linear flattened frs. The genus is variously understood, but is here considered to have only one species. It is grown as a wall cover in the S. and sometimes in the greenhouse. Propagated by cuttings, and by seeds when available.

æquinoctiàlis: *Cydista æquinoctialis.*

allìàcea: *Adenocalymna alliaceum.*

argyrèa (*B. argyreo-violescens*). Greenhouse vine with narrow-ovate or ovate-lanceolate lvs. purple underneath and veined above with white; not known in fl. and fr. and genus uncertain. Supposed to be S. American.

atropùrpurea, atrosanguínea: *B. capreolata* var.

austràlis: *Pandorea pandorana.*

buccinatòria: *Phædranthus buccinatorius.*

callistegioìdes: *Clytostoma callistegioides.*

capénsis: *Tecomaria capensis.*

capreolàta (*Anisostichus* and *Doxantha capreolata. B. crucigera*). Trumpet-Flower. Cross-Vine. Climbing to 50 ft.: lfts. ovate or oblong, to 6 in. long, entire: fls. yellow-red, paler within, 2 in. long: caps. to 7-in. long. Fields, Va. and Ill. to Fla. and La., but root-hardy farther N. Kinds with fls. in darker colors are known as *B. atropurpurea* and *B. atrosanguinea.*

Chàmberlaynii: *Anemopægma Chamberlaynii.*

Cherère: *Phædranthus buccinatorius.*

chinénsis: *Campsis grandiflora.*

crucígera: *B. capreolata.*

grandiflòra: *Campsis grandiflora.*

jasminoìdes: *Pandorea jasminoides.*

laurifòlia: listed name for an evergreen vine with lavender fls.

Máckenii: *Podranea Ricasoliana.*

magnífica: *Arrabidæa magnifica.*

muricàta: *Pithecoctenium echinatum.*

Príncei: *Campsis Tagliabuana.*

purpùrea: *Clytostoma purpureum.*

radìcans: *Campsis radicans.*

serratifòlia: *Tabebuia serratifolia.*

siderafòlia: *Pithecoctenium echinatum.*

speciòsa: *Clytostoma callistegioides.*

stáns: *Stenolobium stans.*

Tweediàna: *Doxantha Unguis-cati.*

Únguis-càti: *Doxantha Unguis-cati.*

venústa: *Pyrostegia ignea.*

violàcea. Lfts. oval, 4 in. long: fls. violet, 1 in. long, in terminal branched panicles. Bolivia.—Undoubtedly not a true Bignonia, but genus undetermined.

BIGNONIÀCEÆ. BIGNONIA FAMILY. About 100 widely distributed genera of trees, shrubs, vines, and herbs, with mostly opposite simple or compound lvs. which are often even-pinnate, showy, more or less irregular gamopetalous fls. in racemes or panicles, having 5-lobed corolla-limb, 5 stamens of which 1 or 3 are sterile, superior 1–2-celled ovary, and fr. a long caps. or pod with winged seeds. Many genera are cult. for ornament, as Adenocalymna, Amphicome, Anemopægma, Arrabidæa, Bignonia, Campsidium, Campsis, Catalpa, Chilopsis, Clytostoma, Crescentia, Cydista, Delostoma, Distictis, Dolichandra, Doxantha, Eccremocarpus, Incarvillea, Jacaranda, Kigelia, Markhamia, Oroxylon, Pandorea, Parmentiera, Phædranthus, Pithecoctenium, Podranea, Pyrostegia, Radermachia, Spathodea, Stenolobium, Tabebuia, Tecoma, Tecomaria, Tecomella, Tourretia. Most of the bignoniads are native in warm regions.

BIHAI: *Heliconia.*

BÍJLIA. *Aizoaceæ.* A monotypic genus segregated from Mesembryanthemum. **B. càna** (*M. canum*). Stemless: lvs. 3-angled, keeled on back, to 1½ in. long, ¾ in. wide and thick near apex, whitish: fls. yellow, 1 in. across, in 1–3-fld. cymes; stigmas 5, filiform. S. Afr.

BIKUKULLA: *Dicentra.*

BILBERRY: *Vaccinium.*

BILIMBI: *Averrhoa Bilimbi.*

BILLARDIÈRA. *Pittosporaceæ.* Small Australian shrubs with twining branches, alternate lvs., and mostly yellow or purple fls. solitary or clustered; grown under glass or out-of-doors in mild climates. Propagated by cuttings under glass or by seeds.

longiflòra. Lvs. varying from ovate to linear, to 1½ in. long, entire: fls. greenish-yellow or becoming purple, solitary, drooping: berries blue.

BILLBÉRGIA. *Bromeliaceæ.* Stemless epiphytic herbs native in trop. Amer., having stiff lvs. in rosettes or clusters, and showy mostly blue fls. in spikes or panicles; grown for ornament and as oddities under glass or as house-plants. For cult., see *Bromeliaceæ.*

Forgetiàna. Lvs. green banded with white. Of uncertain botanical standing.

iridifòlia. Stemless or nearly so: lvs. to 1½ ft. long, lanceolate, undulate, dark green above and purplish-green beneath, margin spiny: floral bracts rose-red, corolla yellowish-green. Brazil.

Lèopoldii. To 2 ft.: lvs. strap-shaped, concave, apex obtuse, margin somewhat coarsely serrate with serrations tipped with minute brown spine: fls. reddish-violet, on lax peduncle. Colombia.

Liboniàna. Lvs. to 2 ft. long and 1½ in. wide, with small spiny teeth: fls. in an erect simple spike on scapes to 1 ft. long, with red sepals and blue-tipped petals. Brazil.

macrócalyx. Stemless or nearly so: lvs. to 1½ ft. long, erect or recurved, concave, dark green with scattered pale green spots, apex acute, margin somewhat spinose-serrate: floral bracts rose-red, corolla yellowish-green tipped with blue. Brazil.

Morélii. Lvs. to 2 ft. long and 2 in. wide, with small spiny teeth: fls. in drooping spikes on scapes to 1 ft. long, with long red bract-like lvs., red sepals and blue-tipped petals. Brazil.

Mùirii: listed as having bright red fls.

nóbilis. Lvs. transversely barred: petals green, curling in spirals after blossoming, bracts carmine. Brazil.

nùtans. Lvs. to 1½ ft. long and ½ in. wide, finely toothed: fls. few on scapes to 1 ft. long, drooping, with bright red bracts and green petals edged with blue. Brazil.—One of the commonest in cult.

palléscens. Stemless or nearly so: lvs. to 2 ft., strap-shaped, suberect, leathery, green with small white spots on both surfaces, apex cuspidate, margin with minute prickles: fls. in lax panicles, leafy bracts bright rose, corolla green tipped violet. Brazil.

pállida: *B. speciosa.*

Perringeàna. A hybrid of *B. nutans* and *B. Liboniana.* Lvs. to 2 ft. long, narrowly strap-shaped, acuminate, finely serrate: fls. few, on scapes to 1 ft. long, with pale rose-pink bracts and more or less viscid green fls.

pyramidàlis (*B. thyrsoidea*). Lvs. to 3 ft. long and 2½ in. wide, finely spiny-toothed: fls. in dense spikes to 4 in. long, with bright red bracts and red petals tipped with violet. Brazil.

Quintusiàna. Stemless or nearly so: lvs. to 1½ ft. long, strap-shaped, obtuse, concave, recurved, bright green with small white spots on upper side and transverse bands on reverse, margin not conspicuously toothed: fls. with rose to carmine-red bracts. Habitat not known.

rhodocyànea: *Æchmea fasciata.*

Sanderiàna. Lvs. leathery, about 1 ft. long, spiny-toothed: panicles loose, to 10 in. long, on nodding scapes; sepals tipped with blue; petals blue with yellowish-green claw; bracts rose. Brazil.

Saùndersii. Lvs. green above, reddish beneath, with red spines and white blotches: fls. greenish tipped with blue. Brazil.

Sòari: listed name of unknown botanical standing.

speciòsa (*B. pallida*). Lvs. to 2 ft. long, spiny-toothed, striped on back: fls. pale green tipped with blue, bracts rose, in loose drooping clusters. Brazil.

thyrsoídea: *B. pyramidalis.*

vittàta. To 3 ft.: lvs. to 2 ft. long, transverse bands across reverse side, apex recurved obtuse and abruptly pointed with red spine: petals deep blue and recurved, bracts red. Brazil.

zebrìna. Lvs. to 3 ft. long and 3 in. wide, prickly-toothed, spotted and banded with white: fls. in spikes on drooping scapes shorter than lvs., with pink or salmon bracts and green or yellowish-green fls. Brazil.

BILTIA: *Rhododendron Vaseyi.*

BINDWEED: *Convolvulus.*

BINGHÀMIA. *Cactaceæ.* Peruvian branched cacti with many low spiny ribs: fls. nocturnal, with straight stout tube.

chosicénsis: *Haageocereus chosicensis.*

Húmboldtii (*Borzicactus Humboldtii* and *plagiostoma*). To 3 ft. long and 2 in. diam., dull green dotted white; ribs 12–13, about ½ in. high and notched, areoles to ⅝ in. apart, yellow-woolly; spines brownish-red to gray, radials to 25, about ½ in. long, straight, centrals 4–7, slightly longer: fls. pale pink to crimson, to 2 in. long. Peru.

icosagòna (*Borzicactus icosagonus*). To 20 in. long and 2 in. diam.; ribs 18–20, angular, areoles nearly ½ in. apart; spines pale golden-yellow, numerous, to ½ in. long: fls. orange-red to red, about 3 in. long. Ecuador.

melanostèle: *Haageocereus chosicensis.*

pseudomelanostèle: *Haageocereus pseudomelanostele.*

BIOTA: *Thuja orientalis.*

BIRCH: *Betula.*

BIRD-OF-PARADISE FLOWER: *Strelitzia.*

BIRDS-EYES: *Gilia tricolor.*

BIRTHWORT: *Aristolochia.*

BISCHÓFIA. *Euphorbiaceæ.* One evergreen or somewhat deciduous tree native in trop. Asia, sometimes planted in extreme S. U. S. **B. javánica** (*B. trifoliata*). Toog. To 75 ft.: lvs. alternate, of 3 ovate-acuminate bronzy-green serrulate lfts. to 5 in. long: fls. small, greenish, diœcious, without petals, in many-fld. racemes not exceeding the lvs.: fr. berry-like, brown or reddish or blue-black, size of a pea.

BISCUTÉLLA. *Cruciferæ.* A few ann. and per. herbs of the Old World, one sometimes planted for ornament, interesting for the 2 circular winged lobes of the flat pods or silicles: radical lvs. large, entire, toothed or pinnatifid: sts. mostly slender-branching: fls. small, yellow. **B. lævigàta** is per., to 2 ft., hairy in lower part: lvs. variable, the radical ones long-oblong and toothed and forming rosette: fls. in terminal racemes, in spring and summer: pods about ⅓ in. across. Cent. and S. Eu.

BISHOPS-CAP: *Mitella.* **-Hood:** *Astrophytum myriostigma.* **-Weed:** *Ægopodium Podagraria.*

BISMÁRCKIA. *Palmaceæ.* One heavy fan-palm in Madagascar, allied to Latania and Hyphæne; from the former it differs in bearing staminate and pistillate fls. on similar spadices, and from Hyphæne in its trunk being columnar and unbranched as well as in fr. and seed. The name has appeared in N. American lists but the plants in cult. probably belong to other genera.

BISTORTA: *Polygonum.*

BITTERNUT: *Carya cordiformis.*

BITTER-ROOT: *Lewisia rediviva.*

BITTER-SWEET: *Solanum Dulcamara.* **False:** *Celastrus scandens.*

BÍXA. *Bixaceæ.* A trop. American tree much planted in the tropics for the annatto dye which is extracted from the pulp around the seeds. **B. Orellàna.** Annatto. To 20 ft. or more: lvs. ovate, to 7 in. long: fls. pink or rose, to 2 in. across: fr. reddish-brown, to 2 in. long, covered with soft spines.—Propagated by seeds 'and cuttings. Grown in S. Fla. and southward.

BIXÀCEÆ. Bixa Family. Two genera of trees and shrubs having alternate simple lvs., regular bisexual fls. with 5 sepals and petals, numerous stamens, superior 1-celled ovary, and capsular fr.: native in the warm parts of Amer. and Australia. Bixa is cult. for the annatto dye. See Cochlospermaceæ.

BLACK-BEAD: *Pithecellobium Unguis-cati.*

BLACKBERRÝ. The American pomological blackberry is a native fruit, having been developed from indigenous species. The species of wild blackberry are more numerous than formerly supposed and their identities are not yet clearly understood, and the exact parentage of the named horticultural varieties is mostly yet obscure. See *Rubus.*

The culture of the blackberry is limited by the cold winters of the northern and plains states and by drought and dry heat in the Southwest. Elsewhere it is grown in some of its forms, although nowhere does it assume great commercial importance. Quantities of fruit are gathered from the wild throughout its natural range. Almost any good soil will grow blackberries provided it is well drained and retentive of moisture with a good humus content. The heavier clay loams are preferred.

Propagation of varieties is by suckers which come up from the roots, and for more rapid increase by root-cuttings. Roots are cut into sections 2–3 inches long, buried in soil to callus during the winter, and planted in the nursery row in early spring. Some of the trailing or lopping sorts root at the tips of the canes. Planting is done in the very early spring either in rows 7–8 feet apart, plants 2–3 feet apart in the row, or in hills 7 x 7 or 8 x 8 feet on the square.

Clean cultivation is essential for successful culture of blackberries on a large scale. Home plantings may be heavily mulched to keep down the weeds and retain moisture. Suckers outside the row or hill must be destroyed or the planting will become a thicket. Blackberries respond to the application of manure or complete fertilizer on poor soils. Care should be taken not to stimulate the plants to over-vegetative growth.

Pruning consists in cutting out the fruiting canes soon after the fruit is picked and thinning out the new canes in the early spring to space them about a foot apart in the row, or 5–6 to the hill. The canes are biennial, growing from the ground one year and fruiting the next year. Canes may be shortened back if very tall. Trailing kinds must be trained on a trellis.

For home use fruit should become soft-ripe on the plants. For market the berries should be black but still firm. Picking is by hand, the berries usually falling into the same quart berry baskets in which the fruit is marketed. A good yield is about 2,000–3,000 quarts to the acre, the average about 1,000.

In choosing varieties, adaptation to climate is important. Varieties of more than average hardiness are Eldorado, Ancient Briton, Snyder, Hardy, Taylor, Wachusett, Minnewaski, Erie, Mersereau. Varieties adapted to regions south of New York are Nanticoke, Rathbun, Agawam, Dorchester, Early King, Lawton. Varieties for the far Southwest are Dallas, McDonald, Haupt. Varieties for the Pacific Coast include Jordan, Kittatinny, Himalaya, Erie, Mammoth, Evergreen, Lawton, Crandall. Varieties specially resistant to rust are Eldorado, Snyder, Taylor, Erie.

Care should be taken to plant only disease-free plants. If rust is prevalent the only remedy is to plant resistant varieties. The commercial grower should give particular attention to special pest and disease problems.

BLACKBUTT: *Eucalyptus pilularis.*

BLACK-EYED SUSAN: *Rudbeckia hirta, Thunbergia alata.*

BLACKTHORN: *Prunus spinosa.*

BLADDER-NUT: *Staphylea.*

BLADDER-POD: *Vesicaria.* **Silvery:** *Lesquerella argentea.*

BLADDERWORT: *Utricularia.*

BLADE: the expanded part of a leaf or petal.

BLANDFÓRDIA. *Liliaceæ.* Australian fibrous-rooted herbs with lvs. mostly near base of st., large drooping 6-lobed fls. in terminal racemes, and capsular frs. Adapted to mild climates. Propagated by seeds and sparingly by division of roots.

flámmea. To 3 ft. or more: lvs. narrowly linear-lanceolate: fls. yellow to orange, suffused red at base, on pedicels 1½–2 in. long, few in loose racemes. Queensland.

marginàta. To 2 ft.: lvs. narrowly lanceolate, to 1½ ft. long and 1½ in. across, rigidly suberect, margins scabrous: fl.-st. green below, purple above, with fls. brick- to copper-red outside and yellowish within, on pedicels to 1¼ in. long, in dense racemes. Tasmania.

nóbilis. To 3 ft.: lvs. to 1½ ft. long and ⅙ in. wide, margins serrate: fls. brownish-red tipped with yellow, to 1¼ in. long, on pedicels to ½ in. long. New S. Wales.—Less tender than *B. marginata*.

BLAZING STAR: *Chamælirium luteum, Liatris, Mentzelia lævicaulis.*

BLÉCHNUM. *Polypodiaceæ.* Rather coarse ferns, with compound or deeply cut fronds; sori in a line close to midrib of segms.

A few species are cultivated in greenhouses. Propagated by spores except in the species that develop plantlets at the ends of the creeping rhizomes. They require a rather dry atmosphere but plenty of moisture at the root, and a temperature of 60–65°; good as specimen plants. See *Ferns*.

brasiliénse. With scaly trunk to 3 ft. high: fronds to 3 ft. long and 15 in. wide, deeply pinnatifid, pinnæ finely toothed. Brazil, Peru.

fluviátile (*Lomaria fluviatilis*). Fronds to 2½ ft. long and 1½ in. wide, simply pinnate, pinnæ to ¾ in. long, wavy-margined, sterile and fertile different. New Zeal., Australia.

gíbbum (*Lomaria gibba*). With trunk to 5 ft. high: fronds to 3 ft. long and 1 ft. wide, deeply pinnatifid, pinnæ finely toothed, the sterile and fertile different. New Caledonia, Aneiteum in S. Pacific. Var. **platýptera** of the trade is to be referred to the species.

Moòrei (*Lomaria ciliata*). Trunk 6 in. high: fronds to 1 ft. long, simply pinnate, toothed or lobed, the sterile and fertile different, stipes blackish. New Caledonia.

occidentàle. Trunkless: fronds to 1½ ft. long, simply pinnate, pinnæ to 3 in. long, entire. Trop. Amer.

orientàle. Trunk stout, erect: fronds to 5 ft. long and 3 ft. broad, simply pinnate, pinnæ to 8 in. long. Australia, China, Himalayas.

serrulàtum. Saw-Fern. Fronds to 2 ft. long and 15 in. wide, simply pinnate, pinnæ finely toothed, linear-oblong. Swamps, Fla. to Brazil.

spìcant (*Struthiopteris* and *Lomaria spicant*). Deer-Fern. Sterile fronds in crown surrounding fertile fronds, evergreen, to 3½ ft. long, simply pinnate, pinnæ entire or slightly toothed. Alaska to Calif., Eu., Asia. Var. **califórnica** is listed in the trade.

BLEEDING-HEART: *Dicentra spectabilis.*

BLEPHARIGLOTTIS: *Habenaria.*

BLEPHÍLIA. *Labiatæ.* Per. E. N. American herbs allied to the Monardas but differing in having smaller more dilated corollas and the calyx-tube with 13 instead of 15 nerves. Adapted to the wild-garden.

ciliàta. To 2 ft., rarely branched: lvs. lanceolate to oblong-lanceolate, to 2 in. long, remotely serrate, the upper ones sessile: fls. bluish-purple, in axillary and terminal clusters. Woods of Vt. to Minn. south to Ga. and Mo.

hirsùta. To 2½ ft., usually branched: lvs. ovate to ovate-lanceolate, to 4 in. long, sharply serrate, the upper ones distinctly petioled: fls. pale purple, pubescent, in axillary and terminal clusters. Que. to Minn. south to Ga. and Tex.

BLÈTIA. *Orchidaceæ.* Erect terrestrial orchids from trop. Amer., allied to Calanthe but differing in the lip not being spurred and only jointed with base of column: fls. numerous, in terminal often branched raceme on erect leafless scape that arises from side of corm.

álta (*B. purpurea, B. verecunda*). To 2½ ft. high or more: lvs. narrowly lanceolate, to 2½ ft. long, contracted into a sheathing petiole: fls. rosy-purple or crimson (rarely white), lateral lobes of lip broadest below and tapering toward the apex. Fla., Mex., Cent. and S. Amer., W. Indies.

flórida. To 3½ ft.: lvs. narrowly to broadly lanceolate, to 2 ft. long, contracted into a sheathing petiole: fls. dark purple, sometimes rose-pink with white lip, lateral lobes of lip rounded above and narrowed toward base. Jamaica, Cuba.

hyacínthina: *Bletilla striata.*

purpùrea: *B. alta.*

verecúnda: *B. alta.*

BLETÍLLA. *Orchidaceæ.* Terrestrial orchids with tuberous rhizomes, rather thin lvs. and fls. in terminal racemes on leafless scapes, the sepals and petals similar, the lip free and 3-lobed; confined to the Old World tropics. Sometimes planted out-of-doors; see *Orchids*.

hyacínthina: *B. striata.*

striàta (*Bletia* and *Bletilla hyacinthina*). To 2 ft.: lvs. 3–5: fls. purple, about 1 in. long, in 3–7-fld. racemes longer than lvs. June. China, Japan. Var. **álba** is listed.

BLÌGHIA. *Sapindaceæ.* One tree native in W. Afr. but now cult. and nat. widely in the tropics, producing edible frs. that are seriously poisonous at certain stages or parts. **B. sápida** (*Cupania sapida*). Akee. To 40 ft.: lvs. of 6–10 obovate-oblong lfts. to 6 in. long: fls. small, greenish-white, polygamous, in axillary racemes: fr. straw-colored to magenta-red, 3 in. long, splitting into 3 parts, with 3 shining seeds having a white fleshy aril at base.— Akees withstand a few degrees of frost when well established. They succeed on moist loamy soils. Propagated usually by seeds.

BLITUM: *Chenopodium capitatum.*

BLOOD-FLOWER: *Asclepias curassavica.*

BLOOD-LEAF: *Iresine.*

BLOODROOT: *Sanguinaria canadensis.*

BLOODWOOD: *Eucalyptus.* **Tree:** *Hæmatoxylum campechianum.*

BLOODWORT FAMILY: *Hæmodoraceæ.*

BLOOMÈRIA. *Liliaceæ.* Herbs native in S. Calif., having corms, basal grass-like lvs., and yellow wheel-shaped fls. in umbels terminating the scapes.

Bloomerias withstand several degrees of frost. The plants thrive in sandy well-drained soil and sunny exposure. The corms should be dug after ripening and replanted in autumn; they are good summer bloomers, allied to Brodiæa. Propagated by seeds.

aùrea: *B. crocea.*

cròcea (*B. aurea*). Golden-Stars. To 1½ ft.: fls. orange-yellow striped with darker lines, ½ in. long.

BLUEBEARD: *Caryopteris.*

BLUE BEDDER, CALIFORNIA: *Penstemon heterophyllus* var. *Purdyi.*

BLUEBELL: *Campanula rotundifolia.* **California:** *Phacelia Whitlavia.* **Creeper, Australian:** *Sollya heterophylla.* **English:** *Scilla nonscripta.* **Spanish:** *Scilla hispanica.*

BLUEBELLS: *Mertensia.*

BLUEBERRY. Certain North American Vacciniums are known as blueberry, but in horticultural practice the name is restricted mostly to *V. corymbosum*, one of the highbush species, and *V. angustifolium* var. *lævifolium* (*V. pensylvanicum*), a lowbush species. The fruit of the latter is gathered in large quantities for canning and market from blueberry barrens in New England, particularly Maine. These barrens are given a special culture of burning over every third year, fertilization and spraying to control fruit-flies. In recent years, the highbush blueberry has been greatly improved in productiveness and size of fruit by selection and breeding; and the knowledge that it requires an acid soil has contributed to its introduction as one of the pomological products.

Common alkaline or neutral lands do not produce blueberries. An acid soil is essential, one composed of peat and sand but with good drainage and aëration. It is not necessary to plant in swamps; in fact, the plant does not thrive when the roots are permanently under water. The water-table should be at least one foot below the surface in the growing season. The permanent plantation is set about 8 feet apart each way. Surface tillage is advised but heavy mulching with peat, oak leaves, sawdust or other material is satisfactory and is well adapted to the home planting. Plants begin to bear well in three or four years after setting and they should last a lifetime. They grow to a height of 6 to 8 feet. In home gardens it is advised that plants be set in ample holes or trenches about 1 foot deep in a mixture of one part peat or half-rotted oak leaves to one part acid sand; a similar mixture is used as a top-dressing in the plantation. If the soil is not naturally acid, aluminum sulfate scattered on the surface at the rate of ½ pound to a square yard each year is of benefit. Chemical fertilizers that leave an acid reaction in the soil may be applied, as sulfate of ammonia, acid phosphate, sulfate or muriate of potash.

Propagation of the blueberry is by dividing the clumps or rootstocks, by layering, by cuttings and by seeds, but the seeds do not reproduce the variety or strain. Softwood cuttings are the source of most nursery-grown plants. The home gardener, if he attempts blueberries at all, will probably purchase his plants.

Some of the varieties now in the trade are the Pioneer, Rubel, Catherine, Jersey and Chabot.

BLUE-BLOSSOM: *Ceanothus thyrsiflorus.* **-Bottle:** *Centaurea Cyanus.* **-Curls:** *Trichostema.* **-Devil:** *Echium vulgare.* **-Dicks:** *Brodiæa capitata.* **-Eyed Mary:** *Collinsia verna.* **-Lips:** *Collinsia grandiflora.* **-Weed:** *Echium vulgare.*

BLUET, MOUNTAIN: *Centaurea montana.*

BLUETS: *Houstonia.*

BLUMENBÁCHIA (*Saloa*). *Loasaceæ.* Ann. herbs armed with stinging hairs, native of S. Amer., having opposite lobed lvs. and odd interesting fls. solitary in the axils: caps. opening at top. Propagated by seeds sown under glass and seedlings transplanted after danger of frost is over.

Hierónymii. Bien.: lvs. ovate, palmately 5-lobed, lobes toothed: fls. white, to 1½ in. across, on peduncles to 4½ in. long. Argentina. See also *Loasa vulcanica.*

insígnis. Ann. or grown as such, twining, the sts. to 2 ft. or more long: lvs. to 3 in. across, deeply palmately 5-lobed: fls. white, 1 in. across, hooded, with thick yellow scales spotted with red at base of petals. S. Amer.

laterítia: *Caiophora lateritia.*

BOCCÒNIA. *Papaveraceæ.* Trees, shrubs or per. herbs with yellowish juice, alternate mostly pinnately lobed or parted lvs. and small fls. without petals, borne in terminal branching panicles; native in Mex. and trop. Amer.; seldom planted in S. U. S.

cordàta: *Macleaya cordata.*

frutéscens. Shrub or tree to 25 ft.: lvs. to 16 in. long, pinnatifid: fls. purplish, the panicles 1 ft. or more long. Cent. Amer. to Peru, W. Indies.

japónica: *Macleaya cordata.*

microcárpa: *Macleaya microcarpa.*

Thúnbergii: probably *Macleaya microcarpa.*

BŒHMÈRIA. *Urticaceæ.* Various herbs, shrubs or trees mostly native in warm countries, with alternate or opposite simple lvs. and very small unisexual fls. in clusters or spikes.

Grown under glass for the ornamental foliage or out-of-doors in the South, one species furnishing fiber. Propagated by division, or seeds when produced. Ramie is grown to some extent in southern United States; it requires fertile well-drained soil, and is easily grown. Scme of the Bœhmerias are weedy plants native in North America.

argéntea. Lvs. alternate, to 1 ft. long and 7 in. wide, finely toothed, spotted above with silvery-gray, veined with red-brown below: fls. in branched drooping spikes to 10 in. long. Mex.

cylíndrica. Per. to 3 ft.: lvs. to 3 in. long and 1½ in. wide, coarsely toothed: fls. in spikes to 1½ in. long. N. Amer., W. Indies.

macrophýlla. Shrub or small tree: lvs. opposite, lanceolate, to 1 ft. long, finely toothed, usually pubescent beneath: fls. in drooping spikes to 1 ft. long. Himalayas.

nívea (*Urtica utilis*). RAMIE. CHINESE SILK-PLANT. Herb or shrub to 6 ft.: lvs. alternate, broad-ovate, to 6 in. long, coarsely toothed, white-tomentose beneath: fls. in panicles to 6 in. long. China, Japan, S. Asia.

platyphýlla. Shrub to 10 ft.: lvs. opposite and alternate, broad-ovate, to 9 in. long, coarsely toothed, usually pubescent: fls. in long drooping spikes. Asia, Afr.—A variable poorly-defined species.

Urèra: the plant cult. far S. under this name is probably the trop. American *Urera caracasana.*

BOENNINGHAUSÈNIA. *Rutaceæ.* A monotypic genus allied to Ruta and differing from it in fls. with 4 petals, 6–8 stamens and ovary pedicelled. One species from E. Asia, **B. albiflòra** (*Ruta albiflora*). Diffuse per. to 2 ft.: lvs. 2–3-pinnate, petioled, segms. obovate to obcordate, to ¾ in. long, glaucous beneath, the terminal one largest: fls. white, to ½ in. across, usually nodding, in leafy many-fld. cymes.

BOERHAÀVIA. *Nyctaginaceæ.* About 50 species or more of trop. herbs, having minute 5-lobed funnelform fls. in heads, umbels or panicles, differing from Oxybaphus in the absence of an involucre.

adscéndens: *B. coccinea.*

coccínea (*B. adscendens*). To 2 ft.: lvs. linear-ovate to oblong, base obtuse or cordate, to 2 in. long, usually white beneath, petioled: fls. red, capitate heads in slender branched panicles. Probably Ceylon, but widely distributed throughout tropics.—A very variable species having weakly prostrate and procumbent variants as well as erect and robust forms.

BOGBEAN: *Menyanthes trifoliata.*

BOG PLANTS, in horticulture, differ from aquatics in the fact that they do not live permanently in deep water, but rather in wet places as about lakes and ponds and in swamps. Mostly they are native plants transferred to wet places in grounds, and sometimes colonized. For the most part they are easily grown if the natural habitat is understood and imitated. Commonly they are perennials and woody plants that take care of themselves when once established. Sedges, rushes, pickerel-weed, arrow-leaf, water plantain, spatterdock, are common bog and swamp plants, as well as some of the eupatoriums, loosestrifes and lythrum. Any region outside deserts and plains yields interesting material for the appreciative planter.

BOISDUVÀLIA. *Onagraceæ.* A few ann. herbs or many-stemmed little bushes, native Ore., Calif., and Pacific S. Amer., one of which may be grown in flower-garden or border in sunny situations; propagated by seeds.

densiflòra (*Godetia* and *Œnothera densiflora*). Ann., erect, 1–5 ft., hairy: lvs. narrow-lanceolate, acute, denticulate: fls. light purple, small, ½ in. or less across, in close leafy axillary clusters that comprise a long interrupted terminal spike. Calif.

BOLÁNDRA. *Saxifragaceæ.* Herbs native in W. N. Amer. and adapted to rock-gardens; fls. purplish, in loose corymbs.

oregàna. To 1½ ft., pubescent: lvs. kidney-shaped, angularly lobed, toothed: fls. deep purple, less than ½ in. long. Ore., Wash.

BOLBOXALIS: *Oxalis cernua.*

BOLDO: *Peumus Boldus.*

BOLDOA FRAGRANS: *Peumus Boldus.*

BOLLEA: *Zygopetalum.*

BOLLWILLERIA: *Sorbopyrus auricularis.*

BOLTÒNIA. *Compositæ.* Tall erect herbaceous aster-like perennials, glabrous: lvs. alternate and entire, usually becoming vertical by a twist at the base: heads with white, purplish or violet ray-fls. Native in U. S. and E. Asia, in moist places and on prairies.

Boltonias are often planted in the border or colonized: they are of the easiest culture. Propagated by division in the spring, also by seed. They resemble wild asters.

asteroìdes (*B. glastifolia*). To 8 ft.: lvs. lanceolate, to 5 in. long, sessile: heads ¾ in. across, rays white to violet and purple. Conn. to Fla. and La.

glastifòlia: *B. asteroides.*

lævigàta: hort. name; perhaps *B. asteroides.*

latisquàma. Differs from *B. asteroides* in the larger heads 1 in. across, rays blue-violet, and in the involucral bracts. Mo. to Okla. Var. **nàna** is 2–3 ft. tall with pinkish rays.

BOLUSÁNTHUS. *Leguminosæ.* One African tree sometimes planted in S. Calif. **B. speciòsus** (*Lonchocarpus speciosus*). To 15 ft.: lvs. pinnate, the lfts. lanceolate: fls. papilionaceous, bright blue, in terminal often pendulous racemes: pods oblong-linear, flattened.

BOMÀREA. *Amaryllidaceæ.* S. American twining herbs, with parallel-veined lvs. and tubular fls. borne in drooping umbels.

Bomareas may be grown out-of-doors in the South in partial shade or in a cool greenhouse. They require abundant water and liquid manure in the growing season. The roots may be left in the soil over winter, the tops being cut off. Propagated by division of the roots or by seeds over heat.

Caldasiàna. Lvs. to 6 in. long, oblong-acute, with distinct petiole, puberulent on lower side: fls. with reddish-brown short outer segms. and bright yellow longer inner segms., in simple umbels on pedicels to 2 in. long. Guatemala.

conférta: *B. patacocensis.*

formosíssima. Lvs. broadly lanceolate, to 10 in. long and 2 in. wide, acuminate, glabrous, petiole winged: fls. with yellow spatulate petals and red sepals, to 1½ in. long, in dense umbels of 60–80 fls., pedicels densely reddish-pubescent: fr. dehiscent. Peru.

multiflòra. Lvs. oblong, to 4 in. long: fls. in dense many-fld. umbels, 1 in. long, the perianth-segms. nearly equal, outer tinged red, inner reddish-yellow spotted with brown. Colombia, Venezuela.

oligántha. Lvs. oblong, to 4 in. long: fls. to 1¼ in. long, the perianth-segms. equal, the outer red, the inner yellow spotted with reddish-brown. Peru.

patacocénsis (*B. conferta*). Lvs. oblong-lanceolate, to 6 in. long: fls. bright red, the inner perianth-segms. to 2½ in. long and yellow-keeled. Andes of Ecuador and Colombia.

BOMBACÀCEÆ. Bombax Family. Trees of about 20 genera in the tropics, mostly American, differing in technical characters from Malvaceæ, with simple or palmately compound lvs., regular bisexual fls. having 5 sepals and petals, 5 to numerous stamens, superior 2–5-celled ovary, and dry or fleshy frs. some of which contain a woolly or cottony fiber. Only Adansonia, Bombax, Ceiba, Chorisia, Durio, and Pachira are cult. on our southern borders. The American genus Ochroma, supplying balsa wood, renowned for its lightness, belongs in this family; the species are probably not planted in the U. S.

BÓMBAX. *Bombacaceæ.* Big trees with digitately compound lvs., large red fls. before the lvs., and capsular frs. woolly within and with woolly seeds; planted for ornament in the tropics and the lint in the pods sometimes used for fiber and the fleshy calyces eaten.

malabáricum. To 75 ft., spiny: lfts. 3–7, to 7 in. long: fls. to 4 in. long, clustered near ends of branches: fr. to 6 in. long. India to Malaya; planted in S. Fla.

BONAPARTEA HYSTRIX: *Agave stricta.*

BONAVIST: *Dolichos Lablab.*

BONESET: *Eupatorium.*

BÓNTIA. *Myoporaceæ.* One evergreen shrub or tree to 30 ft., native in W. Indies and N. S. Amer. and sometimes grown for ornament in our southernmost areas and in the tropics; much like Myoporum but fls. deeply 2-lipped. **B. daphnoìdes.** Lvs. oblong or lanceolate, to 4 in. long, willow-like: fls. yellow spotted with purple, ¾ in. long, 2-lipped, solitary or clustered: fr. yellow, pointed, ½ in. long.

BORAGE: *Borago.*

BORAGINÀCEÆ. Borage Family. Herbs, shrubs or trees, of about 85 or more genera of wide range, prevailingly with bristly hairs, having mostly alternate simple lvs. and bisexual regular fls. with 5-lobed calyx and corolla, 5 stamens, superior 2- or 4-celled ovary, and fr. commonly composed of 4 nutlets; in the herbaceous groups, the fls. are usually small but many or numerous and borne in one-sided scorpioid spikes or racemes; the colors in blue are likely to fade or change to pink; other colors abound, as yellow and orange, white, shades of red. The family furnishes medicinal plants and dyes, and also many ornamental subjects in the genera Adelocaryum, Anchusa, Arnebia, Borago, Brunnera, Caccinia, Cerinthe, Cordia, Cryptantha, Cynoglossum, Echium, Ehretia, Eritrichium, Euploca, Heliotropium, Lappula, Lindelofia, Lithodora, Lithospermum, Mertensia, Moltkia, Myosotidium, Myosotis, Omphalodes, Onosma, Onosmodium, Oreocarya, Pentaglottis, Pulmonaria, Solenanthus, Symphytum, Trachystemon.

BORÀGO. Borage. *Boraginaceæ.* Hairy Medit. herbs with alternate simple lvs. and blue saucer-shaped fls. in open leafy cymes, throat filled by scales, stamens forming a cone; one or two grown in the flower-garden and *B. officinalis* sometimes as a pot-herb and for bees. Propagated by seeds sown in spring, by division or cuttings.

laxiflòra. Decumbent per.: lvs. oblong or ovate: fls. pale blue, drooping, on long pedicels. Corsica.—Good for the rock-garden.

officinàlis. Ann. to 2 ft.: lvs. oblong or ovate: fls. blue, purple or white. Eu., N. Afr.

orientàlis: *Trachystemon orientale.*

BORÁSSUS. *Palmaceæ.* Large heavy diœcious fan-palms of Asia and Afr., of 7 recognized species: trunk single and erect, unarmed: lvs. large and stiff, the petiole somewhat spiny-dentate on margins: infl. among the lvs.; staminate infl. long and much branched, the fls. under closely imbricated bracts in dense spikes 1 in. diam. and about 1 ft. long, the stamens 6; pistillate infl. smaller and little branched, the fls. fewer: fr. a large drupe-like body with 1–3 seeds, subtended by enlarged perianth-parts.

flabéllifer. Palmyra Palm. To 100 ft. and trunk to 3 ft. diam., old lvs. hanging on young trees: lvs. to 10 ft. across, many-cleft, rigid: fr. 6–8 in. diam., depressed-globular, with fibrous pulp. India and Malaya.—Much planted in S. Asia for its many uses and products; once intro. in S. Fla.

BORDER. In the horticultural sense a border is a narrow planting along a boundary or division line (as a walk or road) or against a building or wall or foot of slope, although the term is sometimes inaccurately employed for any long narrow or strip planting even though it has no relation to margins or confines. Ordinarily it is 5 feet or less broad so that it can be planted and tended from one side, but it may be broader if there is easy access from either side. A border is properly not only a place in which plants can be conveniently grown, but it has relation to the lay-out and subdivision of the home property. A good border, well placed for the growing of plants, provides an attractive receiving plot for accessions, and should afford a never-ending variety in bloom and vegetation.

The border receives different designations, depending on the kinds of plants; it may be a shrub border, a flower border, a hardy border for native and other hardy plants, a vine border. As a rule, the most effective planting is that which is thrown into masses, for one plant reinforces the other, and the flowers have a good setting or background. Very striking displays of foliage and flowers and plant forms can be made when massed. Plants are more easily grown when planted in a border, since the whole area can be kept cultivated with ease; and if a plant becomes weak or dies, its place is readily filled by the neighboring plants spreading into it. The border may be mixed,—that is, composed of a great variety of plants,—or it may be made up of one species in considerable quantity. In long and very striking borders, it is often best to have the background—that is, the back row—of one general type of plant in order to give continuity and strength to the whole group. In front of this a variety of plants may be set. Shrub borders are sometimes planted of one species only, for continuous or artistic effect.

For best results in border planting the land should be fertile. The whole area should be plowed or spaded. If the border is composed of shrubs, and is large, a horse cultivator may be run in and out between the plants for the first two or three years, since the shrubs will be set 2 to 4 feet apart. Ordinarily, however, the tillage is by hand tools. After the plants are once established and the border is filled, it is best to dig up as little as possible, for the digging disturbs the roots and breaks off the crowns. It is usually best to pull out the weeds and give the border a top-dressing each autumn of well-rotted manure. If the ground is not very rich, an application of ashes or some commercial fertilizer may be given from time to time. The border may be planted thick to allow the plants to run together, thereby giving one continuous effect. Most shrubs should be set 3 feet apart. Those as large as lilacs may go 4 feet and sometimes even more. Common herbaceous perennials, as bleeding-heart, delphiniums, bellflowers and the like, should go 12 to 18 inches. On the front edge of the border is an excellent place for annual and tender flowering plants. These herbaceous plants may be planted far enough apart to allow of full development. Spring- and summer-flowering bulbs may find good conditions in a well-made border. Into the heavy borders about the boundaries of the place the autumn leaves will drift and afford an excellent mulch. If these borders are planted with shrubs, the leaves may be left there to decay, and not all be raked off in the spring.

BORECOLE: *Kale.*

BORÒNIA. *Rutaceæ.* Australian shrubs or subshrubs with simple or compound lvs., attractive fragrant purple, red or white fls., 4-parted ovary and 4 styles, and fr. of 2–4 carpels.

Grown in a cool greenhouse in well-drained soil and out-of-doors in California. Plants should be cut back after flowering to make bushy specimens, and should be replaced by new plants after two years. Propagated by seeds and cuttings of half-ripened wood.

alàta. Mostly glabrous shrub, somewhat glaucous: lvs. to 7–11 obovate or oblong obtuse lfts., entire or crenate, to ½ in. long: fls. in terminal clusters, pink, fragrant, with very sharp petals, opening wide.

elàtior. To 4 ft.: lvs. of 5–13 linear lfts.: fls. rose-red or purplish, nodding, about ¼ in. long, not wide-opening.

heterophýlla. Glabrous tall shrub to 6 ft.: lvs. sometimes simple and linear, to 2 in. long, sometimes with 3 or 5 linear lfts.: fls. pink or scarlet, drooping, solitary on axillary whorled peduncles, to ½ in. diam., not opening widely.

megastígma. To 2 ft.: lvs. of 3–5 linear lfts.: fls. purple, yellow inside, rather open.

spathulàta. Glabrous and glaucous undershrub: lvs. simple, spatulate to obovate or lanceolate, but broad-ovate on young branches, mostly obtuse, to about 1 in. long: fls. small, pink, in little terminal clusters.

vimínea. Glabrous small shrub: lvs. simple, linear-lanceolate, to 1 in. long: fls. solitary, axillary and terminal, the petals to ¼ in. long.

BORZICÁCTUS. *Cactaceæ.* Erect or procumbent cacti, usually with numerous low ribs and areoles close together bearing needle-like spines: fls. solitary, orange to scarlet or white, diurnal, tube short.

acanthùrus (*Cereus acanthurus*). Branches hanging or procumbent, to 1 ft. long and 1½ in. diam.; ribs 15–18, flowering areoles with tufts of white wool; central spines to ⅝ in. long: fls. scarlet, 1 in. across. Peru. Var. **fèrox** has longer spines.

decúmbens: *Haageocereus decumbens.*

eriótrichus. St. semi-prostrate, to 1½ ft. long, branching from the base; branches to 1¾ in. thick, 15–16-ribbed, latter straight, to $\frac{3}{16}$ in. deep; areoles large, white, to ⅜ in. apart; radial spines about 16 or less; central spines 3–6, to ½ in. long: fls. red: fr. yellowish-green. Peru. Var. **longispìnus** has longer spines.

Faustiànus. St. erect or prostrate, to nearly 4 ft. long and about 2 in. diam., bright green, branched from base; ribs 12, acute, narrow; spines 30 or more, to ⅝ in. long, yellowish. Peru.

Húmboldtii: *Binghamia Humboldtii.*

icosagònus: *Binghamia icosagona.*

Jajoiànus. Cespitose, erect to decumbent, to 2 ft. tall, pale green, joints about 2¼ in. thick; ribs about 12, low, obtuse; radial spines about 20, to ¼ in. long; centrals 1–4, swollen at base, pale yellow: fls. orange. S. Peru.

Morleyànus. Clump-forming, branches erect or pendulous, to 2½ in. diam.; ribs 13–16, rounded, tuberculate; spines 15–20, bristly or acicular, to 1 in. long: fls. to 2½ in. long, perianth-segms. slightly spreading. Ecuador.

plagiostòma: *Binghamia Humboldtii.*

platinospìnus (*Cereus* and *Haageocereus platinospinus*). Branches decumbent, ascending at tips; ribs about 13, areoles gray-tomentose; radial spines 10–13 and ½ in. long; centrals 2–4 and 2 in. long. Peru.

Straùsii: *Cleistocactus Strausii.*

BOSCIA UNDULATA: *Vepris lanceolata.*

BÒSEA. *Amaranthaceæ.* Upright shrubs with alternate entire lvs., small fls. in terminal spikes or racemes, and ornamental crimson berries; native in Canary Isls., Cyprus and Himalayas. Hardy only in S. U. S. Propagated by seeds and cuttings.

Amherstiàna (*Deeringia Amherstiana*). Lvs. ovate, to 7 in. long: fls. greenish, perfect, with 2–4 basal bracts, in terminal panicles: berries ⅙ in. across. Himalayas. Var. **variegàta** is listed.

Yervamòra. Differs in its short-stalked polygamous fls. which have only 2 bracts at base. Canary Isls.

BOSSEKIA: *Rubus deliciosus* and others.

BOSSIǼA. *Leguminosæ.* Australian shrubs with simple mostly entire lvs., yellow, orange or red papilionaceous fls. solitary or in clusters, and flat pods; intro. in S. Calif.

Aquifòlium. Lvs. opposite, broad-cordate, to ¾ in. across, prickly-toothed: fls. yellow, about ½ in. long, solitary.

bîloba. To 1½ ft.: lvs. alternate, linear or broader, to 2 in. long, retuse or 2-lobed, margins revolute: fls. to ¾ in. long.

ornàta. To 2 ft.: lvs. alternate, ovate to lanceolate, to 2 in. long: fls. to ¾ in. across, in clusters.

BOTANIC GARDEN. A controlled and staffed institution for the maintenance of a growing collection of plants under scientific management and control for purposes of education and research, together with such libraries, herbaria, laboratories and museums as are essential to its particular undertakings. Each botanic garden naturally develops its own special field, depending on the personnel, location, extent, available funds, as well as on the terms of its charter. It may include greenhouses, test grounds, herbary, arboretum and other departments. It maintains a scientific as well as a plant-growing staff, and publication is one of its major modes of expression.

The botanic garden may be an independent institution, or it may be connected or affiliated with a college or university. If a department of an educational institution it may have close relation with the teaching program; but in any case it exists for scientific ends and is not to be restricted or diverted by other demands. It is not a landscape or ornamental garden although it may be artistic, nor an experiment station, nor yet a park with labels on the plants. The essential element is the intention of the enterprise, which is the acquisition and dissemination of botanical knowledge.

BOTHRIOCLINE: *Erlangea tomentosa.*

BO-TREE: *Ficus religiosa.*

BOTRÝCHIUM. Grape-Fern. Moonwort. *Ophioglossaceæ.* Mostly somewhat fleshy ferns with short underground sts. each of which sends up a single petiole bearing a 1–3-pinnate blade and an erect panicle of sessile sporangia arranged like grapes; native chiefly of temp. regions of both hemispheres, many in the U. S.; the species are mostly not showy and they do not commonly appeal to the cultivator. See *Ferns.*

califórnicum: see *B. multifidum.*

disséctum. Hardy, to 1½ ft.: blades to 6 in. across, ternately compound into finely dissected segms., evergreen. N. S. and Que. to S. C., Tenn. and Mo. Var. **obliquum** (*B. obliquum, B. ternatum* var. *obliquum*) has blades ternately divided into entire or finely toothed segms. to 1 in. long.

Lunària. Hardy, to 10 in.: blades pinnate into lunate entire or toothed segms. N. and S. Amer., Eu., Asia, Australia.

matricariæfòlium (*B. ramosum*). Hardy, to 1 ft.: blades sessile or short-stalked, 1–2-pinnate, segms. toothed or divided. N. Amer., Eu., Asia.

multífidum. Very variable, from 2 in. to 1½ ft.: blades thick, from ½ in. to 1 ft. wide, ternately decompound into obliquely ovate segms., entire or minutely toothed. N. Amer., Eu., Asia.—*B. californicum* (*B. silaifolium* var. *californicum*), a large lax plant of Calif., and *B. silaifolium* (*B. ternatum* var. *intermedium*), the common plant of the northern and western U. S. and southern Canada, with large coriaceous blade, are to be referred here as subspecies or geographical varieties.

oblìquum: *B. dissectum* var.

ramòsum: *B. matricariæfolium.*

silaifòlium: see *B. multifidum.*

ternàtum: the plant cult. under this name is *B. dissectum* var. *obliquum.*

virginiànum. Rattlesnake-Fern. Hardy: blades to 2½ ft. high, broadly triangular, ternate, the segms. pinnate and much cut. N. Amer., Eu., Asia.

BOTTIÒNEA. *Liliaceæ.* One bulbous per. herb from Chile. **B. thysanoloìdes** (*Anthericum plumosum. Trichopetalum gracile*). To 16 in.: lvs. to 10 in. long, linear-subulate, strongly channelled, glabrous: fls. white, to ⅝ in. across, usually in 2's at end of simple glabrous scape, inner perianth-segms. fringed with many white hairs. Differs from Anthericum in having glabrous stamens, oblong caps., short straight style and fringed inner petals.

BOTTLE-BRUSH: *Callistemon, Melaleuca.*

BOTTLE-TREE: *Brachychiton.*

BOUGAINVÍLLEA. *Nyctaginaceæ.* The cult. kinds grown as woody vines but may be trained as standards, in the open far S. and in greenhouses N.: lvs. simple, alternate, ovate to elliptic-lanceolate, commonly entire: fls. inconspicuous, inclosed by showy mauve, magenta, purple or red corolla-like bracts: native in S. Amer. Many forms bear Latin names as though they were species. The generic name was originally made *Buginvillæa*, a Latinization of the personal name De Bougainville, and it is the correct spelling under the Rules. The international committee now proposes that the current usage Bougainvillea be adopted; this eliminates the digraph *æ* and does not throw the entry out of accustomed alphabetic sequence.

Of easy cultivation in any soil, thriving best in full sunshine; in the North grown as pot-plants in a cool greenhouse. Propagated by cuttings, some kinds more easily than others.

brasiliénsis: *B. spectabilis.*

glàbra. Glabrous or nearly so: lvs. slender-pointed and with narrow base: bracts purple or magenta, running into lighter shades. Brazil. Var. **Cỳpheri** is larger with deep rose bracts. Var. **Sanderiàna,** Paper-Flower, is a floriferous form. Var. **variegàta** has lvs. variegated with white.

Hárrisii. Lvs. dark green marbled with creamy-white; probably a form of *B. glabra.*

lateritia: *B. spectabilis* var.

Lindleyàna. Hairy, with strong curved spines: lvs. acute, slightly wavy: bracts cinnabar-red.

magnífica: listed name.

prætòria. Recorded as a sport from Crimson Lake, with yellow bracts turning to golden-salmon.

refúlgens. Pubescent: bracts purple, the racemes long and drooping. Probably a form of *B. spectabilis.*

ròsa-catalìna: a hort. form with rich rose bracts.

ròsea-speciòsa. Resembling *B. Lindleyana* but lvs. and bracts smaller.

Sanderiàna: *B. glabra* var.

spectábilis (*B. brasiliensis*). More or less pubescent or tomentose; lvs. short- or blunt-pointed and broad at base: bracts in shades of red. Brazil. Var. **Crimson Lake** has bright crimson bracts, and var. **lateritia** brick-red bracts. Yellow bracts are reported.

Thómasii. Listed as a hybrid with red bracts of deeper color than *B. spectabilis* var. *lateritia.*

BOUNCING BET: *Saponaria officinalis.*

BOUSSINGAÚLTIA. *Basellaceæ.* Trop. American per. vines with alternate fleshy lvs. and small fls. in spike-like racemes.

Grown for ornament out-of-doors in warm regions and under glass in cold regions; also root-hardy North. Propagated by seeds, division of roots and by tubercles produced in leaf-axils.

basellòides. Madeira-Vine. Mignonette-Vine. Tall vigorous twiner: lvs. ovate, to 3 in. long: fls. white, fragrant, the racemes sometimes 1 ft. long, in late summer or autumn.

BOUVÁRDIA. *Rubiaceæ.* Mostly shrubs native in Mex. and Cent. Amer., with opposite or whorled lvs., tubular 4-lobed red, yellow or white fls. in terminal cymes, sometimes solitary, and capsular fr.

Bouvardias are grown in the greenhouse and were once very popular. Many of the old florists kinds are supposed to be hybrids. They thrive in a temperature of about 55° in rich soil with abundant water. Propagated by root-cuttings and cuttings of fresh shoots taken with a heel and placed over bottom heat.

Hárlandii: listed name of hort. form said to be dwarf and compact, to 3 ft. tall.

Húmboldtii. Lvs. opposite, ovate: fls. white, fragrant, to 2½ in. long and 1¼ in. across. Hort. form.

Jácquinii: *B. ternifolia.*

leiántha. Lvs. in whorls of 3–5, ovate, to 3 in. long, pubescent beneath: fls. deep red, ½ in. long, glabrous outside. Mex. to Costa Rica.

longiflòra. To 5 ft.: lvs. opposite, ovate or lanceolate, to 2 in. long: fls. white, to 3½ in. long, glabrous outside, solitary. Mex.

ternifòlia (*B. Jacquinii. B. triphylla*). To 6 ft.: lvs. in 3's and 4's, lanceolate to ovate: fls. red, to 1¼ in. long, pubescent outside. Mex., W. Tex.

triphýlla: *B. ternifolia.*

BOWER-PLANT: *Pandorea jasminoides.*

BOWIEA: *Schizobasopsis.*

BOWKÈRIA. *Scrophulariaceæ.* S. African shrubs or trees with lvs. usually in 3's and 2-lipped fls.; may be grown in S. Calif.

Gerrardiàna. Shrub to 10 ft.: lvs. oval-lanceolate, to 6 in. long, finely toothed, paler beneath: fls. white, upper lip to ½ in. long and ⅔ in. broad.

triphýlla. Very similar to the above but differing in the narrow upper lip of corolla.

BOX: *Buxus, Eucalyptus.* **Brisbane:** *Tristania conferta.* **-Elder:** *Acer Negundo.* **-Thorn:** *Lycium.* **Victorian:** *Pittosporum undulatum.*

BOYKÍNIA (*Therofon*). *Saxifragaceæ.* Per. American herbs with creeping rootstocks, alternate broad lvs. and white fls. in cymes or panicles; useful in the wild- or rock-garden; native mostly in woods and mts.

elàta (*B. occidentalis*). To 2 ft.: lvs. 1–4 in. across, deeply lobed and toothed: petals much longer than calyx-lobes. Calif.

Jàmesii (*Telesonix Jamesii*). To 4 in.: lvs. round-kidney-shaped, to 1¼ in. wide, deeply wavy-toothed: fls. reddish-purple, in contracted leafy panicle. Colo.

màjor. To 3 ft.: lvs. 4–8 in. across, cut and toothed: petals slightly longer than calyx-lobes. Ore., Calif.

occidentàlis: *B. elata.*

ranunculifòlia: *Hemieva ranunculifolia.*

rotundifòlia. To 2 ft.: lvs. 2–7 in. across, shallowly lobed and toothed: petals only slightly longer than calyx-lobes. Calif.

tellimoìdes (*Saxifraga tellimoides*). To 3 ft.: lvs. to 5 in. across, 7–9-lobed: fls. greenish, petals twice or more longer than calyx-lobes. Japan.

BOYSENBERRY. A recent offshoot of the well-known loganberry group (*Rubus loganobaccus*) produced in California but exact parentage unknown, named after Rudolf Boysen who was instrumental in its introduction. It is a dewberry, much like the Young but later in ripening. Berries are large, as much as 1½ inches long and three-fourths as thick, dark wine-red to almost black, juicy, soft when ripe, tart in flavor. In the northeastern country it requires or profits by winter protection, a safeguard readily provided inasmuch as the canes may be laid down and covered with straw. It should be grown on trellis or wires, and much room should be provided; canes may grow 8–10 feet. The general culture is as for loganberry and the dewberries. The berry is established as a home and market fruit in California, and has given promising results in many parts of the East.

BRACHÝCHITON. Bottle-Tree. *Sterculiaceæ.* Australian trees sometimes with swollen trunk, bearing alternate entire or palmately lobed lvs., unisexual or polygamous fls. without petals but the calyx mostly corolla-like and bell-shaped, commonly in axillary panicles, and fr. a woody follicle, tardily dehiscing; planted for ornament in southern regions, and particularly in Calif. Propagated by seeds and cuttings of ripened wood.

acerifòlium (*Sterculia acerifolia*). Flame-Tree. To 60 ft.: lvs. deeply 5–7-lobed, to 10 in. across, shining: fls. bright scarlet: fr. black, to 4 in. long.

Bídwillii (*Sterculia Bidwillii*). Shrub or tree, tomentose: lvs. deeply 3-lobed: fls. red.

díscolor (*Sterculia discolor*). Lvs. irregularly 5–7-lobed or angled, white-tomentose beneath, to 6 in. across: fls. livid: fr. to 6 in. long, densely rusty-tomentose.

diversifòlium: *B. populneum.*

lùridum (*Sterculia lurida*). Lvs. palmately 5–7-lobed, pubescent on both sides: fls. livid and variegated: fr. to 6 in. long, tomentose.

popúlneum (*Sterculia diversifolia*). Kurrajong. To 60 ft.: lvs. ovate and entire or 3–5-lobed, to 3 in. long, shining: fls. yellowish-white, reddish inside: fr. to 3 in. long. Var. **occidentàlis** (*Sterculia Gregori*) has deeply 3-lobed lvs. and salmon-pink fls.

rupéstris (*Sterculia rupestris*). Tree with swelling trunk often contracted at top and bottom: lvs. oblong-linear, entire, to 6 in. long, or digitately compound into 5–9 linear-lanceolate lfts.: fls. tomentose: fr. 1 in. long.

BRACHÝCOME. *Compositæ.* Herbaceous annuals and perennials with simple or branching sts., basal or alternate lvs., entire or more or less pinnately cut: heads solitary or loosely clustered at ends of branches; ray-fls. white, blue or lilac; pappus of bristles or scales or lacking. Of easy cult. in the flower-garden. Propagated by seeds.

iberidifòlia. Swan River Daisy. Ann., branching, to 1½ ft.: lvs. alternate, pinnate into narrow segms.: heads 1 in. across, blue, rose or white. Australia.—A good edging and border ann.

ròsea: hort. name, probably for color form of *B. iberidifolia.*

BRACHYGLÓTTIS. *Compositæ.* New Zealand shrubs or small trees with large lobed lvs. and small heads borne in terminal branched panicles, with ray- and disk-fls.; pappus bristly. Grown out-of-doors in S. Calif.

Rangiòra. To 14 ft.: lvs. to 15 in. long, sinuate, white-tomentose beneath, glossy above: heads ⅙ in. long, involucral bracts purplish.

repánda. To 20 ft.: lvs. to 1 ft. long, sinuate, white-tomentose beneath, dull above: heads ⅙ in. long, involucral bracts white, shining. Var. **variegàta** is listed.

BRACHYPÒDIUM. *Gramineæ.* Slender ann. or per. grasses mostly of the north temp. zone, having many-fld. flattened spikelets borne in spike-like racemes; a few sometimes grown for ornament. See *Grasses.*

distàchyon. Ann. to 1½ ft.: lvs. to 4 in. long and ⅙ in. wide, slightly hairy: racemes to 3 in. long, awns to ¾ in. long. Medit. region, S. Afr.

grácile: *B. sylvaticum.*

sylváticum (*B. gracile*). Per. to 4 ft.: lvs. to ⅔ in. across, flaccid, hairy: racemes nodding, to 6 in. long, awns to ⅓ in. long. Medit. region, Asia.

BRACHYSÈMA. *Leguminosæ.* Australian shrubs with simple lvs., mostly red papilionaceous fls. solitary or clustered, and swollen pods; cult. out-of-doors in S. Calif.

acuminàtum. Subshrub, often spreading: lvs. opposite, oval-elliptic, silvery-canescent beneath.

lanceolàtum. To 3 ft.: lvs. usually opposite, lanceolate, to 4 in. long, silvery-canescent beneath: pods about ⅓ in. long.

BRACKEN: *Pteridium.*

BRACT: a much-reduced leaf, particularly the small or scale-like leaves in a flower-cluster or associated with the flowers and on the upper part of flowering stems.

BRACTEOLARIA: *Baphia.*

BRACTLET: bract borne on a secondary axis, as on the pedicel or even on a petiole.

BRADBURYA: *Centrosema.*

BRÀHEA. Rock Palms. *Palmaceæ.* A very few determined species of Mexican fan-lvd. palms, inhabiting calcareous hills, some of them not yet well understood and of doubtful generic position: trunks solitary or sometimes eventually sprouting from near the base, unarmed: lvs. of medium size, stiff, perhaps thinly glaucous, the petiole in most species bearing small callous teeth: spadices interfoliar, mostly exceeding the lf.-blades, the many branches not subtended by spathes; fls. sessile and more or less immersed on tomentose or pubescent branchlets of spadix, hermaphrodite: fr. small, about ½ in. long, oblong to nearly globular. The names *B. calcarea* and *B. Pimo* are sometimes mentioned but it is doubtful whether intro. to our territory and they are not true Braheas. *B. armata* and *B. glauca* are *Erythea armata; B. edulis* is *Erythea edulis* and *B. filifera* is *Washingtonia filifera.* For cult., see *Palms.*

dúlcis. The common species, probably intro. in Calif.: trunk stout, to 20 ft., bearing scars of old lvs. or at top covered with old lvs., naked at base: lvs. 4–5 ft. lengthwise, green, divided to middle or beyond into about 60 rather broad long-pointed and deeply bifid long-hanging segms., the filaments few; petiole rather slender, coarsely retrorse-spiny: spadix to 5 or 7 ft. long, pendulous; fls. partly immersed, the branchlets terete and thick and densely tomentose: fr. oblong-ellipsoid, yellow and succulent; seed free from endocarp. Mex.

BRAKE: *Pteridium, Pteris.* **Cliff-:** *Pellæa.* **Rock-:** *Cryptogramma.*

BRAMBLES: *Rubus.*

BRASÈNIA. *Nymphæaceæ* (or *Cabombaceæ*). One aquatic herb, often in deep water, native in N. Amer., Asia, Afr. and Australia, grown sometimes in ponds. Propagated by seed or division of roots. **B. Schrèberi** (*B. peltata. B. purpurea*). Water-Shield. Lvs. floating, to 4 in. long and 2 in. wide, peltate, submerged parts coated with thick transparent jelly: fls. purple, ½ in. across, on long axillary peduncles: fr. ⅓ in. long, of separate carpels.

BRASSÀIA. *Araliaceæ.* A tree sometimes included in the genus Schefflera, now somewhat planted in S. Fla., from Australia, with stiff digitate lvs. and small involucrate fls. in dense little short-stalked globular heads that form long racemes with stout woody axis and that may become paniculate: petals 7–18, less prominent than the stamens of equal number: fr. a globose drupe. **B. actinophýlla,** to 40 ft. with glabrous parts and glossy foliage: lfts. 7–16, long-stalked, the blades long-oblong and entire, to 1 ft. long: raceme sometimes a few ft. long.

BRASSÁVOLA. *Orchidaceæ.* Trop. American epiphytes having stem-like pseudobulbs, fleshy lvs. and fls. solitary or in short racemes, the sepals and petals narrow and spreading, the lip entire and often toothed, attached to column at base. For cult. see *Orchids.*

cucullàta. Pseudobulbs to 7 in. high, bearing a lf. to 9 in. long: fls. usually solitary, the sepals and petals orange, yellow or white, the lip white, toothed on edges, with long point. May–Dec. Mex. to Honduras, Venezuela, Colombia and W. Indies.

Digbyàna: *Lælia Digbyana.*

glaùca: *Lælia glauca.*

nodòsa. Pseudobulbs 1–4½ in. high, bearing 1 lf. to 9 in. long: fls. solitary and short-stalked; sepals and petals greenish-yellow or white, linear, to 3 in. long; lip white, not toothed. Jan.–Dec. W. Indies, Cent. Amer., Colombia, Venezuela, Surinam.

BRASS-BUTTONS: *Cotula coronopifolia.*

BRÁSSIA. *Orchidaceæ.* Epiphytes native in trop. Amer., with pseudobulbs bearing 1 or 3 lvs. and fls. in lateral racemes, the sepals and petals narrow and long-pointed, often tail-like, the lip entire and shorter than the sepals. Grown in an intermediate temperature; see *Orchids.*

antheròtes. Fls. deep yellow, sepals and petals blotched with blackish-purple. Colombia, Ecuador.

brachiàta. Pseudobulbs to nearly 5 in. high, bearing 2 linear-lanceolate lvs. to 1 ft. long: scapes to 3½ ft. long, bearing a 7–10-fld. raceme; sepals about 8 in. long, yellowish-white marked with brown below, the petals about half as long; lip light yellow marked with green. July–Oct. Guatemala.

caudàta. Pseudobulbs to 6 in. long: lvs. oblong or oblong-elliptic, acute, to 11 in. long: infl. a raceme of 6–15 fls.; sepals and petals greenish-yellow with brown spots on basal half, the lateral sepals to 6 in. long, petals to 1 in. long; lip light yellow with brown spots. Jan.–Aug. Fla., W. Indies, Cent. Amer.

Gireoudiàna. Pseudobulbs to 5 in. high, bearing 2 oblong or elliptic-oblong lvs. to over 17 in. long and 2 in. wide: scapes to over 2 ft. long, usually 7–10-fld.; sepals linear-lanceolate, tapering, to 6 in. long, cream-color or greenish-yellow, spotted with brown on basal third; petals to 2½ in. long, yellow, spotted with brown on lower half. Dec.–May. Costa Rica, Panama.

Keiliàna. Pseudobulbs much compressed, to 2 in. high, narrowly ovate, bearing 1 strap-shaped lf. to 10 in. long: scapes equalling or surpassing the lvs., few- or many-fld.; bracts equalling or surpassing the pedicelled ovary; fls. yellow, spotted with brown; sepals to 3 in. long, the petals to 1¾ in. long; lip whitish. May–June. Colombia, Venezuela.

Lawrenceàna. Pseudobulbs over 2 in. long, bearing 2 oblong or lanceolate lvs. to 8 in. long: scapes to 8 in. or more long; sepals and petals greenish or bright yellow spotted with brown, the former to almost 3 in. long, the lip bright yellow. May–June. British and Dutch Guiana, Brazil.

longíssima (*B. Lawrenceana* var. *longissima*). Pseudobulbs to 5 in. high, bearing 1 or 2 lvs. to 15 in. long and 2½ in. wide: scapes to 2 ft. long, with a 10–15-fld. raceme; sepals and petals golden-yellow or greenish-yellow spotted with brown at base, the lateral sepals to 12 in. long; lip acuminate, pale yellow or white spotted with red-brown. Feb.–Oct. Costa Rica.

maculàta. Differs from *B. longissima* in lateral sepals only 2–3 in. long, smaller petals and much broader acute lip. Apr.–June, Oct. W. Indies, Cent. Amer.

verrucòsa. Pseudobulbs to 3 in. or more long, bearing 2 oblong or elliptic-oblong lvs. to 1 ft. long: scapes to about 2½ ft. long, with 4–16-fld. racemes; sepals and petals green or yellowish spotted at base with brown, the former to 5 in. long; lip warty, white spotted with dark green below. Apr.–June. Mex., Guatemala, Honduras, Venezuela.

BRÁSSICA (incl. *Sinapis*). Coles. Mustards. *Cruciferæ.* Mostly ann. and bien. herbs, sometimes per., yielding many edible plants: see *Broccoli, Brussels Sprouts, Cabbage, Cauliflower, Collards, Kale* (Borecole), *Kohlrabi, Mustard, Pe-tsai, Rape, Rutabaga, Turnip.* The species are probably 40 or more, original in the Old World, but the nativity of many of them is unknown; some of them are widespread weeds. They are erect, tall branched and for the most part glabrous often glaucous plants with variously pinnatifid or lyrate or strongly toothed lower lvs., yellow or yellowish-white or sometimes white fls. in terminal racemes in spring and summer, pods or siliques elongated. The cult. is simple; they are essentially cool-season subjects.

acéphala: *B. oleracea* var.

álba: *B. hirta.*

alboglàbra. Ann., perhaps sometimes living over winter, glabrous and very glaucous, to 3 ft.: lvs. thick, lower ones oval, sinuate, to 10 in. long, auricled or lobed at base of blade, long-stalked, upper st.-lvs. long-oblong and petioled or not clasping: fls. white, large, cabbage-like: pod 2–3 in. long. Probably from Orient, there grown as pot-herb.

arvénsis: *B. kaber.*

botrŷtis: *B. oleracea* var.

bullàta: form of *B. oleracea* var. *capitata.*

campéstris. Ann., in grain fields eastward and a great weed on Pacific Coast, glaucous all over, 2–6 ft.: lvs. clasping, the lower ones variously lyrate-lobed: fls. small, bright yellow: pod 2–3 in. long.

capitàta: *B. oleracea* var.

cauliflòra: *B. oleracea* var. *botrytis.*

cauloràpa. KOHLRABI. Low bien., glabrous and glaucous: st. swelling just above ground into the "turnip" or edible part: lvs. rather small, 10 in. or less long, with oval dentate blade and long petiole: fls. cream-yellow: pod 2–3 in. long, with short thick beak.

chinénsis. PAK-CHOI. Ann. or bien., glabrous, somewhat glaucous at maturity: lower lvs. shining green making a rather compact crown or cluster to 20 in. high but not a head, obovate and entire or nearly so, the petiole white and narrowly winged or margined but not jagged, st.-lvs. clasping: fls. pale yellow, ¾ in. long: pod to 2½ in. long. Grown as pot-herb.

fimbriàta. KITCHEN KALES, formerly included in *B. oleracea* var. *acephala.* Low dwarf plants producing much edible herbage for winter and spring use, then going to seed: lvs. oblong or narrower, deeply side-lobed and curled or fringed, glaucous-blue and sometimes purplish: fls. large, light yellow: seeds small, more or less angled. Dwarf Siberia and Scotch kales belong here.

gemmífera: *B. oleracea* var.

hírta (*B.* and *Sinapis alba*). WHITE MUSTARD. Ann. to 4 ft., sparsely hairy: lvs. oval to obovate, deeply divided on sides: fls. yellow, about ½ in. long: pod to 1½ in. long, spreading, lower part seed-bearing and nodulose, beak flat.

japónica: *B. juncea* var. *crispifolia.*

júncea (*Sinapis juncea. B. rugosa*). LEAF MUSTARD. Ann., green but st. sometimes slightly glaucous, to 4 ft.: lower lvs. oval to obovate, rather thin, lyrate-lobed or divided, with toothed or scalloped edges, st.-lvs. narrowed at base but not clasping: fls. bright yellow: pod to 1½ in. long. Sometimes run wild. The commonest form of leaf mustard for greens, often in the var. **crispifòlia** (*B. japonica* of hort. but not botanically) known as Southern Curled. Var. **foliòsa** comprises forms with very large broad lvs. grown for greens. Var. **lóngidens** has long narrow lvs. with prong-like large teeth. Var. **multisécta** has finely divided lvs.

kàber (*B.* and *Sinapsis arvensis*). CHARLOCK. Ann. to 3 ft. or more, green, commonly hispid toward base and sometimes above: lvs. ovate to oblong-ovate, variously lobed or lyrate, not clasping: fls. small, yellow: pod about ¾ in. or less long, nodulose, beak often ½ in. or more long. Sometimes cult. for mustard. The naturalized plants in the New World are varieties of this species.

Napobrássica. RUTABAGA. Bien., very glaucous and thick-lvd., glabrous, the underground tuber with solid yellow or white flesh and with long neck or crown and often withstanding winter in the N.: lvs. large and long, lyrate-pinnatifid, those on st. with clasping base: fls. light yellow to whitish-yellow: pod much spreading on stout pedicels, the beak stout and short. Var. **solidifòlia** has long not-lobed radical lvs.

Nàpus. RAPE. COLZA. Ann., but late-sown plants pass the winter and bloom following spring, making thin tap-root: otherwise much like *B. Napobrassica* except that the pods are ascending on rather thin pedicels and the beak is slender and commonly ⅓ in. or more long.

narinòsa. Stout low glabrous not glaucous bien., bearing short clusters of orbicular-ovate small puckered mostly entire lower lvs. with broad whitened petioles; st.-lvs. very broad and clasping, entire: fls. yellow: pod very thick and relatively short, ¾ in. or less long and ½ or ⅓ as broad, the beak very short and stout. Grown for pot-herb by Chinese.

nìgra (*Sinapis nigra*). BLACK MUSTARD. Tall ann. to 6 ft. and more, mostly hispid-hairy at least below, little if at all glaucous: lvs. pinnatifid or lobed, terminal part large, petioled, dentate: fls. yellow, in many short racemes: pod 1 in. or less long, 4-sided, appressed to rachis. A widespread weed, and as a cult. plant a main source of table mustard.

oleràcea. Thick-lvd. glaucous per. (probably also bien.) on coasts of W. England, represented in cult. by many races: lower lvs. to 20 in. long, rounded or obovate, lobed at base; st.-lvs. narrow, long, sometimes clasping: fls. whitish-yellow or cream-yellow, large, to 1 in. long: pod to 4 in. long, spreading; seeds large and rounded. Not in cult. except now and then in test grounds. Var. **acéphala** (*B. acephala*) comprises forms without heads or dense rosettes: TALL or TREE KALE, COW-CABBAGE. Var. **botrŷtis** (*B. botrytis*) has whitish heads formed of thickened transformed fl.-clusters: CAULIFLOWER, BROCCOLI. Var. **capitàta** (*B. capitata*) has one dense head of consolidated lvs.: CABBAGE (one form being Savoy, sometimes known as var. *bullata* or *B. bullata*). Var. **gemmífera** (*B. gemmifera*) has small compact buds or heads in lf.-axils along the st.: BRUSSELS SPROUTS, known commonly as "SPROUTS." Var. **itálica** with thickened fl.- branches not condensed into a solid head: SPROUTING, BRANCHING or ASPARAGUS BROCCOLI. Var. **Tronchùda,** a low, cabbage-like plant without head and with broad midribs: PORTUGUESE CABBAGE or KALE. See *B. fimbriata.*

parachinénsis. FALSE PAK-CHOI. Like *B. chinensis* but with radical lvs. more orbicular and petiole not margined, st.-lvs. narrowed to base and not clasping. Grown by Chinese as pot-herb.

pekinénsis (*B. Pe-Tsai*). PE-TSAI (which see). CELERY CABBAGE. Ann. with green soft foliage, glabrous or essentially so: basal lvs. large and very broad, with undulate or obscurely toothed margins, the petiole broad, flat and with jagged wings, st.-lvs. either stalked or clasping: fls. light yellow: pod to 2½ in. long. Grown as a cool-season vegetable, the lvs. forming a more or less solid attractive head.

pervíridis. TENDERGREEN. Lower foliage abundant and tender, spatulate-oblong and nearly entire, not lobed on petiole, glossy-green both surfaces, root not tuberous: fls. large: seeds small, somewhat angled.

Pe-Tsài: *B. pekinensis.*

purpurària. PURPLE MUSTARD. Ann., with sts. and ribs of lvs. purple: lower lvs. lyrate-pinnatifid with broad ribs and veins: fls. small, at first crowded: seeds small, somewhat angled. Planted for greens.

Ràpa. TURNIP. Green-lvd. bien., with white- or yellow-fleshed flat or globular tuber not bearing a long neck or crown and that does not withstand the winter in the N.: lvs. soft but hispid, to 20 in. long, lyrate-pinnatifid, st.-lvs. clasping: fls. yellow: pod 2½ in. long or less. Var. **lorifòlia,** STRAP-LEAVED T., has radical lvs. nearly or quite unlobed.

rugòsa: *B. juncea.*

Rùvo. TURNIP BROCCOLI. Bien. if sown in autumn, the young spring shoots eaten, ann. if sown in spring, with tap-root, 2½–3½ ft. at maturity, foliage dark green and often glossy, lvs. deeply lobed to petiole: fls. small, in close clusters: pod small, about 2 in. long. Of recent intro. in N. Amer.

sépticeps (*B. Rapa* var. *septiceps*). SEVEN-TOP TURNIP. Bien., very leafy and floriferous, producing several tall sts. from one thick crown, foliage glaucous: lower lvs. deeply few-lobed, st.-lvs. clasping: fls. small, in short clusters: seeds small, angled or irregular. Young shoots used for food, and sometimes called broccoli. Spontaneous in Va. and south, perhaps also in milder regions northward.

BRASSOCATTLÆLIA. *Orchidaceæ.* Trigeneric hybrids between the genera Brassavola, Lælia and Cattleya, most of which have been given English or vernacular names. Those known to have Latin names are:

Máckayi (*B. Digbyana* × *L.-C. elegans*).

prevenústa (*B. Digbyana* × *L.-C. bletchleyensis*).

pulchérrima (*B. Digbyana* × *L.-C. Canhamiana*).

Truffautiàna (*B.-C. Leemanniæ* × *L.-C. Truffautiana*).

Victòria Regìna (*B.-L.* King Edward VII × *C. Mossiæ*).

BRASSOCÁTTLEYA. *Orchidaceæ.* A group comprising hybrids between the genera Brassavola and Cattleya.

amabalénsis (*B.-C. heatonensis* × *C. amabilis* var. *alba*).

Clíftonii (*B.-C. Digbyano-Mossiæ* × *C. Trianæi*).

Clíftonii var. **magnífica** (*B.-C. Veitchii* × *C. Trianæi*).

Fournièræ (*B. Digbyana* × *C. labiata*).

fúlgens (*B. Digbyana* × *C. Mendelii*).

heatonénsis (*B. Digbyana* × *C. Hardyana*).

Hólfordii (*B. Digbyana* × *C. Forbesii*).

Hyèæ (*B. Digbyana* × *C. Harrisoniana*).
Jéssopii (*B. Digbyana* × *C. Dowiana*).
langleyénsis (*B. Digbyana* × *C. Schroederiana*).
Leèmanniæ (*B. Digbyana* × *C. Dowiana*).
Lindleyàna (*B. tuberculata* × *C. intermedia*).
Marìæ (*B. Digbyana* × *C. Warneri*).
Maròniæ (*B. Digbyana* × *C. gigas*).
Marònii (*B. Digbyana* × *C. Mendelii*).
Massangeàna (*B.-C. Leemanniæ* × *C. Trianæi*).
mirábilis (*B.-C. Leemanniæ* × *C. Mendelii*).
Praètii (*B. Digbyana* × *C. Leopoldii*).
Rubyàna (*B.-C.* Ruby × *C. Trianæi*).
Sedènii (*B. Digbyana* × *C. Trianæi*).
speciòsa (*B.-C.* Imper. de Russie × *C. Schroederiana*).
Thórntonii (*B. Digbyana* × *C. Gaskelliana*).
Veìtchii (*B. Dibgyana* × *C. Mossiæ*).
Vilmoriniàna (*B.-C.* Mrs. J. Leemann × *C. Mossiæ*).

BRASSOLÆ̀LIA. *Orchidaceæ.* A series of hybrids between Brassavola and Lælia.

Gratríxiæ (*B. Digbyana* × *L. cinnabarina*).
Jéssopii (*B. Digbyana* × *L. xanthina*).
Veìtchii (*B. Digbyana* × *L. purpurata*).

BRASSOLÆLIOCÁTTLEYA. *Orchidaceæ.* A group of trigeneric hybrids between Brassavola, Lælia and Cattleya.

Mossmaniàna (*B.-C.* Mrs. J. Leemann × *L.-C. Firminii*).
pulchérrima (*B. Digbyana* × *L.-C. Canhamiana*).
Truffautiàna (*B.-C.* Mrs. J. Leemann × *L.-C. luminosa*).
Truffautiàna aùrea is listed as having the same parentage.

BRAUNERIA: *Echinacea.*

BRAUNSIA: *Echinus.*

BRAVÒA. *Amaryllidaceæ.* About 4 species of Mexican tuberous herbs, to be grown in well-drained sandy soils of warm regions, withstanding a few degrees of freezing temperatures when given winter protection: basal lvs. linear to lanceolate, thin, st.-lvs. small: fls. whitish to red, stalked, in racemes, perianth consisting of a long tube and unequal segms.: fr. a caps. One species, **B. geminiflòra,** is offered. To 18 in., tuber globose: lvs. 6–8, sword-shaped, usually 12–18 in. long, mostly basal: fls. bright red, in pairs, to 1¼ in. long. Cent. Mex.

BRAZIL-NUT: *Bertholletia.*

BRAZIL-WOOD: *Cæsalpinia echinata.*

BREADFRUIT. The great rough syncarp of *Artocarpus communis* (*A. incisa*), native probably in the Malayan Archipelago and now widely dispersed in the torrid zone; it is cooked for eating. The tree is large and heavy-leaved. The fruit is borne on small branches; it is commonly 4–8 inches in diameter when full grown, spherical or short-oblong. The tree is sometimes seen in economic collections under glass and may be set out in the open in the warmest parts of the continental United States, but its real culture is confined to low moist regions in the tropics. The usual breadfruit is seedless and is propagated by means of suckers and root-cuttings. The seed-bearing form, usually called breadnut, may be raised from seeds; this is grown for the seeds which are roasted or boiled.

BREADNUT: *Brosimum Alicastrum; see Breadfruit.*

BREADROOT, INDIAN: *Psoralea esculenta.*

BREVOÓRTIA. *Liliaceæ.* One California cormous herb, grown in shady well-drained locations. **B. Ìda-Màia** (*Brodiæa coccinea*). Floral Fire-Cracker. To 3 ft.: lvs. basal, linear: fls. tubular, scarlet tipped with green, 1½ in. long, nodding in umbels terminating the scape.

BRÈYNIA. *Euphorbiaceæ.* Shrubs or trees with alternate simple lvs., monœcious apetalous fls. usually solitary in the axils, and fr. a berry; native in Old World tropics. Distinguished from Phyllanthus by the absence of a disk around the base of the gynœcium and andrœcium. Grown for ornament and hedges in the warmest parts of the country and in greenhouses in the N. Propagated by cuttings of green wood and roots.

nivòsa (*Phyllanthus nivosus*). Snow-Bush. Loose-growing shrub, 3–4 ft.: lvs. oval, to 2 in. long, mottled or speckled green and white: fls. small and greenish. S. Sea Isls.; more or less run wild in Fla. and tropics. Var. **atropurpùrea** (var. *purpurea*) has dark purple lvs. and var. **ròseo-pícta** has lvs. mottled with pink and red.

BRICKÉLLIA (*Coleosanthus*). *Compositæ.* American herbs or shrubs with alternate or opposite lvs. and heads in panicles or cymes, of white, yellowish or pink disk-fls.; pappus bristly; achenes 10-ribbed. One species is grown in the border where it thrives in moist shady locations. Propagated by cuttings over heat.

grandiflòra. Tassel-Flower. Per. to 3 ft.: lvs. triangular-ovate, to 4 in. long, toothed: heads about ½ in. across, yellowish-white. W. N. Amer., in mts.

BRIDAL WREATH: *Spiræa prunifolia* and *trichocarpa;* see also *Francoa ramosa.*

BRIDGESIA: *Ercilla spicata.*

BRIER: *Rosa, Smilax.* **Sensitive:** *Schrankia uncinata.*

BRISTLY: bearing stiff strong hairs or bristles.

BRITÒA. *Myrtaceæ.* Brazilian trees allied to Pimenta, one intro. into Fla. for the edible fr.; cultural requirements similar to the guava.

ácida. Pará Guava. To 30 ft., the branchlets winged: lvs. oblong-ovate or oblong-lanceolate, to 4 in. long: fls. white, solitary in the axils: fr. sulfur-yellow, oval, to 3 in. long, with soft whitish pulp.

BRITTONÁSTRUM. *Labiatæ.* Per. herbs native in Ariz. and Mex., with toothed opposite lvs. and white, red or purple 2-lipped fls. in whorls in terminal spikes, stamens exserted; sometimes grown in the herb-garden but not hardy in the N. Propagated by division.

cànum (*Cedronella* and *Agastache cana*). To 3 ft., woody, hoary: lvs. ovate, to 1½ in. long: fls. pink, 1 in. long.

mexicànum (*Cedronella mexicana. Gardoquia betonicoides,* but the plant sold under this name may not be correct). To 3 ft., with creeping roots: lvs. ovate-lanceolate, to 2½ in. long: fls. pink, 1 in. long.

BRITTONIA DAVISII: *Hamatocactus hamatacanthus.*

BRÌZA. Quaking-Grass. *Gramineæ.* Small ann. and per. grasses having many-fld. flattened nodding spikelets borne in panicles with hair-like branchlets; native in Old World and S. Amer., a few grown for ornament.

geniculàta: *Eragrostis obtusa.*

grácilis: *B. minor.*

máxima. Ann. to 2 ft.: lvs. to 6 in. long and ¼ in. wide: spikelets ovate, ½ in. or more long, often bronzy, in panicles to 3 in. long, decorative. Medit. region.

mèdia. Per. to 2 ft.: lvs. to 3 in. long and ⅙ in. wide: spikelets ovate, to ¼ in. long, often purplish, in panicles to 10 in. long. Eu., Asia; nat. in N. Amer.

mìnor (*B. gracilis*). Ann. to 1½ ft.: lvs. to 5 in. long and ⅛ in. wide: spikelets triangular, to ⅙ in. long, in panicles to 5 in. long. Eu.; nat. in N. Amer.

BRIZOPYRUM: *Desmazeria sicula.*

BROCCOLI (*Brassica oleracea* var. *botrytis*). A form or race of the cauliflower tribe, requiring a long season and, where the climate permits, the plants may be allowed to stand over winter and make their heads in spring. The leafage of the plant is likely to be more erect than in the cauliflower and the leaves narrow and long. A related plant, not making a large single white head but a loose more or less leafy panicle of edible flower shoots, is the asparagus or sprouting broccoli (*B. oleracea* var. *italica*). Turnip broccoli is *B. Ruvo*. For culture of broccoli, see *Cauliflower*.

BRODIÆA. *Liliaceæ*. Cormous herbs mostly native in W. N. Amer., in fields and on hills and mountains, with few basal grass-like lvs. and funnel-shaped or campanulate fls. in loose umbels terminating the slender scapes.

Brodiæas are hardy in the Pacific and southern states and useful in borders; also sometimes grown in pots; spring and summer bloomers. They thrive on any soil that is not wet or heavily manured. Propagated by seeds, or by offsets if produced.

bícolor. To 1 ft. or more: fls. blue and white. Calif.

Brídgesii. To 9 in.: fls. pale lilac, about 1½ in. long, fertile stamens 6. Calif., Ore.

califórnica. To 1 ft.: fls. violet-purple, to 1½ in. long, fertile stamens 3. Calif.

cándida. Similar to *B. laxa* but with white or pale blue fls. Calif.

capitàta (*Dichelostemma capitatum*). Blue-Dicks. To 2 ft.: fls. blue, ⅔ in. long, in head-like umbels, fertile stamens 6. S. Ore. to Lower Calif. Var. **pauciflòra** has 2–10-fld. umbels of pale blue fls.

coccínea: *Brevoortia Ida-Maia.*

congésta: *B. pulchella.*

coronària (*B. grandiflora*). To 1⅓ ft.: fls. violet-purple, to 1¾ in. long, fertile stamens 3. B. C. to Calif.

cròcea. To 1 ft.: fls. bright yellow, ¾ in. long, fertile stamens 6. Calif.

Doúglasii (*Triteleia grandiflora*). To 2 ft.: fls. blue, to 1 in. long. B. C. to Ore. and Mont.

Èastwoodii. A recent species with umbels of pure white fls.

grandiflòra: *B. coronaria.*

Héndersonii. Similar to *B. Bridgesii* but with yellow fls. having purple band down center. Ore.

hyacínthina. To 2 ft.: lvs. linear: fls. white to purplish, to 1 in. long with segms. equalling or exceeding perianth-tube, infl. an umbel of 10–30 fls. Calif.

ixioìdes (*Calliprora ixioides*). Pretty Face. To 1½ ft.: fls. salmon-yellow veined with dark purple, ¾ in. long, fertile stamens 6. Ore. to S. Calif. Var. **spléndens** has large bright yellow fls.

láctea (*Hesperoscordum hyacinthinum*). Wild-Hyacinth. To 1½ ft.: fls. white or lilac, ½ in. long, fertile stamens 6. B. C. to Calif.

láxa (*Triteleia laxa*). Grass-Nut. Triplet-Lily. To 2 ft.: fls. purple or rarely white, to 1¾ in. long, fertile stamens 6.

Leàchiæ: listed name of unknown botanical standing.

mìnor (*B. Purdyi. Hookera minor*). To 10 in.: fls. violet-purple, 1 in. long, fertile stamens 3. Calif.

multiflòra. To 2 ft.: fls. light purple, ¾ in. long, in head-like umbels, fertile stamens 3. Calif., Ore.

pedunculàris (*Triteleia peduncularis*). To 3 ft.: fls. violet-purple or white, ¾ in. long, fertile stamens 6. Calif.

puchélla (*B. congesta. Dichelostemma pulchellum*). To 3 ft.: fls. violet-purple, ¾ in. long, in head-like clusters, fertile stamens 3. Wash. to Calif.

Púrdyi: *B. minor.*

stellàris (*Hookera stellaris*). To 6 in.: fls. violet-purple, ¾ in. long, fertile stamens 3. Calif.

terréstris. Very low, the mostly large umbel at or near the ground: fls. purple, wide open, ¾ in. long. Calif.

uniflòra (*Milla uniflora. Triteleia uniflora. Leucocoryne uniflora*). Spring Star-Flower. To 8 in., with onion-like odor: fls. white tinged with blue, solitary, 1 in. long. Argentina. Var. **cærùlea** has porcelain-blue fls. and **violàcea** violet fls.

volùbilis (*Dichelostemma* and *Stropholirion californicum*). Snake-Lily. To 3 ft. or twining to 8 ft.: fls. rose or pink, ⅔ in. long, fertile stamens 3. Calif.

BROMÈLIA. *Bromeliaceæ*. Trop. American terrestrial herbs with stiff spiny-margined lvs. in basal rosettes, and fls. in heads or panicles; planted in the tropics and sometimes in greenhouses. See *Bromeliaceæ*.

fastuòsa. To 2 ft.: lvs. to 5 ft. long, rigid and arching, margins with stout recurved triangular spines: petals reddish-lavender, subtended by scarlet bracts to 1 ft. long: fr. lemon-yellow, ovoid, to ⅞ in. long. Brazil.

Pínguin. Pinguin. Lvs. to 6 ft. long and 1½ in. wide, light green, with hooked prickles: fls. white or pinkish, in mealy panicles shorter than lvs. W. Indies, S. Amer.

rùbro-víridis is listed.

BROMELIÀCEÆ. Bromeliads. Bromelia or Pineapple Family. American herbs or subshrubs, of tropics or warm countries, mostly epiphytic, of about 40 genera, with usually long stiff lvs. often in rosettes, regular bisexual fls. in spikes, heads or branching panicles often with showy colored bracts and sometimes with ornamental fls., having 6 perianth-parts in 2 series, 6 stamens, 3-celled ovary and fr. a berry or caps. Several genera are grown for ornament, mostly under glass, and the pineapple for food, such as Æchmea, Ananas, Aregelia, Billbergia, Bromelia, Canistrum, Cryptanthus, Dyckia, Greigia, Guzmania, Hechtia, Hohenbergia, Nidularium, Pitcairnia, Puya, Rhodostachys, Tillandsia, Vriesia. Distinctions between the genera are mostly technically botanical and cannot be detailed here.

Many of the bromeliads, in several genera, make showy and effective greenhouse and conservatory subjects. Although many of the cultivated kinds are variously epiphytic in their native habitats, they are usually grown in pots, wire baskets or wooden cribs, in a soil of fibrous material. Growth is mostly in summer, when plenty of water should be supplied; bloom is usually best in the following late winter to early summer. The spikes of showy bracts and often of colored flowers made the plants unusually attractive. Most bromeliads require a night temperature in the winter of 50–75°, and plenty of light and sunshine. In winter only a light sprinkling over the foliage is necessary. Propagated by suckers or sprouts from the base of the old plants.

BRÒMUS. Brome-Grass. *Gramineæ*. Ann. and per. grasses with flat lvs. and usually drooping spikelets in open terminal panicles; mostly natives of the north temp. zone, some kinds grown for forage and others for the flower-garden. See *Grasses*.

brizæfórmis. Quake-Grass. Ann. to 2 ft.: lvs. to 8 in. long and ¼ in. wide: spikelets ovate-oblong, flattened, to 1 in. long, awnless, in panicles to 8 in. long, the branches nodding. N. Eu., Asia; nat. in N. Amer.—Useful in dry bouquets.

eréctus. Per. to 3 ft.: lvs. to 1 ft. long and ⅙ in. wide: spikelets to 1½ in. long, awned, in panicles to 7 in. long, the branches erect. Eu.; nat. in E. N. Amer.

inérmis. Hungarian or Awnless B. Per. to 4 ft.: lvs. to 1 ft. long and ¼ in. wide: spikelets oblong, to 1 in. long, awnless, in panicles to 10 in. long, the branches ascending. Eu.; grown in pastures and sometimes escaped.

intermèdius (*Serrafalcus Hughii*). Ann. or bien. to 1½ ft.: spikelets 1 in. long, greenish or yellowish, in panicles to 4 in. long. Medit. region.

japónicus (*B. patulus*). Ann. to 2 ft.: lvs. to 8 in. long and ¼ in. wide: spikelets lanceolate, to 1 in. long, awned, in panicles to 8 in. long, the branches nodding. Eu., Asia; sparingly nat. in N. Amer.

macróstachys. Ann. to 2 ft.: lvs. to 6 in. long and ¼ in. wide: spikelets to 1½ in. long, flattened, with awns to ¾ in. long, in panicles to 4 in. long, the branches erect. Eu., W. Asia.—Grown for ornament. Var. **lanuginòsus** has lvs. and spikelets pubescent.

madriténsis. Ann. to 2½ ft.: lvs. to 8 in. long and ¼ in. wide: spikelets to 2 in. long, with awns to ¾ in. long, in dense panicles to 6 in. long, the branches erect. Eu.; escaped in N. Amer.—Grown for ornament.

pátulus: *B. japonicus.*

pendulìnus. Per. to 3 ft.: lvs. to 6 in. long and ⅙ in. wide: spikelets to ¾ in. long, awned, in panicles to 6 in. long. Mex.

unioloìdes (*Ceratochloa pendula*). Rescue-Grass. Ann. or bien. to 3 ft.: lvs. to 1 ft. long and ⅓ in. wide: spikelets to 1 in. long, much flattened, awnless, in panicles to 10 in. long, the branches ascending. S. U. S. to S. Amer.—Grown for forage in the S.

BROOKLIME, EUROPEAN: *Veronica Beccabunga.*

BROOM: *Cytisus; Genista, Notospartium, Spartium.* **Butchers:** *Ruscus aculeatus.* **Climbing Butchers:** *Semele androgyna.* **Turpentine:** *Thamnosoma montana.*

BRÓSIMUM. *Moraceæ.* Trop. American milky-juiced trees with alternate entire leathery lvs., staminate fls. of a single stamen, pistillate fls. and frs. immersed in the fleshy receptacle; grown in trop. regions for the nuts, and for the lvs. which are used for fodder. Propagated by cuttings over heat.

Alicástrum. Breadnut. To 100 ft.: lvs. oblong, to 7 in. long and 2½ in. wide: fr. globose, about 1 in. across, yellow, with a single large seed which is eaten and roasted. Mex., Cent. Amer., W. Indies.

BROUGHTÒNIA. *Orchidaceæ.* A small genus of W. Indian epiphytic orchids differing from Epidendrum in that the free lip is produced below into an adnate spur and the ovary is produced into a long hollow neck. The species are sometimes cult. under glass; treat as *Epidendrum.*

domingénsis. Pseudobulbs crowded, to 2 in. long: lvs. 1–2, oblong, mucronate, to 8 in. long, leathery: peduncle to nearly 2 ft. long, terminating in short lax raceme: fls. rose-lilac, to 1¼ in. long, lip with nerves densely bearded. Dec.–May. Bahamas, Cuba, Jamaica, Santo Domingo.

sanguínea. Differs from *B. domingensis* in its fls. crimson-scarlet and usually ½–⅞ in. long and in having a lip with smooth nerves. Jan.–May, Sept. Cuba, Jamaica.

BROUSSONÈTIA. Paper-Mulberry. *Moraceæ.* Deciduous trees or shrubs with milky juice, alternate toothed often lobed lvs., staminate fls. in drooping catkins, pistillate in globose heads, and fr. a small syncarp composed of orange-red drupelets; native in E. Asia, where the bark is used for making paper.

Propagated by seeds, suckers, cuttings of green or ripe wood in a cool greenhouse, root-cuttings over slight heat, and by layers. Varieties may also be grafted in spring in the greenhouse on roots of the type or budded in summer.

papyrífera (*Papyrius papyrifera*). To 50 ft.: lvs. ovate, to 8 in. long, usually deeply lobed, grayish-pubescent beneath: syncarp tomentose, ¾ in. across. China, Japan; much planted as a street tree and nat. N. Y. to Fla. and Mo. Var. **laciniàta,** lvs. finely dissected. Var. **leucocárpa;** fr. white. Var. **variegàta,** lvs. variegated white or yellow.—Hardy in central states, and farther north in protected places.

secundiflòra: *Sophora secundiflora.*

BROWÁLLIA. *Solanaceæ.* Annuals grown in the garden or greenhouse for the blue, violet or white tubular fls. with spreading 5-lobed limb, which are solitary and axillary or in more or less one-sided racemes; lvs. usually simple; native in trop. Amer. and of the simplest cult.

americàna (*B. demissa. B. elata*). To 2 ft., glabrous or somewhat pubescent, not viscid: lvs. ovate, to 2½ in. long: fls. blue or violet, tube ½ in. long and limb ½ in. across, segms. 2-lobed, calyx hairy. Trop. Amer. Var. **álba** has white fls., **cærùlea** pale blue fls., and **nàna** is dwarf.

Czerwiakòwskii: *B. viscosa.*

demíssa: *B. americana.*

elàta: *B. americana.*

grandiflòra (*B. Roezlii*). Similar to *B. americana,* with white or pale blue broader fls. and glabrous calyx. Peru.

Jàmesonii: *Streptosolen Jamesonii.*

màjor: *B. speciosa.*

pulchélla: *B. viscosa.*

Roézlii: *B. grandiflora.*

speciòsa (*B. major*). To 5 ft., shrubby at base: lvs. ovate: fls. with tube 1 in. long, limb dark purple, pale lilac beneath, varying to blue, violet and white, to 2 in. across, segms. entire. Colombia.

viscòsa (*B. Czerwiakowskii. B. pulchella*). To 1 ft., sticky-hairy, at least on young parts: lvs. ovate: fls. dark blue with white eye, or white, to ¾ in. long, the segms. short and 2-lobed. S. Amer. Var. **compácta** is listed.—Some of the stock otherwise named belongs here.

BROẀNEA (*Hermesias*). *Leguminosæ.* Small trees native in trop. Amer., with leathery pinnate lvs. and very showy red fls. in racemes or dense heads; sometimes planted in the warmest parts of the country.

capitélla. Lfts. 9 in. or more long, long-acuminate: fls. in dense heads about 11 in. across, the stamens long-exserted. Venezuela.

grándiceps. Lfts. about 7 in. long, caudate: fls. in dense heads about 9 in. across. S. Amer.

latifòlia. Lfts. to 4 in. long and 2 in. wide, pointed: heads small, stamens slightly protruding. Trinidad, Venezuela.

macrophýlla. Partially climbing shrub to 18 ft.: lfts. tomentose beneath: heads to 6 in. across, borne near base of trunk. Panama, Colombia.

Ròsa-de-mónte (*B. rosea*). Lfts. 3–4 in. long, abruptly acuminate: fls. in heads. S. Amer.

ròsea: *B. Rosa-de-monte.*

BROWN-EYED SUSAN: *Rudbeckia triloba.*

BROWNÍNGIA. *Cactaceæ.* One species native in S. Peru and N. Chile. **B. candelàris** (*Cereus candelaris*). To 15 ft., with simple trunk branching at top, very spiny when young; ribs 30–34, low, areoles ½ in. apart, becoming much elevated; spines on trunks 20–50, the longest to 6 in.: fls. brown or rose to white, to 5 in. long, nocturnal.

BRUCKENTHÀLIA. *Ericaceæ.* One evergreen heath-like shrub to 10 in. high, adapted to the rock-garden and hardy N. Propagated by seeds and cuttings. **B. spiculifòlia.** Spike-Heath. Lvs. crowded, linear, about 15 in. long: fls. pink, very small, bell-shaped, in racemes to ¾ in. long, the style exserted, in summer. S. Eu., Asia Minor. Var. **álba** is listed as a white-fld. form.

BRUGMANSIA: *Datura.*

BRUNELLA: *Prunella.*

BRUNFÉLSIA (*Franciscea*). *Solanaceæ.* Shrubs and trees usually winter blooming, with mostly large showy often fragrant funnel-shaped fls. in loose or dense terminal cymes or sometimes solitary: lvs. alternate, simple and entire. Native in trop. Amer., a few grown in conservatories and in the open in Fla. and S. Calif. Linnæus, in 1753, spelled the name Brunsfelsia, but in Genera, 1754, Brunfelsia, apparently a correction.

Brunfelsias need a rich loose compost and liberal feeding during their growing season, blooming best if pot-bound. They should have a night temperature of 50°. Propagated by cuttings from the new growth in spring or in autumn from pieces of ripened wood.

americàna. Lady-of-the-Night. Shrub to 8 ft.: lvs. oval to obovate, to 4 in. long: fls. white fading to yellow, mostly solitary, the slender tube to 4 in. long and limb to 2 in. across, very fragrant at night; calyx short: fr. a yellow berry ¾ in. diam. W. Indies.

calýcina. Erect or spreading: lvs. ovate-oblong, to 4 in. long, dark green above, lighter below: fls. rich dark purple, limb 2 in. across, in few-fld. mostly terminal cymes; calyx with tube to 1 in. long, half or more length of corolla-tube. Brazil. Var. **exímia,** fls. rich purple soon fading to almost white. Var. **floribúnda** (*B. floribunda*), dwarf, fls. rich violet with small white eye. Var. **macrántha** (*B. grandiflora, B. Lindeniana, B. macrantha*), lvs. rich dark green, to 8 in. long, fls. rich deep purple with lavender-blue ring around white eye at mouth of tube. Peru.

capitàta. Shrub: lvs. obovate-oblong, to 9 in. long: fls. in many-fld. cymes, corolla-tube slightly longer than calyx which is 1 in. long. Brazil.

floribúnda: *B. calycina* var.

grandiflòra: *B. calycina* var. *macrantha.*

Hopeàna. Slender branching shrub: lvs. lanceolate-oblong, to 3 in. long, rich dark green: fls. small, solitary or in pairs along the leafy growths, limb light violet-blue changing to nearly white, tube nearly white, 1 in. long; calyx ¾ in. long. Brazil, W. Indies.

latifòlia. Rather dwarf: lvs. oval, to 4 in. long: fls. nearly white to lavender and purple with lighter center, solitary or in few-fld. clusters, tube 1 in. long, limb 1½ in. across; calyx short. Trop. Amer.

Lindenіàna: *B. calycina* var. *macrantha.*

macrántha: *B. calycina* var.

macrophýlla. Shrub: lvs. oblong, to 9 in. or more long: fls. in loose many-fld. cymes, corolla-tube twice as long as calyx. Brazil.

BRUNIÀCEÆ. Brunia Family. About a dozen genera of heath-like subshrubs, mostly in S. Afr. but extending to S. Australia, placed in the sequence near Hamamelidaceæ and Saxifragaceæ. The family is characterized by small bisexual and regular fls., with the parts mostly 4 or 5, and a dry fr. with commonly 2 parts. Only Audouinia appears to be cult. in N. Amer., and this is likely to be listed under Diosma, which is one of the Rutaceæ.

BRUNNÈRA. *Boraginaceæ.* A small herbaceous genus of W. Siberia and E. Medit. region, usually referred to Anchusa, but of different habit, broad netted-veined lvs. and naked infl.

macrophýlla (*Anchusa myosotidiflora*). Per. to 1½ ft.: lvs. ovate, heart-shaped at base: fls. blue, ¼ in. across, in summer. Siberia, Caucasus.

BRUNÒNIA. *Goodeniaceæ.* A monotypic Australian genus having nearly regular fls. in head-like clusters, with a superior 1-celled ovary containing a single basal ovule, the seeds without endosperm and in a small nut. **B. austràlis.** Blue Pincushion. Per. to 1 ft.: lvs. basal, obovate to spatulate, to 3 in. long, cuneate, entire: fl.-heads blue.

BRUNSDÓNNA. Hybrids between *Amaryllis Belladonna* and *Brunsvigia Josephiniæ.* Such hybrids have been produced crossing either way, those with Amaryllis seed parent apparently being more satisfactory horticulturally.

BRUNSFELSIA: see *Brunfelsia.*

BRUNSVÍGIA. *Amaryllidaceæ.* S. African summer- and autumn-flowering bulbs having basal lvs. and red or pink funnelform fls. in umbels terminating the scape.

Brunsvigias require rich sandy soil together with heat and sunlight. After flowering the bulbs should be rested. Propagated by offsets.

Josephìnæ (*Amaryllis Josephinæ*). Josephines-Lily. To 1½ ft.: lvs. to 3 ft. long and 2 in. wide, ribbed: fls. bright red, 3 in. long, the tube about ½ in. long.

BRUSSELS SPROUTS (*Brassica oleracea* var. *gemmifera*). Biennial, the first year from seed producing little heads or "sprouts" in the leaf-axils, and the second year bearing seeds. The culture is essentially that for kale except that it is always a fall crop, the seed being sown in spring in a seed-bed and the young plants set in the field in late spring or summer, 18–30 inches apart in rows 30–36 inches apart. The "sprouts" attain a diameter of 1 or 2 inches; they are gathered as they mature from the bottom upwards, and a good plant should yield about one quart. As the sprouts attain form and considerable size, the subtending leaf is removed, the terminal crown of foliage maintaining the vigor of the plant. The crop is desired after frosty weather comes. The little sprouts or buttons are amongst the most delicate products of the cabbage tribes; they are best when not too large, say an inch or even less in diameter. The insects and diseases are those of the cabbage.

BRYANTHUS: *Phyllodoce Breweri.*

BRYÒNIA. Bryony. *Cucurbitaceæ.* Herbs with per. more or less fleshy or tuberous root, mostly diœcious, one of them seldom grown in this country as an ornamental or arbor vine: fls. not large, the staminate in racemes, the pistillate few or solitary in axils: species 7 or more, in temp. Eu. and W. Asia.

dioìca. To 10 or 12 ft., from fleshy tuber or strands: lvs. palmately 5-lobed, rough: fls. greenish, to ¾ in. across: fr. a smooth red berry ¼ in. diam. Eu., W. Asia, N. Afr.

BRYONÓPSIS. *Cucurbitaceæ.* Two ann. tendril-climbing herbs, Asia, Afr. and Pacific Isls., one of which may be grown as an ornamental vine: plant monœcious: fls. small and greenish, fascicled and mostly in the axils.

laciniòsa. Sts. slender, glabrous, tall-climbing: lvs. deeply 3–5-lobed, with obtuse sinuses: fr. yellow-green to reddish and striate, nearly ¾ in. diam.

BRYONY: *Bryonia.* **Black:** *Tamus communis.*

BRYOPHYLLUM: *Kalanchoë.*

BUCARE: *Erythrina Poeppigiana*

BUCHU: *Diosma ericoides.*

BUCÌDA. *Combretaceæ.* Trop. American trees and shrubs with entire leathery lvs. clustered at ends of twigs, small fls. without petals borne in spikes, and fr. a small drupe.

Bucèras. Black Olive. Tree to 75 ft.: lvs. spatulate or elliptic, to 3½ in. long, obtuse or notched: fls. greenish-yellow, in spikes to 4 in. long, stamens exserted: fr. ⅛ in. long. Fla., W. Indies, Panama.

BUCKBEAN: *Menyanthes trifoliata.*

BUCKBERRY: *Gaylussacia ursina.*

BUCK-BRUSH: *Ceanothus cuneatus.*

BUCKEYE: *Æsculus, Ungnadia.*

BUCKLEỲA. *Santalaceæ.* Deciduous parasitic shrubs with opposite entire lvs., staminate fls. in umbels, pistillate solitary, and drupaceous frs.; 3 species in China, Japan, and N. Amer.

As the cultivated species is parasitic on the roots of Tsuga, seeds must be sown in a pot with the host plant and set out with the hemlock. Hardy in New England.

distichophýlla. To 12 ft.: lvs. ovate to ovate-lanceolate, to 2½ in. long, sessile: fls. greenish, small: fr. yellowish-green, about ½ in. long. N. C., Tenn.—A graceful shrub.

BUCKTHORN: *Rhamnus.* **False:** *Bumelia lanuginosa.* **Sea-:** *Hippophaë.*

BUCKWHEAT: *Fagopyrum.* **-Tree:** *Cliftonia monophylla.* **Wild:** *Eriogonum fasciculatum.*

BUDDING: see *Graftage.*

BUDDLÈJA (*Buddleia*) Butterfly-Bush. *Loganiaceæ.* Shrubs or rarely herbs, deciduous or evergreen, bearing stellate, glandular or scaly pubescence, with mostly opposite lanceolate lvs., 4-lobed fls. in heads, panicles or spikes, and fr. a 2-valved caps.; several showy species are grown for ornament.—Spelled *Buddleja* by Linnæus, but the *i* and *j* have the same phonetic value.

Even when buddlejas are not hardy North, the roots may survive with winter protection, but some of the species stand the winter in New York. They thrive in sunny locations in rich well-drained soil. Propagated by seeds sown over heat in spring, by cuttings of green wood, and by cuttings of ripe wood kept over winter in a frost-proof room.

alnifòlia: listed name.

alternifòlia. To 12 ft. or more, branches drooping or arching: lvs. alternate, to 4 in. long, gray-tomentose beneath: fls. lilac-purple, in dense clusters to ¾ in. long. June. China.

amplíssima: hort. name.

asiática. Lvs. to 8 in. long, entire or fine-toothed, white- or yellow-tomentose beneath: fls. white, fragrant, in drooping spikes to 9 in. long, in winter and spring. China to India.—Grown under glass; in the open adaptable only in southernmost parts.

brasiliénsis. Erect shrub to 10 ft. or more: lvs. oblong-lanceolate, to 8 in. long, dentate-crenate, white-tomentose beneath: fls. yellow-orange to reddish-orange, in many-fld. verticillate leafy racemes. Brazil; not hardy N.

caryopteridifòlia. To 6 ft.: lvs. ovate to oblong, to 2½ in. long, with large irregular teeth, tomentose: fls. lavender, in narrow panicles to 3 in. long. China; not hardy N. but in Calif.

Cólvilei. To 30 ft.: lvs. to 7 in. long, toothed, pubescent: fls. purple or crimson with white eye, in drooping panicles to 1½ ft. long. Himalayas; to be grown far S.

críspa (*B. paniculata*). To 15 ft.: lvs. to 5 in. long, coarsely toothed, pubescent above, white or yellow-tomentose beneath: fls. lilac with white eye, fragrant, in panicles to 4 in. long, in summer. Himalayas.

curviflòra: *B. japonica.*

Dàvidii (*B. variabilis*). SUMMER LILAC. To 15 ft.: lvs. to 10 in. long, finely toothed, dark green above, white-tomentose beneath: fls. lilac with orange eye, fragrant, in spikes to 10 in. long, in late summer. China.—One of the hardiest and probably commonest. Var. **magnífica** has larger rose-purple fls. in dense spikes. Var. **nanhoénsis** grows to 5 ft. high with lvs. to 4½ in. long. Var. **supérba** resembles *magnifica* but has larger panicles. Var. **Veitchiàna** bears mauve-colored fls. in large dense spikes. Var. **Wílsonii** has rose-lilac fls. in drooping spikes to 2 ft. long.

Fárquhari. Hybrid between *B. officinalis* and *B. asiatica:* lvs. yellow-tomentose beneath: fls. pale pink, in spikes; adaptable S.

Fórrestii: plants grown under this name are confused.

Fórtunei: hort. name.

globòsa. To 15 ft.: lvs. to 10 in. long, wavy-toothed, yellow-tomentose beneath, wrinkled above: fls. orange, fragrant, in dense long-stalked heads ¾ in. across. June. Peru; planted in Calif.

Hártwegii: hort. name.

intermèdia. Hybrid between *B. Lindleyana* and *B. japonica:* lvs. to 6 in. long: fls. violet, in drooping panicles to 8 in. long. Var. **insígnis** has rosy-violet fls. in erect spikes.

japónica (*B. curviflora*). To 6 ft., with 4-winged branchlets: lvs. to 8 in. long, slightly toothed, tomentose beneath when young: fls. lilac, in drooping panicles to 8 in. long, in summer. Japan.

Lindleyàna. To 6 ft., with 4-angled branchlets: lvs. to 4 in. long, slightly toothed, nearly glabrous beneath: fls. purplish-violet, in erect spikes to 8 in. long, in summer. China; not hardy N.

madagascariénsis. To 20 ft.: lvs. to 5 in. long, dark green above, white- or yellow-tomentose beneath: fls. orange, in panicles, in winter. Madagascar; stands in Calif. and other mild climates.

magnífica: *B. Davidii* var.

nanhoénsis: *B. Davidii* var.

nívea. To 10 ft.: lvs. to 10 in. long, coarsely toothed, dark green above, white-tomentose beneath: fls. lilac or purple, in dense spikes to 6 in. long, corolla tomentose outside, in late summer. China. Var. **yunnanénsis** has lvs. pubescent above and yellow-tomentose beneath.

officinàlis. To 10 ft.: lvs. to 6 in. long, entire or fine-toothed, gray-pubescent above, white- or yellow-tomentose beneath: fls. lilac with orange eye, fragrant, in panicles 6 in. long, in winter and spring. China; adapted only far S.

paniculàta: *B. crispa.*

salvifòlia. To 10 ft.: lvs. to 6 in. long, finely toothed, rusty-tomentose beneath, pubescent above: fls. yellowish-white with orange throat, in panicles to 6 in. long. Trop. and S. Afr.

supérba: *B. Davidii* var.

variábilis: *B. Davidii.*

Veitchiàna: *B. Davidii* var.

BUFFALO-BERRY: *Shepherdia argentea.*

BUGBANE: *Cimicifuga.*

BUGINVILLÆA: *Bougainvillea.*

BUGLE-WEED: *Ajuga.*

BUGLOSS: *Anchusa.* **Vipers-:** *Echium.*

BULBÌNE. *Liliaceæ.* Herbs from Australia and Afr., having bulbs or tuberous roots, linear or lanceolate lvs., and usually yellow fls. in racemes; seldom grown under glass or in the open in warm regions; bloom in spring and summer. The name is pronounced in three syllables.

alooìdes. Stemless per. with tuberous rootstock: lvs. to 9 in. long: fls. bright yellow, ¼ in. long, in racemes to 1 ft. long. S. Afr.

ánnua. Stemless ann. without rootstock or bulb: lvs. to 1 ft. long: fls. bright yellow, ¼ in. long, in racemes to 6 in. long on scapes. S. Afr.

bulbòsa. Stemless or essentially so, per. to 1½ ft.: lvs. narrowly lanceolate to linear, grooved above, often fleshy: fls. yellow, all filaments bearded: caps. 1–2-seeded. Australia.

cauléscens. To 2 ft. or more, distinct st. to 1 ft. high, simple or branched: lvs. terete, to 1 ft. long, crowded above: fls. bright yellow, in dense racemes to 1 ft. long. S. Afr.

semibarbàta (*Bulbinella semibarbata* of hort.). Stemless or essentially so, per. to 2 ft., tuberless: fls. yellow, the 3 outer stamens with short beardless filaments: caps. 3–4-seeded. Australia.—By some authorities formerly considered inseparable from *B. bulbosa.*

BULBINÉLLA. *Liliaceæ.* Per. herbs with fleshy tuberous roots, linear basal lvs. and yellow or white fls. in a dense raceme terminating the naked scape; native in S. Afr. and New Zeal. Grown in the border where they do best in rich moist soil; useful in warm regions. Propagated by division or seed.

Hoòkeri (*Chrysobactron Hookeri*). To 3 ft.: fls. bright yellow, ⅓ in. across, in racemes to 10 in. long. New Zeal.

robústa. To 1½ ft.: fls. bright yellow, ⅙ in. long, in racemes to 4 in. long. S. Afr.

semibarbàta: *Bulbine semibarbata.*

BULBOCÒDIUM. *Liliaceæ.* One crocus-like cormous herb native in Eu. and Asia. **B. vérnum.** Lvs. radical, narrow: fls. violet-purple, funnelform, 1–3 from each bulb and borne close to the ground in very early spring in advance of full leafage, the narrow segms. 2 in. long. A recent treatment has combined this genus with Colchicum, from which it may be distinguished by the distinctly clawed perianth-segms. and the entire single 3-lobed style. For cult. see *Crocus.*

BULBOPHÝLLUM. *Orchidaceæ.* Epiphytes having more or less prominent pseudobulbs which bear 1 or 2 lvs. and from the base a raceme of fls. or sometimes solitary fls., having petals smaller than the sepals and a commonly fleshy strap-shaped lip. Grown in a warm greenhouse; see *Orchids.*

appendiculàtum (*Cirrhopetalum appendiculatum*). Fls. about 3 in. long, solitary, with petals and dorsal sepal pale yellow lined with purple and tipped with purple fringe, and thick bright purple lip. India, Burma.

barbígerum. Pseudobulbs to 1 in. long, with 1 lf. to 3 in. long and 1 in. wide: fls. in many-fld. racemes to 4 in. long, the sepals dull purple, the lip green with yellow markings, hairy and tipped with long purple hairs. June–July. Trop. Afr.

Careyànum. Pseudobulbs to 2½ in. high, with 1 lf. to 10 in. long and 1½ in. wide: fls. in dense nodding racemes to 3 in. long, yellow thickly spotted with red-brown. Oct.–Dec. Himalayas.

carícinum: listed name of plant said to differ from *B. Careyanum* in its more open fl.

Cóllettii (*Cirrhopetalum Collettii*). Pseudobulbs 4-lobed, ellipsoidal: lvs. ovate to elliptic-oblong, to about 4 in. long, acutish, fleshy: scapes pendulous, to 6 in. long, umbellate infl. of 5–7 fls.; fls. 4–5 in. long, sepals long-attenuate, pale orange with crimson stripes, dorsal sepal and petals conspicuously fringed, lip bright carmine-crimson to magenta, column orange. Burma.

comòsum. Pseudobulbs to 1½ in. high, with 2 broad lvs. to 8 in. long: fls. small, yellowish-white, in dense racemes on scapes to 10 in. high, the lip yellow. Jan. Burma.

congolànum. Pseudobulbs about 1 in. high, with 2 lvs. to 3½ in. long and ½ in. wide: fls. pale yellow, in racemes on flattened red scapes. W. Afr.

Cúmingii (*Cirrhopetalum Cumingii*). Lvs. to 7 in. long: fls. purple, in 9–12-fld. umbels, with yellow fringed petals and dorsal sepal, and fleshy lip. Philippines.

cùpreum. Differing from *B. Careyanum* in the copper-yellow fls. and the red lip. Nov.–May. Cochin-China, Burma.

cylindràceum: listed name.

Dayànum. Pseudobulbs about 1 in. high, with 1 oblong-elliptic lf. to 4 in. long: fls. about 1 in. across, in 2–3-fld. clusters, the sepals yellow-green spotted with red and hairy, the petals half as long and purple-red edged with yellow, the lip green with red ridges. May–July. Burma.

Dèarei. Pseudobulbs up to 1½ in. high, with 1 strap-shaped lf. to 6 in. long: fls. solitary, large, the sepals brownish-yellow spotted with red, the petals shorter, yellow marked with red, the lip white finely dotted with purple. May–June. Philippines, Borneo.

densiflòrum. Pseudobulbs ovoid-oblong, to 1¼ in. long, 2-lvd.: lvs. oblong-lanceolate, about 4 in. long, acute, pale green: scape suberect, about 5 in. tall, terminated by a densely fld. raceme; fls. small, greenish-yellow, malodorous, the lip deeper yellow than sepals and petals. Himalayas.

Éricssonii. Pseudobulbs cylindrical, to 5 in. high, 1-lvd.: lf. elliptic-oblong, acute, about 5–6 in. long: scape to 7 in. long, usually 10–15-fld.; fls. umbellate; sepals lanceolate, long-acuminate, deep yellow-green spotted with brown, up to 3 in. long; petals similarly colored, smaller. Oct. Probably from Molucca Isls.

falcàtum (*Megaclinium falcatum*). Pseudobulbs to 2 in. high, with 2 lvs. to 3 in. long and ½ in. wide: fls. green and yellow or dark reddish-purple and orange. Apr.–June, Oct. W. Afr.

gibbòsum. Rhizome creeping, with very small pseudobulbs: lvs. lanceolate, to 7 in. or more long and 1¼ in. wide, leathery: fls. pale brownish, sepals tipped with yellow, lip small and yellow or orange, in erect spikes about 6 in. or more high. Java, Sumatra.

grandiflòrum. Pseudobulbs 1½ in. or more high, with 1 lf. to 10 in. long and 2 in. wide: fls. solitary on scapes about 6 in. long, very large, the sepals brownish-green with light spots, the petals very small, the lip small, greenish dotted with red-brown, hairy at base. Oct. New Guinea.

guttulàtum: *B. umbellatum.*

lilácinum. Pseudobulbs to 2 in. long, ovoid or oblong-cylindric: lf. oblong or oblong-elliptic, to 8 in. long, fleshy: fls. in dense racemes on short peduncle, sepals and petals lilac spotted with pink to purple. Siam, Malaya.

Lóbbii. Pseudobulbs to 2 in. high, with 1 lf. to 8 in. long and 2 in. or more wide: fls. solitary, 2–4 in. across, the sepals and petals yellow spotted or lined outside with red, the lip golden-yellow. May–June, Nov. Borneo, Java to Sumatra, Burma.

longiflòrum (*Cirrhopetalum Thouarsii*). Lvs. to 7 in. long and 1½ in. wide: fls. whitish or pale yellow to reddish-brown, almost 2 in. long, in several-fld. umbels, the dorsal sepal and petals with a thread-like tail. Dec.–Apr., Aug. Mauritius, Pacific Isls.

Medùsæ (*Cirrhopetalum Medusæ*). Lvs. to 6 in. long and 2 in. wide: fls. pale yellow spotted at base with red, in many-fld. umbels, the lateral sepals prolonged into tails to 6 in. long. Jan.–Feb. Malaya, Siam, Borneo.

odoratíssimum. Pseudobulbs to 1½ in. high, with 1 linear-oblong lf. to 3 in. long: fls. small, in dense globose heads, yellow, fragrant. India to China.

ornatíssimum (*Cirrhopetalum ornatissimum*). Pseudobulbs ovoid, to 2 in. tall: lf. leathery, to 6 in. long: fls. umbellate, yellowish, greenish or pale purplish-brown with dark purple stripes and reticulations, to 4 in. long, lip crimson-purple, on stout scape surpassing the lvs. Himalayas, Philippines.

picturàtum (*Cirrhopetalum picturatum*). Lvs. to 6 in. long and 1½ in. wide: fls. about 2 in. long, in 10-fld. umbels, sepals and petals green spotted with red, the upper sepal with a terminal red thread, the lip dark red. Oct., Nov., Apr. Burma.

púlchrum (*Cirrhopetalum pulchrum*). Fls. purple, in 5–7-fld. umbels, the lateral sepals yellow spotted with purple, over 1 in. long. Malaya.

refráctum (*Cirrhopetalum refractum*). WINDMILL ORCHID. Lvs. 2, lanceolate, to 5 in. long: fls. yellow, 2½ in. long, the lip spotted with red. Himalayas, Java.

Reinwárdtii: *B. uniflorum.*

rígidum. Pseudobulbs indistinct: lvs. oblong, to 10 in. long, obtuse: scape not exceeding lvs.; fls. laxly racemose, 8–14, yellowish tinged with green and streaked with red, sepals lanceolate, petals oblong, lip dull orange-yellow, finely speckled and streaked with purple. Himalayas.

Róxburghii (*Cirrhopetalum Roxburghii*). Lvs. oblong to elliptic-oblong, to 4 in. long: fls. umbellate, lateral sepals yellow, petals and dorsal sepal yellow striped with red, lip red-purple. India.

saurocéphalum. Pseudobulbs bearing 1 oblong lf.: fls. in many-fld. racemes with a bright red rachis, the sepals light ochre lined with brown, petals small and white bordered with reddish, lip ochre, deep purple at base. Philippines.

suavíssimum. Pseudobulbs 1 in. high, with 1 lanceolate lf. to 4 in. long: fls. bright rose or whitish, the lip yellow, in many-fld. arching racemes to 10 in. long. Feb. Burma.

Thouársii: *B. longiflorum.*

umbellàtum (*Cirrhopetalum guttulatum*). Pseudobulbs ovoid, to 2 in. high, with lf. to 6 in. long: scape greenish-yellow speckled with purple, to 10 in. tall; fls. in umbels, yellow-green with bright purple dots, to nearly 1 in. across, lip purple, the lower sepals twisted and spreading. India.

uniflòrum (*B. Reinwardtii*). Pseudobulbs to 4 in. high, with 1 elliptic lf. to 9 in. long: fls. about 4 in. long, yellowish tinged with brownish-red. Java, Malaya.

viréscens. Pseudobulbs about 5 in. high, with 1 lf. to 8 in. long and almost 4 in. wide: fls. large, in umbels, the sepals and petals greenish-yellow, the lip greenish-yellow spotted with purple near base. June. Java, Amboina.

BULBS, when defined as a horticultural class, are ornamental partial-season mostly simple-stemmed plants arising from bulbs, corms, tubers or thickened rootstocks that may be cured and dried off and stored over winter. The term is incapable of close definition: it includes crocuses, tulips, hyacinths, narcissi, squills, lilies, amaryllids and similar groups. It specially denotes spring-blooming subjects. Because of their quick growth and showy bloom, bulbs are unceasing favorites with cultivators.

The outdoor culture of the common bulbs is simple. The plants care for themselves throughout a greater part of the year, many of them flowering very early when no other kinds are able to grow and bloom out-of-doors. Success depends to a large degree on good stock to begin with. Not only should the varieties be good and true to name, but the bulbs themselves should be well ripened and firm although it is not necessary to choose the biggest ones. While the so-called Holland bulbs thrive in any kind of soil, all do better in deep sandy ground well enriched with well-rotted manure; but do not let the manure come into direct contact with the bulb. Even heavy clay may be fitted for the growing of bulbs by the addition of sharp sand, either worked into the soil or placed directly under the bulb when planted.

To make a bulb bed, choose, if possible, a loose or loamy soil and throw out the top earth to the depth of 6 inches. Put into the bottom of the bed about 2 inches of well-rotted (not fresh) manure and spade it into the soil. Throw back half of the top soil, level it off nicely, set the bulbs firmly on this bed and then cover them with the remainder of the soil; in this way one will have the bulbs from 3 to 4 inches below the surface and of uniform depth. When the weather is cold enough to freeze a hard crust the bed should have its winter covering. This may be straw, hay, cornstalks or leaves spread over the bed to the depth of 6 inches if the material is coarse; but if leaves are used, 3 inches will be enough, because the leaves lie close together and may smother out the frost that is in the ground and let the bulbs start. If they start too early the hard freezes of March and early April will spoil their beauty if the leaves or flowers are near or above the surface. Early in April, in New York, the covering may be removed gradually, and should all be off the beds before the leaves show above the ground. Some of the bulbs may be readily naturalized in grassy and untilled areas, as grape-hyacinth, crocus, jonquil, daffodil, lily-of-the-valley, tulip. The plants are usually massed irregularly for pleasing and striking effect. The area may be fertilized in autumn with top-dressing.

The growing of flowering bulbs in winter adds to the list of house plants a charming variety. Hyacinths, narcissi, tulips, and crocus can be made to flower in the winter without difficulty. Pot the bulbs by the middle or last of October, or if earlier all the better. The soil should be rich sandy loam, if possible; if not, the best one can get, to which add about one-fourth the bulk of sand and mix thoroughly. If ordinary flower-pots are to be used, put in the bottom a few pieces of broken pots, charcoal or small stones for drainage, then fill the pot with earth so that when the bulbs are set on it the top of the bulb is even with the rim of the pot. Fill around it with soil, leaving just the tip of the bulb showing. If the soil is heavy, a good plan is to sprinkle a small handful of sand under the bulb to carry off the water, the same as is in beds outdoors. If one does not have pots, boxes may be used; and excellent flowers are sometimes obtained from bulbs planted in old tomato cans. If boxes or cans are used, care must be taken to have holes in the bottoms for drainage. A large size hyacinth bulb will do well in a 5-inch pot. The same size pot will do for three or four narcissi or eight to twelve crocuses. After the bulbs are planted they should be placed in a cold pit or cellar, or on the shady side of a building, or, better yet, plunged or buried up to the rim of the pot in a shady border. This is to force the roots to grow before the top appears, as only the bulbs with good roots will give good flowers. When the weather is so cold that a crust is frozen on the soil, the pots should be covered with a little straw, and as the weather becomes colder more straw must be added. In six to eight weeks after planting the bulbs, they should have made roots enough to grow the plant, and the pots may be taken up and placed in a cool room for a week or so, after which, if plants have started into growth, they may be taken into a warmer room where they have plenty of light. They will grow very rapidly now and will want much water. When just coming into bloom the plants may have full sunlight part of the time to help bring out the color of the flowers. Crocuses and tulips open only in sunlight. After blooming in the house, the bulbs are usually discarded and new ones purchased for the following year, although it is possible to grow them on for future blooming.

BULLACE, DAMSON: *Prunus domestica* var. *insititia.*

BULLATE: the surface blistered or puckered, as the leaf of a Savoy cabbage.

BULLOCKS-HEART: *Annona reticulata.*

BULRUSH: *Scirpus.*

BUMÈLIA. *Sapotaceæ.* Evergreen or deciduous often thorny shrubs and trees in S. U. S. and southward with very hard wood, one sometimes transferred to grounds in its region: lvs. mostly fascicled or crowded on short spurs: fls. small, white, fascicled in axils: fr. small, black, drupe-like.

lanuginòsa. Chittamwood. False Buckthorn. Deciduous tree to 25 ft., but the oblong-obovate thick lvs. persisting late, tomentose underneath, entire, 2–3 in. long: fr. about ⅓ in. long. Woods and copses, Va. to Fla. and west to Kans. and Tex.

BUNCHBERRY: *Cornus canadensis.*

BUNCH-FLOWER: *Melanthium.*

BÙNIAS. *Cruciferæ.* Coarse bien. or infrequently per. herbs of E. and S. Eu., one species nat. throughout most of Eu. and locally in N. Amer.

orientàlis. To 4 ft., coarsely branched above: basal rosette lvs. lyrate-pinnatifid, oblong-elliptic, to 1 ft. long, acute; st.-lvs. lanceolate-elliptic, becoming only toothed above: fls. yellow, about ¼ in. across, in dense branched racemes: fr. ovoid-apiculate, scarcely ¼ in. long, on stout ascending pedicels about ½ in. long, cotyledons accumbent and somewhat contorted.—Often of a weedy nature when well established.

BUNYA-BUNYA: *Araucaria Bidwillii.*

BUPHTHÁLMUM. Ox-Eye. *Compositæ.* Showy herbaceous perennials with large yellow heads of disk- and ray-fls. and alternate entire or toothed lvs.; pappus of scales united into a crown. Native in Eu. and W. Asia. Of easy cult. in the border, and mostly hardy N. Propagated by division; also by seeds and sometimes blooming first year.

cordifòlium: *B. speciosum.*

grandiflòrum. Perhaps synonymous with *B. salicifolium* but with long-acuminate nearly glabrous lvs. S. Eu.

salicifòlium. To 2 ft.: lvs. oblong-lanceolate, toothed, white-hairy: heads solitary and terminal, to 2 in. across. S. Eu.—Spreads rapidly by underground parts.

speciosíssimum (*Telekia speciosissima*). To 5 ft.: lvs. oval-cordate, clasping, toothed, hairy only on midrib below: heads solitary and terminal. S. Eu.

speciòsum (*B. cordifolium. Telekia speciosa*). To 4 ft., pubescent: lvs. cordate-ovate, coarsely toothed, very large: heads 2–5, large. S. Eu., W. Asia.

BUPLEÙRUM. Thorough-Wax. *Umbelliferæ.* Old World herbs or shrubs with simple entire lvs., yellow fls. in compound umbels, and compressed frs.; suitable for dry sterile soils in warm climates, being grown for ornament.

fruticòsum. Subshrub to 6 ft., evergreen or partially so: lvs. oblong, to 3½ in. long, leathery: umbels to 4 in. across, subtended by deflexed bracts. S. Eu.

ranunculoìdes. Per. to 2 ft. with flexuous sts.: lvs. lanceolate or linear, 3–7-nerved: involucels with 5–6 oval bracts, not deflexed. Cent. and S. W. Eu.

rotundifòlium. Ann. to 2 ft., with stiff glabrous branching sts.: lvs. broadly ovate or oval, to 1½ in. long, obtuse or mucronate, perfoliate: umbels to 1 in. across with large yellowish involucral bracts. Eu.; nat. in cult. fields of U. S.

BUR, BUTTER-: *Petasites.* **New Zealand:** *Acæna microphylla.*

BURDOCK: *Arctium.*

BURLINGTONIA FRAGRANS: *Rodriguezia venusta.*

BURNET: *Sanguisorba.*

BURNING-BUSH: *Dictamnus albus, Euonymus atropurpureus.*

BURSÀRIA. *Pittosporaceæ.* Shrubs or trees with alternate simple lvs., small fls. in terminal panicles, and fr. a flat caps.; one species grown in S. Calif. for ornament.

spinòsa. Spiny shrub or small tree: lvs. to 1 in. long: fls. white: caps. about ¼ in. across. Australia.

BURST-WORT: *Herniaria.*

BUSH: shrub, particularly when dense and much branched.

BUSHMANS-POISON: *Acokanthera venenata.*

BÙTEA. *Leguminosæ.* Small Asiatic genus of trees and climbing shrubby vines, having large and showy papilionaceous (pea-like) fls., with nodes of racemes swollen, stamens diadelphous, the style beardless and pods 1-seeded.

frondòsa. Flame-of-the-Forest. Tree to 50 ft., twigs gray or brown silky-pubescent: lvs. trifoliolate on petioles to 6 in. long, lfts. rhombic with terminal one more rounded, to 8 in. long, leathery, silky beneath: fls. bright orange-red, corolla silvery-tomentose outside, to 1 in. across or more, in racemes to 6 in. long: pods silvery-canescent, to 8 in. long and 2 in. wide. India to Burma.—A trop. tree of which seeds are offered in the S.

BÙTIA. Yatay Palms. *Palmaceæ.* Species of Cocos segregates but without the aspect of Cocos, Arecastrum, Rhyticocos or Syagrus, of warm-temp. Brazil to Uruguay, Paraguay and Argentina: short stocky monœcious feather-lvd. palms, trunk solitary and covered with lf.-bases or their scars and 3–15 ft. high, plant unarmed except for the spine-margined hard flattened or thin-edged petiole: lvs. stiffish, decurved beyond the middle, grayish- or glaucous-green; pinnæ standing well up from the rachis then curving, strongly conduplicate toward base, long and narrow: spadix from axils of lower lvs., the spathe not plicate or grooved outside; stamens 6, borne on upper part of spadix branches: fr. globose, ovoid or ovoid-conic, yellow or reddish, 1 in. long more or less, with a pulpy-fibrous or rather soft yellowish exterior, 3-celled but 1 or 2 seeds sometimes aborted; albumen not ruminate. The Butias are hardy palms, hardly regarded as real trees by planters, thriving in S. Calif., on the Gulf Coast and southward, and on coast to N. C. See *Palm.*

Bonnètii (*Cocos Bonnetii. C. Gaertneri*). Low palm, the trunk 1–4 ft., small in all parts: pinnæ equally spaced, not aggregate, narrow: spadix 2 ft. or so, the spathe glabrous on outside; fls. and fr. small, the latter about ¾ in. long and four-fifths as broad, ovoid-conic and acute and held for a third or half its length in the enlarging perianth. Brazil.—See note under *Arikuryroba.*

capitàta (*Cocos capitata. C. australis* and *C. coronata* of hort. not of botanists). Variable in arrangement of pinnæ and character of fr.: trunk stout, to 12–20 ft. or more and 1½ ft. diam., becoming bare of lf.-bases at the bottom: lvs. long and gracefully curving; pinnæ many, to 2½ ft., whitish beneath, often 2–3 together; petiole glabrous, spiny at base: spadix 4–5 ft. long, spathe generally glaucescent: fr. ovoid, about 1 in. long or a little more at maturity and four-fifths as broad; nutlet elliptic, more or less acute; perianth deeply cup-like at base of fr. Brazil; commonly planted in S. Calif. and elsewhere. Var. **Nehrlingiàna** (*Cocos Nehrlingiana*) has violet-red fls. and frs. Var. **odoràta** (*Cocos odorata*). Fr. depressed-globose, about ¾–1 in. lengthwise, at maturity broader than long; nutlet nearly spherical; fruiting perianth not cup-like, flattened and expanded under base of fr. Var. **pulpòsa** (*Cocos pulposa*). Fr. globose, only lightly depressed, very pulpy, 1¼–1½ in. lengthwise; nutlet and seed spherical; fruiting perianth cup-like but not deep. Var. **stríctior.** Upright close grower, all the lvs. strongly ascending. Var. **viréscens.** Lvs. brilliant green, not glaucous.

eriospàtha (*Cocos eriospatha*). Trunk stout, 4–10 ft., becoming naked below: spathe densely brown-tomentose on outside: pinnæ equally distant, not assembled unless at base of rachis, green above and somewhat glaucous underneath, petiole tomentose on margin at base: fr. small, nearly globular, ⅝–¾ in. either way, with a short abrupt point; nutlet globose; fruiting perianth shallowly cup-like. S. Brazil.—*Cocos Blumenavia*, planted in Calif., apparently belongs here.

Nehrlingiàna: *B. capitata* var.

Yatày (*Cocos Yatay*). Stout palm, trunk to 8 or 10 ft. and about 1½ ft. diam.: petiole glabrous and armed on margin; pinnæ numerous, about equally placed or somewhat aggregate near the base, glaucescent underneath: fr. ovoid-conic and acuminate, 1½–2 in. long and 1 in. or more thick; cup-like fruiting perianth ⅓–½ length of fr. Uruguay, Argentina.

BUTNERIA: *Calycanthus.*

BUTOMÀCEÆ. Butomus Family. Four genera of aquatic per. herbs with basal lvs., bisexual fls. solitary or in umbels, having 3 sepals and petals, 9 or more stamens, and 6 or more ovaries. By some writers the genera have been placed in Alismaceæ. Butomus, Hydrocleis and Limnocharis may be grown in ponds and aquaria.

BÙTOMUS. *Butomaceæ.* One erect aquatic herb native in Eu. and Asia, **B. umbellàtus.** Flowering-Rush. Lvs. linear, to 3 ft. long: fls. rose-colored, 1 in. across, in many-fld. umbels on naked rush-like scapes to 4 ft. high. Easily grown in ponds, hardy N. Propagated by division.

BUTTER-AND-EGGS: *Linaria vulgaris.*

BUTTERCUP: *Ranunculus.* **Bermuda:** *Oxalis cernua.*

BUTTERFLY-BUSH: *Buddleja.*

BUTTERFLY-FLOWER: *Schizanthus, Bauhinia monarda.*

BUTTERFLY-WEED: *Asclepias tuberosa.*

BUTTERNUT: *Juglans cinerea.*

BUTTERWORT: *Pinguicula.*

BUTTON-BUSH: *Cephalanthus.*

BUTTONWOOD: *Platanus occidentalis.*

BUXÀCEÆ. Box Family. Herbs, shrubs or trees, with persistent foliage, of about 6 widely distributed genera, with simple lvs., monœcious fls. without petals, superior usually 3-celled ovary, and capsular or drupaceous fr. The ornamental genera Buxus, Pachysandra, Sarcocca and Simmondsia are cult.

BÚXUS. Box. *Buxaceæ.* Evergreen shrubs with small opposite entire stiff lvs., very small fls. in little axillary clusters or spikes, and fr. a caps.

Extensively used for hedges and edgings, as the plants stand pruning and shearing well. Box is suited to any well-drained soil and thrives in partial shade. Plants may be set out in spring or in August and September. Propagated by hardwood cuttings, suckers or division, or layering. Seeds may be sown but the plants grow very slowly. Dwarf varieties may also be propagated by division. In protected or favored places both common species stand in parts of New York and central New England.

arboréscens: *B. sempervirens* var.

baleárica. To 30 ft.: lvs. larger and not so shining as *B. sempervirens.* Spain, Balearic Isls.

Fórtunei: *B. microphylla* var. *japonica.*

Hárlandii. Differs from *B. microphylla* in lvs. oblanceolate to oblong, to ¾ in. long, somewhat narrowed toward base. China.

japónica: *B. microphylla* var.

koriénsis: probably *B. microphylla* var. *koreana.*

microphýlla. To 3 ft. or often prostrate, branches conspicuously winged, mostly glabrous: lvs. somewhat obovate, broadest above middle. Japan. Var. **japónica** (*B. japonica. B. Fortunei*). To 6 ft.: runs into several forms, as **angustifòlia** with long narrow lvs., **aùrea** with yellowish foliage, **latifòlia** with broad lvs., **rotundifòlia** with large bluish-green lvs. Var. **koreàna,** to 2 ft. Korea. Var. **sínica,** twigs briefly pilose, lvs. usually emarginate and orbicular to ovate-lanceolate. China.

nàna: dwarf forms of *B. sempervirens.*

sempérvirens. Common B. To 25 ft., with 4-angled or slightly winged branches, mostly somewhat pubescent: lvs. elliptic, broadest about or below the middle. Eu., N. Afr., W. Asia. There are many forms in cult., such as: **angustifòlia** (vars. *longifolia* and *salicifolia*) with long narrow lvs.; **arboréscens** which grows to a small tree; **argénteo-variegàta** (var. *argentea*), the lvs. edged with silvery-white; **aùreo-variegàta** (var. *aurea*), lvs. yellow or variegated with yellow; **bullàta,** lvs. bullate, large; **élegans,** a variegated form with oblong lvs.; **Hándsworthii,** a bushy type with large broad lvs.; **marginàta,** lvs. edged with yellow; **myrtifòlia,** a dwarf form with narrow lvs.; **pyramidàta** (var. *conica*), of erect conical habit; **rosmarinifòlia,** a low kind with narrow lvs.; **rotundifòlia** (var. *latifolia*) has broadly oval lvs.; **suffruticòsa,** a dwarf form with small lvs. Other listed forms include: *fastigiata, globosa* and *oleæfolia.*

suffruticòsa: *B. sempervirens* var.

BYRNESIA: *Graptopetalum.*

C

CABBAGE (*Brassica oleracea* var. *capitata*). One of the standard garden vegetables and truck crops, essentially a cool-season plant but growing continuously through the summer; in all stages it withstands considerable frost, although young plants from hotbeds must be hardened off. Soil should be deep and fertile, and it should be capable of holding abundant moisture to supply the heavy demands in growth. The cabbages of many kinds have been developed through centuries apparently from *Brassica oleracea* of coasts of western Europe. The varieties differ in season, in color and size and shape of head. The Savoy cabbages, which are of excellent quality, are a race with puckered or blistered (bullate) leaves. It is usual to classify by season into three groups, early, midseason, late or winter. Consult experiment station and government bulletins, and dealers catalogues, for current varieties.

For very early and early crops, as of Wakefield, Golden Acre, and Copenhagen Market, seeds are usually sown in a hotbed or indoors a month at least before hard frosts are expected to cease. The seedlings may be transplanted into flats or into other frames, to keep them stocky. They should be given plenty of air, with reduction of temperature, to harden them for the field. In the field the plants are placed in rows 30–36 inches apart, and about 18 inches in the row.

For later and midseason crop, as of Glory, Succession, and All Season, seeds are commonly sown in the open in seed-beds six to eight weeks before time for planting in the field in rows 3 inches or more apart; from these rows they are usually transplanted directly to the field, the plants having been well thinned in the meantime if they begin to crowd. These later or main summer kinds are commonly given more room in the field, both because they grow larger and to allow for horse tillage.

Of the autumn and winter kinds, as Ballhead, Drumheads, and Flat Dutch, seeds are sometimes placed in hills where the plants are to stand, all plants but one being removed as they grow. A much better procedure, however, is to grow in seed-beds, transplanting to the field in July in the North. The plants usually stand 2 feet apart in rows with 3 feet space between. For winter storage only the long-keeping varieties should be employed; the heads should be mature and solid, free from injury and disease, internally moist and plump, but the center of the head should be free of water. They may be buried, usually heads down to keep them clear of water, or placed on racks in a building kept near freezing yet warm enough so that the heads do not freeze. When buried, care must be taken to choose a well-drained place, and if any quantity is stored provision should be made for ventilation; they are covered deeply enough to keep them cool in warm spells and also to protect from hard freezing in cold weather. If too warm they may rot. Usually 3 or 4 inches of earth are first placed on the pit or trench, and more added, or a straw covering applied, as cold weather advances. The heads are usually not more than two tiers deep.

In the midsouthern parts of the United States, cabbage plants are often started in autumn and carried over winter in the field; they are then ready for growth in earliest spring. Far South cabbage is treated as a winter or early spring crop, being grown continuously in the cool season.

Allowing for losses, 4 to 6 ounces of seed are generally required to produce sufficient plants for an acre.

Many insects and fungi attack cabbages. The grower should keep in touch each year with the new advice issuing from the experiment stations and departments of government. The root-maggot is often a serious pest; young plants in seed-beds may be protected from the adult fly by covering securely with cheese-cloth, or by soaking the soil of the bed with a solution of corrosive sublimate 1 ounce to 8 or 10 gallons of water. In the field early cabbage plants can be protected by applying about ¼ pint of corrosive sublimate solution around each plant when the fly appears and making two additional applications a week apart. The club-root fungus is controlled by long rotations in which related plants (crucifers) are not grown; also by liming to bring the soil reaction to neutral (pH 7) or slightly alkaline. Cabbage-worms can be kept in check by dusting or spraying with poisons such as arsenate of lead, rotenone or pyrethrum; it is not safe to apply arsenates after the heads begin to form but the other poisons are safe as they are not poisonous to humans. Aphis or louse is controlled by spraying or dusting with preparations of nicotine sulfate.

CABBAGE, DEER-: *Lupinus diffusus.* **Squaw:** *Caulanthus inflatus.* **Wild:** *Caulanthus.*

CABBAGE, SKUNK-: *Symplocarpus fœtidus.* **Yellow:** *Lysichitum.*

CABBAGE-TREE: *Andira inermis*, *Sabal Palmetto*, and other palms in the tropics.

CABÓMBA. FANWORT. WATER-SHIELD. *Nymphæaceæ* (or *Cabombacaceæ*). Aquatics of the western hemisphere, sometimes grown in ponds and aquaria: floating lvs. entire, submerged lvs. finely divided: fls. very small, with 3 sepals and petals. Grown from cuttings set in the earth in 1–2 ft. of water, by division of the plants, and by seeds.

aquática of some authors: *C. caroliniana.*

caroliniàna (*C. aquatica. C. viridifolia*). WASHINGTON PLANT. FISH-GRASS. Floating lvs. green, very narrow, to ¾ in. long: fls. axillary, ½ in. broad, white with 2 yellow spots at base of each petal. Ponds and slow streams, S. Ill. to Fla. and Tex. Var. **pulchérrima,** sts. reddish-purple, lvs. darker with narrow segms., petals bright purple. Ga. Var. **rosæfòlia** has reddish lvs. and is more difficult to propagate than the type.

viridifòlia: *C. caroliniana.*

CACALIA: *Emilia, Kleinia repens.*

CACAO: *Theobroma Cacao.*

CACCÍNIA. *Boraginaceæ.* Per. W. Asiatic herbs allied to Borago. One species, **C. glaûca,** is cult. To 3 ft. tall, somewhat branched, scabrous and bearing tubercles or small prickles and depressed wart-like glands: lvs. elliptic-oblong, to 8 in. long, very pale green, margins dentate-spiny, midrib somewhat enlarged and fleshy: fls. violet-blue turning red, the ovate-lanceolate lobes about ½ in. long, exserted beyond calyx and rotate to recurved. Persia, Afghanistan.

CACTI, CACTÀCEÆ. Cactus Family. Over 1,300 species of cacti are known, now arranged in more than 100 genera. They are American plants, the few that occur wild in other parts of the world being probably spread from the western hemisphere. They are plants of varied habit, but in most kinds (with marked exception in Pereskia) the leaves are minute and indistinguishable to the general observer, or are very early deciduous, and the vital functions are performed by the green plant body. For the most part the cacti are spiny, the spines arising from cushions or areoles; often, as in Opuntia, the spines are accompanied by small easily detached barbed bristles or glochidia that penetrate the skin. In many or most cases some of the spines at the areole are spreading or radial and others more or less erect and central. The flowers are bisexual, mostly without well-defined distinction between calyx and corolla; they are often very showy, in white, yellow and shades of red. The fruit is mostly a fleshy berry-like body, sometimes edible. Cacti are grown for the odd shape of the plant body as well as for the flowers; sometimes the plant is rigidly columnar, or barrel-shaped or even globular; but there are slender climbing and trailing forms and massive tree-like structures. Cacti are fascinating to lovers of oddities and novelties, and any number of kinds may be brought into cultivation from the wild; in fact, much of the stock has been collected rather than propagated plants. In this book obviously only the more generally cultivated or mentioned species can be included. The genera represented in cultivation are Acanthocalycium, Acanthocereus, Ancistrocactus, Aporocactus, Arequipa, Ariocarpus, Arrojadoa, Arthrocereus, Astrophytum, Aztekium, Bartschella, Bergerocactus, Binghamia, Borzicactus, Browningia, Carnegiea, Cephalocereus, Cereus (now divided into many genera), Chamæcereus, Chilenia, Cleistocactus, Cochemiea, Copiapoa, Corryocactus, Coryphantha, Deamia, Dendrocereus, Denmoza, Discocactus, Disocactus, Dolichothele, Echinocactus, Echinocereus, Echinofossulocactus, Echinomastus, Echinopsis, Epiphyllanthus, Epiphyllum, Epithelantha, Erdisia, Eriosyce, Escobaria, Escontria, Espostoa, Eulychnia, Facheiroa, Ferocactus, Frailea, Grusonia, Gymnocalycium, Haageocereus, Hamatocactus, Harrisia, Hatiora, Heliocereus, Homalocephala, Hylocereus, Lemaireocereus, Lepismium, Leptocereus, Leuchtenbergia, Lobivia, Lophocereus, Lophophora, Machærocereus, Malacocarpus, Mamillopsis, Mammillaria, Matucana, Mediocactus, Mediolobivia, Melocactus, Mila, Monvillea, Myrtillocactus, Neobesseya, Neolloydia, Neoporteria, Neoraimondia, Neowerdermannia, Nopalea, Nopalxochia, Notocactus, Nyctocereus, Obregonia, Opuntia, Oreocereus, Oroya, Pachycereus, Parodia, Pediocactus, Pelecyphora, Peniocereus, Pereskia, Pereskiopsis, Pfeiffera, Phellosperma, Phyllocactus, Pilocereus, Porfiria, Pyrrhocactus, Rathbunia, Rhipsalis, Roseocactus, Schlumbergera, Sclerocactus, Selenicereus, Solisia, Spegazzinia, Stenocactus, Stetsonia, Strombocactus, Thelocactus, Toumeya, Trichocereus, Weberocereus, Wilcoxia, Wilmattea, Zehntnerella, Zygocactus. See *Succulents*. The Cactus and Succulent Society of America publishes a journal in Los Angeles.

The Cactaceæ or Cactus Family divides itself into two rather marked groups, one of which is characterized by regular foliage leaves as in other plants and not looking much like cacti to the general observer, and the flowers are more or less stalked: to this group belongs the single genus Pereskia with about a score of species. The other group has no true foliage leaves, except in the anomalous genus Pereskiopsis, such leaves as appear being small or rudimentary and often falling early, and the flowers are without stalks. The second group divides itself into two tribes, the opuntia-like plants mostly bearing glochids on the areoles, the vegetative parts having small and short-lived leaves and the flowers rotate (wheel-shaped, without definite tube), and the cereus-like plants without glochids and leaves and the flowers mostly with definite and often very long tubes. To the Opuntia tribe belong seven genera, as now treated, only Opuntia and perhaps Nopalea being much known horticulturally. To the Cereus tribe belong all the other genera of the Cactaceæ, of which some of the most prominent horticulturally are Cereus, Cephalocereus, Echinocactus, Echinocereus, Echinopsis, Epipphyllum, Harrisia, Hylocereus, Mammillaria, Nyctocereus, Rhipsalis, Selenicereus, Zygocactus.

In the recent studies of cacti many new names have been introduced, but the familiar old names are given here as synonyms (in parentheses) so that the identities and relationships may be traced; and these synonyms also suggest the cultural requirements of plants under strange appellations.

Although most of the cacti are desert or dry-country plants, they need liberal supply of water in their growing period. For the most part they are summer bloomers and are more or less dormant in winter, when care should be taken not to over-water them, but they soon suffer in pots if allowed to be dry for any length of time, and they should not be grown close to hot pipes. Soils should be open in texture to insure proper drainage; sand and sometimes pounded brick are often added to the soil, and care should be taken not to have much fresh organic material in it. In summer, if placed out-of-doors, the plants are usually plunged rather than turned out of the pots.

Propagation is by offsets in the species that produce them, and most kinds grow readily from cuttings made of the stems or joints. The severed or cut surface should be allowed to dry in the air for several days, until it is seared or a corky layer has formed; the cutting is then inserted shallowly in sand in a pot or pan. Cacti start quickly from seeds, when they are available, and seed-grown plants commonly are more amenable under glass than those transplanted directly from the wild. Seeds should be sown only in sterilized soil. Seeds of some cacti, as of opuntias and echinocacti, germinate in a few days. The seedlings may remain in their pots or pans for several months or more before transplanting. When large enough they are transplanted to other pots or pans; and the shifting may then proceed as required, being careful not to use too large pots.

The cacti are easily grafted on other stocks. This practice is employed in order to provide weeping kinds with straight stout stems or standards, and also to propagate the many crested and contorted forms, and sometimes to elevate small globular kinds. Pereskia stocks are often employed, and also some of the strong columnar kinds of the Cereus group. The cacti graft rather indiscriminately. Any method of applying the cut surfaces of stock and cion together is satisfactory if the surfaces are held firmly in place by cords or thongs. Wax is not employed. The cleft-graft is perhaps most commonly used, but when small globular forms are grafted on columnar stocks it is necessary only to cut off squarely the top of the stock and the base of the cion and to set one on the other, and tie the parts firmly together.

CACTUS (as a genus): see *Melocactus*. **CACTUS** (as a popular name): **Button:** *Epithelantha*. **Christmas:** *Zygocactus truncatus*. **Crab:** *Zygocactus truncatus*. **Deerhorn:** *Peniocereus Greggii*. **Easter:** *Schlumbergera Gaertneri*. **Fishhook:** *Ancistrocactus Scheeri*. **Giant:** *Carnegiea gigantea*. **Hair-brush:** *Pachycereus pecten-aboriginum*. **Hatchet:** *Pelecyphora*. **Hook:** *Ancistrocactus*. **Mistletoe:** *Rhipsalis cassutha*. **Mountain:** *Oreocereus*. **Old-Man:** *Cephalocereus senilis*. **Organ-Pipe:** *Lemaireocereus marginatus*. **Rainbow:** *Echinocereus rigidissimus*. **Rat-tail:** *Aporocactus flagelliformis*. **Redbird-:** *Pedilanthus tithymaloides*. **Sea Urchin:** *Echinopsis*. **Snowball:** *Pediocactus Simpsonii*. **Star:** *Astrophytum*. **Turks-Cap or -Head:** *Melocactus communis*. **Vine-:** *Fouquieria splendens*.

CÆSALPÌNIA. *Leguminosæ*. Armed or unarmed trees and shrubs, sometimes climbing, native in warm regions of both hemispheres, with 2-pinnate lvs., yellow or red fls., not papilionaceous, in racemes, and mostly flattened pods; planted for ornament in tropical and subtropical countries.

Propagated by seeds which will germinate more readily if soaked in warm water some hours before sowing. Transplant into pots as soon as seedlings show the first true leaf. In frostless regions the plants may soon be set permanently out-of-doors.

Bónduc (*Guilandina* and *C. Crista* of hort. and authors). Nicker-Nut. Straggling more or less climbing prickly shrub: lfts. numerous, ovate: fls. yellow: pods oval, prickly, 2½ in. long. Trop. Amer.

coriària (*Libidia coriaria*). Divi-Divi. To 30 ft.: lfts. numerous and small: fls. yellow: pods oblong, curved, about 1 in. long. Trop. Amer.

Crísta (*C. Nuga*. *Ticanto Nuga*). Wood-Gossip. Prickly climbing shrub: lfts. ovate: fls. bright yellow: pods ovoid-oblong, 2 in. long. Malay Archipelago to S. China and Australia.—Recent studies have shown the name of this smooth-fruited plant to be the true *C. Crista* of Linnæus and the prickly-fruited *C. Crista* of the trade to be *C. Bonduc*.

echinàta. Brazil-Wood. Tree with prickly trunk: lfts. numerous, rhombic-oblong: fls. yellow: pods oblong, 3 in. long. Brazil.

Gìlliesii: *Poinciana Gilliesii*.

japónica. Thorny shrub to 8 ft.: lfts. oblong: fls. canary-yellow with bright red stamens: pods 3 in. long. Japan.

mexicàna. Shrub or small tree to 18 ft., unarmed: lfts. oblong to nearly orbicular: fls. yellow: pods 2½ in. long. Mex.

Nùga: *C. Crista*.

pulchérrima: *Poinciana pulcherrima*.

règia: *Delonix regia*.

Sappán (*Biancæa Sappan*). Prickly tree to 15 ft.: lfts. rhombic-oblong: fls. yellow: pods oblong, 3 in. long, beaked. India, Malaya.

sepiària (*Biancæa sepiaria*). Mysore Thorn. Prickly scrambling shrub: lfts. oblong: fls. yellow: pods 3 in. long, beaked. India.

spinòsa (*C. tinctoria*. *Coulteria tinctoria*. *Tara spinosa*). Tree or large shrub, the trunk covered with short sharp tubercles: lfts. oblong: fls. yellow, in dense racemes to 8 in. long: pods to 4½ in. long and 1 in. wide. Cuba, S. Amer.

tinctòria: *C. spinosa*.

CÆSALPINIACEÆ: *Leguminosæ*.

CAFTA: *Catha edulis*.

CAILLIÈA (*Dichrostachys*). *Leguminosæ*. Shrubs with finely divided acacia-like lvs., fls. in spikes, the upper ones bisexual and those on the lower half of spike with long slender staminodia, and flattened twisted pods; one species sometimes planted out-of-doors in S. Fla. and S. Calif. for ornament.

glomeràta (*Dichrostachys nutans*). Spiny hard-wooded shrub or small tree: fls. sulfur-yellow on upper part of spike, rosy or lilac on lower part: pods in heads. Trop. Afr.—A serious pest in Cuba, where it is known as *Aroma*.

CAIÓPHORA (spelled also *Cajophora*). *Loasaceæ*. S. American herbs usually with stinging hairs, opposite lvs., yellow, white or red fls., and capsular twisted frs.; one species cult. in the flower-garden. Propagated by seeds and cuttings.

laterítia (*Blumenbachia lateritia*. *Loasa lateritia*. *L. aurantiaca*). Ann., twining to 20 ft.: lvs. pinnate: fls. orange-red, to 2 in. across, on very long stalks.

CAJÀNUS. *Leguminosæ*. One shrub native probably in the old World. **C. Cajân** (*C. indicus*). Pigeon-Pea. Cajan. Much cult. in trop. countries for the edible small truncate-orbicular somewhat flattened seeds which often are known simply as "peas." To 10 ft.: lvs. of 3 lanceolate soft-hairy lfts. to 4 in. long: fls. yellow or orange, papilionaceous, in axillary racemes: pods to 3 in. long, hairy, constricted between the seeds, slender pointed.—Often grown as an ann. from seeds; in greenhouses propagated by cuttings. It thrives in the open in S. Fla.

CAJEPUT-TREE: *Melaleuca Leucadendra*.

CAJOPHORA: *Caiophora*.

CALABASH GOURD: *Lagenaria*.

CALABASH-TREE: *Crescentia Cujete*.

CALABAZILLA: *Cucurbita fœtidissima*.

CALACINUM: *Muehlenbeckia*.

CALÀDIUM. *Araceæ*. Trop. American herbs with tubers or rhizomes, usually peltate arrow-shaped lvs. mostly beautifully marked in many colors and patterns, and unisexual fls. on spadices slightly shorter than the spathes which have boat-shaped limbs; popular foliage plants in the S. and under glass in the N., often improperly called Colocasias.

Tubers may be planted in the open in well-worked soil to which bone-meal has been added. In the greenhouse tubers may be started in boxes of moss in a temperature varying from 70° to 85°; when roots are formed they should be put in pots and shifted as they grow. Propagation may also be effected by seeds.

argyrìtes: *C. Humboldtii*.

bícolor. Lvs. ovate, variously colored above, giving rise to many named forms, glaucescent beneath, the petioles 3–7 times longer than blades: spathes green, violet at throat, the limb tipped white. Trop. Amer.—The usual species in cult.

bulbòsum: hort. name.

cándidum: unidentified trade name.

esculéntum: *Colocasia esculenta*.

Húmboldtii (*C. argyrites*). Lvs. ovate-oblong or oblong, green, spotted between veins with large transparent white markings, the petioles 2–3 times longer than blades. Brazil.

picturàtum. Lvs. lanceolate, variously colored above, pale beneath, the petioles variegated below: spathes green, purplish inside, the limb white. Brazil, Peru.

Schómburgkii. Lvs. obliquely elliptic-ovate, midrib and veins silvery or red, slightly spotted above, petioles 4 times longer than blades. Guiana, Brazil.

CALAMINTHA: *Satureja*.

CALAMONDIN: *Citrus mitis*; see *Citrus Fruits* (page 183).

CALAMPELIS: *Eccremocarpus*.

CÁLAMUS. Cane and Rattan Palms. *Palmaceæ*. The largest genus of palms, with more than 300 species in trop. and subtrop.

Asia and Afr. to the Philippines, New Guinea and Australia; some of them have been tried in S. Fla., but are not sufficiently hardy; Dæmonorops is a similar genus. The calami are mostly climbing plants with hooks on the midrib or the upper pinnæ transformed into hooked spines or the rachis perhaps prolonged and whip-like and making very long reed-like sts.; feather-palms, polygamo-diœcious, with axillary branched spadices: fr. globose or ellipsoid, clothed with close scales. See *Palm*.

ciliàris. Very slender, covering a trellis or other support, climbing by means of long leafless branches with hooked spines: lf.-blade 1½–2½ ft. long, petiole very short, pinnæ 40–50 pairs and hairy: fr. globose, about ½ in. diam. Java, Sumatra.

Ròtang. One of the species that yield rattan: very slender climber: lvs. 1½–2 ft. long, without whip-like prolongation; petiole very short; pinnæ very many and ½ in. or less broad, setose on ribs and margins: fr. subglobose, ½ in. diam. India.

CALANDRÌNIA. *Portulacaceæ.* Rather fleshy low herbs of the western side of the Americas, with narrow alternate or basal lvs., red or rose ephemeral fls. in racemes or panicles, and capsular frs.; suitable for borders or rock-gardens. Cult. as annuals and propagated by seeds or cuttings.

Bùrridgei. Ann. to 1 ft.: lvs. linear-lanceolate: fls. copper-rose or brick-red, small. S. Amer.

cauléscens: *C. ciliata.*

ciliàta (*C. caulescens*). Ann. to 1 ft.: lvs. linear-spatulate, to 1⅓ in. long, margins usually glabrous or ciliate: fls. purple or white fading to purple, to ⅝ in. across, solitary, axillary. Peru, Ecuador. Var. **Ménziesii** (*C. Menziesii. C. speciosa*). Red Maids. Ann., diffuse or erect, sts. to 2 ft. long: lvs. oblanceolate to linear, to 2 in. long: fls. crimson or rose-red, about ⅓ in. long. W. N. Amer.

grandiflòra. Per. to 3 ft.: lvs. oval, to 8 in. long: fls. light purple. Chile.

Ménziesii: *C. ciliata* var.

speciòsa: *C. ciliata* var. *Menziesii.*

umbellàta. Per. to 6 in.: lvs. linear, basal: fls. bright crimson-magenta. Peru.

CALÁNTHE. *Orchidaceæ.* Terrestrial or epiphytic orchids, sometimes having pseudobulbs, with broad plaited lvs. and white, rose or yellow fls. on erect or nodding scapes, the sepals and petals similar, the lip with the claw united to the column, usually 3-lobed and spurred. They require hothouse conditions, are mostly deciduous, and require rest after fls. are past in winter. See *Orchids*.

béllа (*C. Harrisii*). Hybrid between *C. Veitchii* and *C. Turneri* (the latter a form of *C. vestita* with crimson-blotched lip).

díscolor. Lvs. 2–3, broadly lanceolate-elliptic, to 12 in. long, strongly striate, acute: scape erect, to 16 in. high; infl. about 6–12-fld.; sepals and petals wine-red, lanceolate-elliptic; lip white suffused or dotted with pale pink, 3-lobed, the center lobe bifid. Japan.—Varieties of this species have yellow or green sepals and petals.

furcàta (*C. veratrifolia*). Lvs. to about 2 ft. long, lanceolate-elliptic: fls. snow-white often with yellow at base of lip, to almost 2 in. across, in many-fld. racemes on scapes to 3 ft. or more high, lip 4-lobed, spur slender. Jan.–Dec. India, Pacific Isls., Australia.

Hárrisii: *C. bella.*

Lasselliàna. Hybrid.

Múrrayi: hort. form having white fls. with wine-colored center.

Orpetiàna: fls. white with dark pink center.

Regnièri: *C. vestita* var.

Sanderiàna. Lvs. elliptic-lanceolate, to 1 ft. long: fls. in many-fld. racemes, the sepals and petals rose-colored, the lip bright rosy-crimson. Trop. Afr.

Sandhurstiàna: *C. Veitchii* var.

Vánderbiltii: fls. cream with purple center.

Veìtchii. Hybrid between *C. rosea* and *C. vestita*, having rose-colored fls. with a white spot at base of lip. Var. **Sandhurstiàna** (*C. Sandhurstiana*) has crimson fls. Other listed forms are **ròsea** and **summiténsis.**

veratrifòlia: *C. furcata.*

vestìta. Pseudobulbs 3 in. high; lvs. broad-lanceolate, to 1½ ft. long: fls. white or creamy, 2½ in. across, in 6–12-fld. racemes on scapes to 2½ ft. long, the 4-lobed lip marked with orange-yellow at base and with slender spur. Nov.–Dec. Burma, Malaya. Var. **Regnièri** has less deeply lobed rose-colored lip marked with purple in throat. Var. **Wîlliamsii** has white sepals and petals bordered with rose and deep rose lip.

Whittiàna. Hybrid.

Wîlliamsii: *C. vestita* var.

CALATHÈA. *Marantaceæ.* Trop. American or African per. herbs with attractively colored basal tufted lvs. and fls. in heads or cones borne on scapes among the lvs.; commonly known as Marantas, but Maranta is a separate genus distinguished by technical characters. These plants, in both genera, are difficult to determine as to species without inflorescence, and foliage should be had from normally grown and developed subjects. Leaf-blades are intended in the subjoined dimensions of lvs.

Calatheas should be grown in a moist close greenhouse with a night temperature not below 65°. They require good drainage and loam soil mixed with leaf-mold and sand. They should be shaded from the direct rays of the sun. In subtropical climates calatheas may be grown out-of-doors with winter protection. Leaf colors are likely to differ between young and old plants. Propagated by dividing the crowns, by tubers or by cuttings in spring.

Alloùia. To 4 ft., with edible tubers: lvs. to 24 in. long and 6 in. broad, light green above, silvery beneath. Trop. Amer.—Tubers edible.

Bachemiàna (*Maranta Kegeliana*). To 16 in.: lvs. to 10 in. long and 2½ in. wide, unequal-sided, silvery-green above with white lines along nerves, purplish or greenish beneath. Brazil.

béllа. Stemless: lvs. to 6 in. long and 3 in. broad, whitish-green above, pale purple beneath. Habitat unknown.

bícolor: *Maranta bicolor.*

Chantrièri. To 7 ft.: lvs. to 1½ ft. long, rich dark green but in juvenile stages pale yellowish-green with dark green band around margins and midrib, purplish-red beneath. Brazil.

exímia. To 1½ ft.: lvs. to 15 in. long, striped above with olive-green and silver, wine-red and pubescent beneath. Cent. Amer.

fasciàta. To 1 ft.: lvs. to 9 in. long and 7 in. broad, dark olive-green above transversely barred with silvery-white, dull grayish-green below. Brazil.

Goùletii: *C. Vandenheckei.*

illústris. To 9 in.: lvs. to 6 in. long and 5 in. wide, shining olive-green with metallic luster above having white marginal zone, dull red beneath. Ecuador.

imperiàlis: a variant of *C. ornata.*

insígnis. To 6 ft.: lvs. to 1½ ft. long and 10 in. broad, pale yellowish-green above margined and blotched with olive-green, dark maroon-red beneath. Brazil.

Legrelliàna. To 1 ft.: lvs. to 8 in. long and 3½ in. wide, shining green above with broad white central band and white transverse lines, whitish-green marked with red and green beneath. Colombia, Ecuador.

leopardìna. To 1½ ft.: lvs. to 8 in. long and 3½ in. broad, rich green but in juvenile stage dark olive-green in center surrounded by band of paler green. Brazil.

Liètzei (*Maranta conspicua*). To 2 ft.: lvs. to 9 in. long and 2½ in. broad, velvety green above striped between side veins with olive-green and splashed with yellowish-green, purplish-red underneath. Brazil.

Lindeniàna (*Maranta Lindenii*). To 3 ft.: lvs. to 1 ft. long, dark green above with olive-green zone either side the midrib and then darker zone, purplish zone beneath. Brazil.—Probably *Phrynium Lindenii*, Hort. belongs here.

Louìsæ. To 3 ft.: lvs. to 1 ft. long, light green above feathered with white along midrib, tinted with purple-red below. Habitat unknown.

Luciàna. To 3 ft.: lvs. to 1 ft. long, light green above with zone of greenish-white near margin and feathered along midrib, grayish-green beneath. Trop. Amer.

Makoyàna. To 4 ft.: lvs. olive-green or cream-colored beneath blotched with dark green, red beneath. Brazil.

mèdio-pícta. To 20 in.: lvs. to 8 in. long and 3½ in. wide, dark green above feathered with white along the midrib, pale green beneath. Brazil.

mìcans. To 8 in.: lvs. to 4 in. long and 1 in. broad, shining green above feathered with white, pale green beneath. Brazil.

musàica. Dwarf: lvs. cordate-ovate, to 6 in. long, pale shining green above transversely lined with lighter green. Brazil.

Oppenheimiàna: *Ctenanthe Oppenheimiana.*

ornàta. To 3 ft.: lvs. to 3 ft. long, rich green above, dull purple-red beneath, in juvenile forms often striped with pink and white. Guiana, Colombia, Ecuador. Var. **roseolineàta** is listed.

Pavònii (*C. tubispatha*). To 2 ft.: lvs. to 10 in. long and 5½ in. wide, bright green above spotted with light green and brown. Peru.—The plant cult. as *Maranta tubispatha* may be a form of *M. bicolor.*

prínceps. Lvs. to 30 in. long and 10 in. wide, light green above with broad central band of black-green, violet-purple below. Amazon.

pulchélla. Lvs. to 4 in. long and 2 in. wide, light green with transverse green bands, purple beneath. Brazil.

ròseo-pícta. To 8 in.: lvs. to 9 in. long and 6 in. broad, dark green above with red midrib and zone of bright red near margin, purple beneath. Brazil.

Sanderiàna: a variant of *C. ornata.*

smarágdina: *Monotagma smaragdinum.*

spléndida. To 1½ ft.: lvs. to 14 in. long and 10 in. wide, shining dark green above transversely barred with pale green, purple beneath. Brazil.

tubispàtha: *C. Pavonii.*

undulàta. To 8 in.: lvs. to 4 in. long and 2 in. broad, wavy, shining dark green above with a central white stripe, purplish beneath. Peru.

Vandenhéckei (*C.* and *Maranta Gouletii*). To 2½ ft.: lvs. to 9 in. long, dark green above marbled with silvery-white along midrib and band along margin, purplish-red beneath. Brazil.

Veitchiàna. To 4 ft.: lvs. to 1 ft. long and 6 in. wide, shining dark green above with irregular pale green band on either side midrib having brownish blotches, reddish underneath. Peru.

vittàta. To 3 ft.: lvs. to 1½ ft. long and 9 in. broad, light green above transversely striped with white, tinted yellowish-green beneath. Colombia.

Wállisii. To 4 ft.: lvs. to 1 ft. long, light green above with a row of olive-green blotches on either side midrib, grayish-green beneath. Peru.

Warscewíczii. To 3 ft.: lvs. 1 ft. long and 5 in. broad, velvety green above and midrib feathered with yellow-green, purple beneath. Costa Rica.

zebrìna. Zebra Plant. To 3 ft.: lvs. to 2 ft. long and 1 ft. across, velvety green above with transverse bands of pale yellow-green and olive-green, purplish-red beneath. Brazil. Var. **Binòtii** is a large form with darker colored lvs.

CALCEOLÀRIA (*Fagelia*). Slipperwort. *Scrophulariaceæ.* Herbaceous and shrubby plants cult. in greenhouses in the N. and in the open in warmer regions, having irregular cymes of showy saccate fls., the upper part of the fl. small and more or less pouched, the lower lip, in the cult. forms, very large and inflated and somewhat slipper-like, usually yellow, sometimes purple, often spotted; mostly native from Mex. to Chile.

The herbaceous calceolarias are grown from seed sown from late spring to early autumn for plants for the next winter and spring. Finely sifted soil should be provided, preferably one containing leaf-mold, and care should be exercised in watering as the seed is very small; sub-irrigation is the best method. A temperature of 60° is recommended and no direct sun till the plants are rather large.

The shrubby types are grown from seed or from cuttings. The latter are usually taken when the plants are trimmed in late summer or early autumn, choosing firm wood and cutting down to two joints, giving a temperature of 45–50° and protection from the sun.

álba. Shrubby, to 2 ft.: lvs. linear, to 2 in. long, remotely toothed: fls. white, ½ in. long and ⅓ in. across. Chile.

angustifòlia: *C. integrifolia* var.

biflòra. Per. to 1 ft.: lvs. in basal rosettes, ovate or spatulate, to 2½ in. long, toothed: fls. yellow, ½ in. long and ¾ in. wide. Chile, Argentina.

chelidonioìdes. Ann. to 3 ft.: lvs. to 8 in. long, pinnate into toothed segms.: fls. yellow, ½ in. long and 2 in. wide. Ecuador, Peru, Chile.

Clibrànii: *C. profusa.*

crenatiflòra. Per. to 2½ ft., pubescent: lvs. ovate, to 8 in. long, coarsely toothed: fls. drooping, to 1 in. long and broad, yellow with orange-brown spots on the inflated wavy lower lip. Chile.—Much grown by florists in many colors and large fls.

Dárwinii. Low cespitose nearly stemless per.: lvs. oblong, to 3 in. long, margin minutely toothed and wavy, glabrous: fls. yellow with large reddish-brown spots, to 1 in. wide, on scapes to 6 in. tall. Patagonia.—Said to be hardy on Pacific Coast, north to Vancouver.

Fothergíllii. Stemless per. to 6 in.: lvs. spatulate, to 1½ in. long, margin densely hairy: fls. sulfur-yellow spotted red, to ⅝ in. wide. Patagonia.—Hardy to Vancouver.

fruticohýbrida. A group of shrubby cultigens with yellow, orange or dull red spotted fls.; to be considered as forms of *C. integrifolia.*

grácilis. Ann. to 1½ ft., sticky-pubescent: lvs. pinnate, the lobes toothed, white beneath: fls. pale yellow, ½ in. long and ¼ in. wide. Peru, Ecuador.

grandiflòra tigrìna. A group with very large yellow, orange or dull red spotted fls.; probably forms of *C. crenatiflora.*

herbàcea: see *C. herbeohybrida.*

herbeohýbrida (*C. herbacea. C. hybrida. C. Youngii*). A group of herbaceous cultigens, usually dwarf or small, 2 ft. or less, with inflated pouches, in many colors; to be regarded as forms of *C. crenatiflora.*

hýbrida: see *C. herbeohybrida.*

integrifòlia (*C. rugosa*). Sts. woody, to 6 ft.: lvs. oblong or oval, to 3 in. long, rugose, toothed: fls. ½ in. across, yellow to red-brown, not spotted. Chile.—Much used by gardeners. Var. **angustifòlia** (*C. angustifolia*) has lanceolate lvs. Var. **viscosíssima** (*C. viscosissima*) is a sticky-hairy form.

lignòsa: a hort. form adapted for bedding, 1 ft. high, with golden-yellow fls.

Lýmanii: a hort. shrubby form with bronzy-red fls.

Médfordii: a hort. form with velvety-maroon fls.

mexicàna. Ann. to 1 ft., glandular-hairy: lower lvs. 3-parted or -lobed, the upper pinnate into ovate toothed segms., to 2½ in. long: fls. pale yellow, ½ in. long and ¼ in. wide. Mex., Cent. Amer.

multiflòra. Low shrub: lvs. ovate, to ½ in. long, opposite, margin toothed: fls. yellow, to ⅜ in. long, 3–4 in terminal clusters. Peru.—The material listed in trade as *C. multiflora nana* is probably a small-fld. floriferous form of *C. crenatiflora.*

pinnàta. Ann. to 3 ft., pubescent: lvs. pinnate, to 3 in. long: fls. pale yellow, ½ in. long and broad. Chile, Peru, Bolivia.

polyrrhìza. Dwarf tufted per. to 2 in.: lvs. lanceolate, to 2½ in. long: fls. yellow spotted purple, 1 in. long and ½ in. wide, solitary on scapes to 4 in. long. Chile.—One of the hardiest species, grown with protection in N. Y.

profùsa (*C. Clibranii*). A garden form, to 3 ft., very free-flowering: fls. light and graceful, rich golden-yellow.

racemòsa. Per. to 20 in.: lvs. oblong-acute, to 5 in. long, villous, margin toothed: fls. sulfur-yellow, remotely spotted red inside the sac, to ½ in. long. Chile.

rugòsa: *C. integrifolia.*

scabiosæfòlia. Pubescent ann. to 2 ft.: lvs. pinnate, to 8 in. long, the bases of the petioles united across the sts., lfts. toothed or cut: fls. pale yellow, ½ in. long and ⅓ in. across. Ecuador to Chile.

Stèwartii: a hort. shrubby form with yellow fls.

tenélla. Low creeping subshrub to 8 in. tall: lvs. broadly ovate, to ½ in. long or less, margin remotely toothed: fls. yellow, spotted within, to ½ in. long, usually 2–3 on peduncles to 6 in. long. Chile.—Hardy, if protected, on Pacific Coast.

umbellàta. Cespitose herb, mostly with very short st.: lvs. all nearly or quite radical, oblong, lanceolate or somewhat ovate, obtuse, entire, slightly hairy underneath: fls. yellow, 2–8 terminating a scape-like peduncle, the lip ½ in. or less across. Bolivia.

Veìtchii. Hybrid with *C. alba* as one parent, to 5 ft.: fls. rather small, pale lemon-yellow.

violàcea: *Jovellana violacea.*

viscosíssima: *C. integrifolia* var.

Yoúngii: *C. herbeohybrida.*

CALÉNDULA. *Compositæ.* Herbaceous annuals and perennials with simple alternate lvs. and usually large yellow or orange heads of ray- and disk-fls.; pappus none: fr. large, flattened or curved. Native from Canary Isls. to Persia, one a garden favorite.

Calendulas are of easy culture in the greenhouse as well as in the garden, growing quickly from seeds. Also propagated by cuttings, of special colors.

ægyptìaca. Ann. to 20 in., sticky-hairy: lvs. linear to linear-lanceolate: heads to nearly ½ in. across, few-fld. with very short ray-fls.: achenes ending in a beak as long as or longer than seed. Asia Minor to Egypt.

arvénsis (*C. bicolor*). Ann. to 1 ft., sts. ascending, pubescent: lvs. oblong-lanceolate, sessile, mucronate, dentate or entire: ray-fls. yellow, heads solitary, to 1½ in. across. Medit. region.

bícolor: *C. arvensis.*

chrysántha: *C. officinalis* var.

eriocárpa. Branching ann.: lvs. lanceolate, partly clasping, nearly glabrous: heads yellow, about 1 in. across. Country unknown.

hýbrida: *Dimorphotheca hybrida.*

maderénsis. Per. to 2 ft.: lvs. oblong-spatulate, attenuate at base, rough, nearly entire: heads yellow. Madeira.

marítima. Ann., sticky-pubescent: lvs. obovate to lanceolate, entire, the upper partly clasping: heads yellow, about 1½ in. across. Sicily.—Probably only a race of *C. officinalis.*

maroccàna. Similar to *C. suffruticosa,* differing in its much narrower lvs. which are entire or somewhat repandate-dentate. Morocco.

officinàlis. Pot-Marigold. Hardy branching ann. to 2 ft., hairy: lvs. thickish, oblong to oblong-ovate, entire or minutely toothed, partly clasping: heads to 4 in. across, rays white-yellow to deep orange, closing at night, blooming for the entire season; sometimes proliferous from the involucre. S. Eu.—A favorite flower-garden plant and grown for cut-flowers in winter. Var. **chrysántha** (*C. chrysantha*), a strain with chrysanthemum-like double fls. of buttercup-yellow.

pluviàlis: *Dimorphotheca annua.*

Póngei: *Dimorphotheca annua* var. *ligulosa.*

sícula. Probably only a race of *C. officinalis* distinguished by being almost glabrous and heads only about 1 in. across. S. Italy.

stellàta. Ann. to 1 ft., rough: lvs. ovate-oblong, the upper partly clasping, wavy-toothed: heads yellow, 1–2 in. across. Medit. region.

suffruticòsa. Ann., woody at base, pubescent: lvs. lanceolate, somewhat toothed: heads bright yellow, very numerous, about 1 in. across. Medit. region.

Tràgus: *Dimorphotheca aurantiaca.*

CALICO-BUSH: *Kalmia latifolia.*

CALICO-FLOWER: *Aristolochia elegans.*

CALÍMERIS. *Compositæ.* Hardy per. aster-like herbs, differing from Aster in the character of the involucre; native in Asia. One is cult. in the border and requires the same treatment as the perennial asters.

incìsa (*C. incisæfolia. Aster incisus*). To 2 ft.: lvs. oblong-lanceolate, cut-toothed, the upper narrower and entire: heads solitary, 1 in. across, rays purple or almost white, disk yellow. Siberia. Var. **ròsea** has pink fls.

CÁLLA. *Araceæ.* One herb growing in bogs in the north temp. zone, sometimes transplanted to pond-margins and wet places. The callas of gardens belong to the genus Zantedeschia. **C. palústris.** Water-Arum. Wild Calla. Lvs. ovate-cordate, to 6 in. long and broad, the petioles to 10 in. long: spathes green outside, white inside, about 2 in. long and 1½ in. wide; berries red, in dense cluster.—**C. pícta** is *Aglaonema pictum.*

CALLA, BLACK: *Arum palæstinum.* **Red:** *Sauromatum guttatum.*

CALLIÁNDRA (*Anneslia*). *Leguminosæ.* Trop. shrubs and trees with 2-pinnate lvs., fls. in heads or clusters having long conspicuous stamens, and flat pods with thickened margins; grown out-of-doors in trop. and subtrop. regions and in greenhouses N. Propagated by cuttings over bottom heat, when seeds are not available.

califórnica. To 4 ft.: weak slender spines at base of petioles: lfts. ¼ in. long: fls. purple with long purple stamens. Lower Calif.

eriophýlla. Low woody shrub to 1½ ft.: usually 1–4 pair of lfts. to ⅙ in. long or less, pubescent beneath and glabrous above: fls. purple, pubescent, in few-fld. heads. W. Tex. to Ariz.

Guíldingii. Small tree: lfts. to 2½ in. long: fls. greenish-white with crimson stamens to 3 in. long. Trinidad.

Houstoniàna. To 20 ft.: lfts. to ¼ in. long: fls. brown-tomentose with long purple stamens, the heads in terminal racemes. Mex., Cent. Amer.

portoricénsis. To 25 ft.: lfts. ⅗ in. long: fls. white with long white stamens. W. Indies.

Tweèdii (*Inga pulcherrima*). To 6 ft.: lfts. linear: fls. purple with long purple stamens. Brazil.

CALLICÁRPA. Beauty-Berry. *Verbenaceæ.* Shrubs and trees with opposite simple lvs., small pink, bluish or white fls. in axillary clusters, and attractive berry-like frs.

Callicarpas can be grown in a light airy place in the greenhouse in a compost of loam and peat. Propagated by cuttings, layers and seeds. They are raised for both the ornamental flowers and colored fruits in clusters. Some of them are fairly hardy in the North and if the tops kill, new shoots usually bloom and fruit.

americàna. French-Mulberry. Shrub to 6 ft.: lvs. to 6 in. long, toothed, white- or rusty-tomentose beneath: fls. bluish, May–July: fr. violet or white in var. **láctea** (var. *alba*). Va. to Tex., W. Indies; not hardy N.

Arnoldiàna: *C. japonica.*

Bodinièri (*C. Giraldiana* var. *subcanescens*). To 10 ft.: lvs. elliptic to oblong-elliptic, to 4 in. long, toothed, pubescent beneath: fls. pink, in dense cymes to 1½ in. across, July–Sept.: fr. violet. China; stands N. Var. **Giráldii** (*C. Giraldiana*) is a glabrescent form.

càna (*C. sinensis*). To 12 ft.: lvs. to 6 in. long, toothed, gray- or white-pubescent beneath: fls. lavender: fr. lavender. Malaya.

dichótoma (*C. purpurea. C. koreana*). Shrub to 4 ft.: lvs. to 3 in. long, toothed above middle: fls. pink, Aug.: fr. lilac-violet. Japan, China; stands well N.

Giraldiàna: *C. Bodinieri* var. *Giraldii.*

japónica (*C. Mimurazakii. C. Arnoldiana*). Shrub to 5 ft.: lvs. to 5 in. long, finely-toothed: fls. pink or whitish, Aug.: fr. violet or white in var. **leucocárpa.** Japan; stands N.

koreàna: *C. dichotoma.*

longifòlia. Shrub: lvs. to 5 in. long, lanceolate, pubescent beneath: fls. pink or purple: fr. white. Himalayas, China.

Mimurazákii: *C. japonica.*

purpùrea: *C. dichotoma.*

sinénsis: *C. cana.*

CALLICHROA: *Layia.*

CALLÍCOMA. *Cunoniaceæ.* A few small trees of Australia having opposite leathery lvs. and small fls. in heads, without petals; one species planted in S. Calif.

serratifòlia. To 40 ft.: lvs. oblong to ovate-lanceolate, to 4 in. long, coarsely toothed, shining above, tomentose beneath: heads globular, dense, stamens much exserted.

CALLICORE ROSEA: *Amaryllis Belladonna.*

CALLIGLOSSA: *Layia Calliglossa.*

CALLIOPSIS: *Coreopsis.*

CALLIPRORA: *Brodiæa ixioides.*

CALLÍRHOË. Poppy-Mallow. *Malvaceæ.* N. American herbs, root often tuberous, with alternate lobed or dissected lvs. (as if compound) and showy pink or red-purple fls.; some of them are attractive flower-garden subjects.

Seeds should be sown where the plants are to stand. Perennial kinds may also be propagated by cuttings and division of the roots.

digitàta. Per. to 1½ ft.: lvs. deeply parted into linear lobes or sometimes entire: fls. reddish-purple to violet, to 2 in. across, with small calyx. Mo. to Tex.

involucràta (*C. verticillata*). Per. to 1 ft., hirsute to hispid: lvs. deeply 5–7-parted: fls. red-purple or paler, to 2½ in. across, with leafy calyx. Minn. to Tex. Var. **linearíloba** (*C. lineariloba*) is less hairy with smaller lvs., the upper ones linear lobed. Tex., Mex.

linearíloba: *C. involucrata* var.

Papàver. Per., main st. 1 ft. or more, peduncle-like branches 8–12 in. long and solitary or somewhat clustered: lvs. 3–5-parted into narrow divisions: fls. rose or purple, 2 in. across. Ga., Fla. to Tex.

pedàta. Ann. to 3 ft.: lower lvs. 5–7-lobed, the upper ones 3–5-parted: fls. red-purple to lilac, 1 in. long, with small calyx. Mo. to Tex.

triangulàta. Per. to 3½ ft.: lvs. mostly basal, triangular-hastate, to 2 in. long, upper ones usually 7-lobed, the segms. coarsely toothed to pinnatifid: fls. deep purple, few to several on each peduncle. N. C. to Tex., north to Minn.

verticillàta: *C. involucrata.*

CALLISTACHYS: *Oxylobium.*

CALLISTEMMA: *Callistephus.*

CALLISTÈMON. Bottle-Brush. *Myrtaceæ.* Australian shrubs or small trees with scattered linear or lanceolate entire simple leathery lvs., showy yellow or red fls. in dense spikes resembling a bottle-brush due to the long exserted stamens (which are not united with each other) and capsular frs.; suitable for cult. in warm-temp. regions, particularly in Calif.

They are not particular as to soil. Propagated by seeds or cuttings of ripened wood. Seeds are gathered in summer by allowing the capsules to open in boxes or sheets of paper and are sown the next spring.

brachyándrus. Shrub: lvs. stiff and needle-like, to 1½ in. long: fls. with dark red stamens and yellow anthers, in spikes to 3 in. long.

citrìnus: *C. lanceolatus.*

coccíneus. To 30 ft.: lvs. lanceolate, to 1½ in. long: fls. with red stamens and yellow anthers, the spikes not very dense.

Cúnninghamii. Branches yellowish: lvs. elliptic, pale, reddish when young.

hýbridus: a name of uncertain application.

lanceolàtus (*C. citrinus. Metrosideros floribunda. M. semperflorens. M. citrina*). To 30 ft.: lvs. lanceolate, to 3 in. long: fls. with bright red stamens, the spikes not very dense.

laterítius: listed as of drooping habit, with bright scarlet fls.

lineàris. Lvs. narrowly linear, to 5 in. long: fls. with red stamens, the spikes dense.

paludòsus: *C. salignus* var. *australis.*

phœníceus. Lvs. narrowly lanceolate, to 4 in. long: fls. with rich red stamens, the spikes not dense.

pinifòlius. Tall shrub: lvs. stiff and terete, linear, to 4 in. long: fls. with yellowish-green stamens.

rígidus. Lvs. linear or narrowly lanceolate, to 5 in. long: fls. with red stamens, the spikes very dense.

rugulòsus: name of uncertain application.

salígnus. To 40 ft.: lvs. lanceolate, to 3 in. long: fls. with yellow or light pink stamens, the spikes not very dense. Var. **austràlis** (*C. paludosus*) has lvs. to 2 in. long. Var. **viridiflòrus** has greenish-yellow stamens and shorter lvs.

speciòsus. To 40 ft.: lvs. lanceolate, to 4 in. long: fls. with rich red stamens and yellow anthers, the spikes very dense.

viminàlis. Tree of pendulous habit: lvs. linear-oblong: fls. with bright red stamens, infl. a dense spike. Var. **péndulus** is probably not distinct from type and this species may be only a form of *C. speciosus.*

CALLÍSTEPHUS. China Aster. *Compositæ.* Erect branching plants with herbage of strong odor, large terminal heads bearing prominent rays; pappus of bristles. A single species from Asia which has resulted in many races of well-known and adaptable garden annuals. Grown from seed; for early bloom the seed is sown indoors in late spring, but the main crop may be sown directly in the open. The distance at which the plants are to stand is governed by the stature of the particular variety, ranging from 6 in. to 2 ft.

chinénsis. Erect, hairy, to 2½ ft.: lvs. alternate, ovate, deeply toothed or lobed: heads terminal, in the wild plant with 1–2 series of ray-fls. and yellow disk-fls., but under cult. the rays are numerous and vary in color from violet, purple, blue, rose to white but no true yellow, and 5 in. and more across; there are dwarf and condensed forms. China, Japan.—Known also as *Callistemma chinense* and *C. hortense.*

CALLÌTRIS. Cypress-Pine. *Cupressaceæ.* Evergreen trees with scale-like lvs. and jointed mostly angled branchlets, staminate fls. in ovoid or cylindrical catkins and cones usually of 6 unequal scales; native in Australia and New Caledonia. Grown in warm regions, as Fla. and Calif.; for cult. see *Conifers.*

Actinostròbus: *Actinostrobus pyramidalis.*

arbòrea: *Widdringtonia juniperoides.*

austràlis: *C. oblonga.*

calcaràta. Tree to 60 ft. and more: cones ovoid, ½ in. across. Australia.

cupressifórmis (*C. rhomboidea*). Tree to 50 ft.: cones nearly globose, ½ in. across, often clustered. Australia.

Drúmmondii. Shrub or small tree: cones globose, ½ in. across. Australia.

glaùca: *C. robusta.*

Mùelleri. Tree to 30 ft.: cones globular, to 1 in. across. Australia.

oblónga (*C. australis*). Tree to 25 ft.: cones ovoid or oblong, to 1 in. long, usually clustered. Tasmania.

quadriválvis: *Tetraclinis articulata.*

rhomboídea: *C. cupressiformis.*

robústa (*C. glauca. C. verrucosa*). Tree to 100 ft.: cones subglobose, ¾–1 in. or more across. Australia.

verrucòsa: *C. robusta.*

Whỳtei: *Widdringtonia Whytei.*

CALLÙNA. Heather. *Ericaceæ.* One hardy evergreen shrub native in Eu. and Asia Minor (also in a few localities in E. N. Amer., but probably intro.), cult. as for Erica and differing in having a colored calyx longer than the corolla. **C. vulgàris** (*Erica vulgaris*). To 3 ft.: lvs. scale-like and overlapping: fls. natively mostly purplish, ⅛ in. long, in racemes to 10 in. long, blooming profusely in late summer. There are numerous hort. vars., as: **álba,** fls. white and its forms *elata, minima, minor, multiflora, pilosa, pumila, rigida, tenella;* **Álportii,** tall and vigorous, fls. carmine; **argéntea,** lvs. pale; **atrórubens,** fls. crimson; **aùrea,** dwarf, lvs. golden; **cárnea,** fls. pink; **coccínea,** fls. deep red; **compácta,** of compact habit; **cùprea,** lvs. golden turning bronze; **erécta,** tall, fls. white; **Fóxii,** dwarf and matted; **Hámmondii,** fls. white, taller and with brighter green lvs. than var. *alba;* **hirsúta** (var. *tomentosa*), lvs. gray-tomentose; **hùmilis,** low, fls. white; **hypnoìdes,** to 1 ft., fls. deep pink; **monstròsa;** **nàna** (var. *pygmæa*), to 4 in., fls. purple; **plèna** (var. *multiplex*), fls. double, pink; **purpùrea** (var. *rubra*), fls. dark purple; **ròsea,** fls. pink; **Seárlei,** fls. white, late; **serícea,** fls. white, late; **spicàta,** fls. deep pink; **ténuis,** dwarf, fls. purple; **variegàta,** lvs. somewhat variegated with white.

CALLUS: a hard prominence or protuberance; in a cutting or on a severed or injured part, the roll of new covering tissue.

CALOCARPUM: *Achras.*

CALOCÉPHALUS. *Compositæ.* Australian ann. herbs or small shrubs with mostly alternate entire lvs. and fl.-heads in terminal clusters, fls. all tubular; pappus of scales or plumose bristles. One species is grown in Calif. as a foliage edging. Propagated by cuttings.

Broẁnii (*Leucophyta Brownii*). To 1 ft., white-woolly: lvs. linear, ⅙ in. long: heads ½ in. across, subtended by a few floral lvs.

CALOCHÓRTUS. Mariposa-Lily. Globe-Tulip. *Liliaceæ.* Cormous herbs native in W. N. Amer., with linear-lanceolate lvs. borne on the st. and broadly campanulate yellow, white or lilac interesting fls. solitary or in terminal clusters, usually with a somewhat flattened gland on the inner basal third of the petals, blooming in spring and summer, mostly showy.

Calochortuses should have a light porous soil, not too stimulating, with perfect drainage, such as equal parts of light loam and spent tan-bark, with a little broken charcoal. They withstand much cold but not alternate thawing and freezing. Winter protection of leaves should be provided. Planting should be late in autumn and bulbs lifted after ripening the following season. They are useful in borders and frames and are sometimes bloomed indoors. Propagated by natural increase and by seeds when obtainable.

álbus. To 2 ft.: fls. white, purplish at base, 1¼ in. long, nodding, petals arched. Calif. Var. **rubéllus** has fls. tinged with rose.

amábilis. Golden G. To 1½ ft.: fls. golden-yellow, 1¼ in. long, nodding. Calif.

amœnus. Purple G. To 1½ ft.: fls. rose-purple, 1¼ in. long, nodding. Calif. Var. **màjor** is listed as a large form.

apiculàtus. Giant Star G. To 1½ ft.: lvs. to 12 in. long and ¾ in. wide, linear, flat, glossy: fls. white to straw-colored, 1–9 from single bulb. B. C. to N. Ida.

aùreus. To 6 or rarely 14 in. high: fls. pale yellow, to 1½ in. long. S. Calif. to S. Utah.—Frequently confused with *C. Kennedyi*.

barbàtus (*C. flavus. Cyclobothra flava*). To 2 ft.: fls. yellow, ¾ in. long. Mex.

Bénthamii: *C. monophyllus.*

cærùleus. Cats-Ear. To 6 in.: fls. blue, ½ in. long, hairy, erect. Calif.

catalìnæ. To 2½ ft.: fls. white to lilac-purple, maroon at base, 2 in. long. S. Calif., Catalina Isl.

citrìnus: *C. luteus* var.

clavàtus. To 3 ft.: fls. rich yellow lined with brown, having club-shaped hairs at base, 2 in. long. Calif.

Davidsoniànus. To 2 ft.: fls. lilac-purple, to 1¼ in. long. S. Calif.

eurycárpus. To 1½ ft.: fls. white to lavender, with deep blue spot in center of petals, to 1¼ in. long. Ore. to Nev.

excavàtus. To 1½ ft.: fls. white streaked and suffused with purple. Calif.

flàvus: *C. barbatus.*

flexuòsus. Sts. decumbent or ascending and flexuose: fls. purple or white with yellowish base, 1 in. long. Nev., Utah, Ariz.

Greènei. To 1½ ft.: fls. lilac marked below with yellow, to 1½ in. long. Calif.

Gúnnisonii. To 1½ ft.: fls. white streaked with purple, 1¾ in. long. S. D. to New Mex.

Howellii. To 1½ ft.: fls. white, 1 in. long. Ore.

Kénnedyi. To 6 or rarely 14 in. high: fls. orange-red or vermillion, to 1½ in. long. Calif., Nev., Ariz.

Leichtlínii. To 1 ft.: fls. white tinged with purple, yellow at base with dark spot, 1¼ in. long. Ore. to S. D. and Calif.

lilácinus: *C. uniflorus.*

lùteus. To 2 ft.: fls. yellow or orange lined with brown, to 2 in. long. Calif. Var. **citrìnus** has lemon-yellow petals with dark brown spot near base. Var. **oculàtus** has white or lilac petals, the brown spot bordered with yellow.

Lỳallii: listed name of undetermined botanical standing.

macrocárpus. Green-banded M. To 2 ft.: fls. purple with green band down middle, 2 in. long. B. C. to Calif.

Maweànus. To 8 in.: fls. white or tinged with purple, 1 in. long. Ore. to Calif. Var. **grandiflòrus** is listed. Var. **màjor** is a larger form. Var. **purpuràscens**, larger form with fls. tinged deeper purple. Var. **ròseus**, fls. tinged with rose.

monophýllus (*C. Benthamii*). Yellow Star-Tulip. To 10 in.: fls. yellow with brown at base, ¾ in. long. Calif.

nítidus. To 1½ ft.: fls. lilac or purple with dark purple spot, 1½ in. long. Wash., Mont., Ore.

Núttallii. Sego-Lily. To 1½ ft.: fls. white lined with purple, with purple spot at base, to 1¾ in. long. Wash. to Calif. and New Mex.

obispoénsis. To 2 ft.: fls. deep orange tinged brown, ½ in. long, fringed on margins. Calif., San Luis Obispo Co.

oculàtus: *C. venustus* var.

Plúmmeræ. To 2 ft.: fls. purple with orange-colored hairs, 1½ in. long. Calif.

pulchéllus. To 2 ft.: fls. golden-yellow, ciliate on margin, 1¼ in. long, nodding. Calif.

Púrdyi. To 1 ft.: fls. creamy-white tinged with purple, hairy, ¾ in. long. Wash., Ore.

purpuráscens: *C. venustus* var.

spléndens. Lilac M. To 2 ft.: fls. lilac, 2 in. long. Calif. Var. **rùbra** has reddish-lilac fls.

supérbus: name given to a tall hort. strain reported to have very large fls. white inside with a maroon eye, lavender outside; probably *C. venustus.*

Tólmei. Erect or ascending, to 18 in., usually branched: fls. creamy-white tinged purple, to ¾ in. long, usually 2-several. Ore.

uniflòrus (*C. lilacinus*). To 10 in.: fls. lilac, 1 in. long. Calif.

venústus. White M. To 10 in. or more: fls. pale lilac with reddish-brown spot, 2 in. long. Calif. Var. **citrìnus**, fls. deep yellow with black eye. Var. **oculàtus** (*C. oculatus*), fls. cream-white, tinted purple with dark eye. Var. **purpuráscens** has darker fls. and var. **ròseus** a rose-colored spot at apex. Var. **supérbus** is an improved form.

Vésta. Form of *C. venustus* with larger fls. having across the center a reddish or brown band.

Weèdii. To 2½ ft.: fls. yellow dotted with orange-brown, 1¼ in. long. Calif.

CALODÉNDRUM. *Rutaceæ.* One S. African evergreen tree adapted to cult. in warm regions (as S. Fla.) for interest and beauty, for its dark green foliage and profusion of showy bloom. **C. capénse.** Cape-Chestnut. To 70 ft.: lvs. simple, ovate, the veins parallel, to 5 in. long: fls. 1½ in. long, light rose-lilac with purple dots, in large terminal panicles: frs. nearly spherical, woody, covered with tubercles.—Propagated by cuttings of young wood over heat.

CALONÝCTION. Moonflower. *Convolvulaceæ.* American twining herbs of tropics and subtropics, with heart-shaped to arrow-shaped lvs., large fragrant white or purple fls. blooming at night, having long tube, flat limb and exserted stamens and style; grown rarely as a greenhouse vine in the N. and out-of-doors in the S. Propagated by seeds, which are often notched to hasten germination. Per., but often grown as ann.

aculeàtum (*Ipomœa Bona-Nox. I. noctiflora. I. mexicana grandiflora*). Juice milky: sts. more or less prickly: lvs. broad-ovate, to 8 in. long, sometimes 3-lobed: fls. white, often banded with green, with tube to 6 in. long and limb 6 in. across. Tropics, Fla.—The common moonflower.

muricàtum. Similar to *C. aculeatum* but with smaller purple fls. to 3 in. across. Tropics.

Tùba (*Ipomœa Tuba*). Differs from *C. aculeatum* in thick cordate ovate not lobed lvs. and very broad obtuse rather than narrow-acuminate calyx-lobes: fls. white, 5 or 6 in. long. S. Fla., W. Indies.

CALÓPHACA. *Leguminosæ.* Low shrubs or herbs with alternate pinnate lvs., yellow or violet papilionaceous fls. in racemes or solitary, and cylindrical pods. Grown in borders or on rocky slopes in well-drained soil. Propagated by seeds and sometimes grafted high on Laburnum.

wolgàrica. To 3 ft.: lfts. ½ in. long: fls. bright yellow, 1 in. long, in racemes: pods to 1¼ in. long. S. Russia, Turkestan.

CALOPHANES: *Dyschoriste.*

CALOPHÝLLUM. *Guttiferæ.* Trees of trop. Asia and Amer., with opposite leathery lvs. which have numerous parallel cross veins, polygamous fls. in racemes or panicles, and fr. a drupe. Several species yield oil and gum; sometimes planted for ornament in tropics.

antillànum (*C. Calaba* of some authors). Maria. To 90 ft. or more: lvs. to 6 in. long: fls. white, fragrant, in axillary few-fld. racemes: fr. about 1 in. across. W. Indies.

Calàba: *C. antillanum.*

inophýllum. Kamani. To 60 ft. or more: lvs. to 8 in. long and 4 in. wide, shining: fls. white, fragrant, in axillary racemes to 7 in. long: fr. to 1½ in. across. Trop. Asia.

CALOPÒGON. *Orchidaceæ.* N. American terrestrial orchids with grass-like lvs. and fls. borne in racemes on naked scapes, the sepals and petals similar, the lip long-clawed and hairy above; sometimes planted in bog- or rock-gardens.

pulchéllus (*C. tuberosus. Limodorum tuberosum*). Grass-Pink Orchid. To about 19 in.: lvs. linear, to 10 in. long: fls. violet-rose, 1½ in. across, in 1–11-fld. racemes, the lip bearded with golden-yellow hairs. June–Aug. Swamps, E. N. Amer.

tuberòsus: *C. pulchellus.*

CALOTHÁMNUS. *Myrtaceæ.* Australian shrubs with narrow scattered lvs., usually showy red fls. in clusters or spikes, the stamens long-exserted and united into bundles, and capsular fr. For cult. see *Callistemon.*

ásper. Pubescent: lvs. crowded, linear, to 1 in. long, stiff and rough: fls. in short dense clusters.

coccíneus: a hort. name for *C. quadrifidus.*

homalophýllus. To 6 ft.: lvs. oblong to nearly linear, very obtuse, 1–2 in. long: fls. rich crimson, to 1 in. long, in spikes.

longíssimus. Low shrub: lvs. terete, 6 in. to 1 ft. or more long: fls. 1 in. long, in few-fld. spikes.

quadrífidus. To 8 ft.: lvs. needle-like, to 1 in. long: fls. rich crimson, to 1 in. long, in clusters.

rupéstris. Low evergreen shrub: lvs. needle-like, densely covering branches: fls. with bright red filaments and golden-yellow anthers, in clusters on previous seasons growth.

sanguíneus. Tall shrub: lvs. terete, to 1½ in. long: fls. rich red, 1 in. long, in clusters or short spikes.

CALPIDISCA: see *Utricularia.*

CALPÚRNIA. *Leguminosæ.* Trees or shrubs with pinnate lvs., yellow papilionaceous fls. in racemes, and rather flat slightly winged pods; native in Afr. Grown out-of-doors in subtrop. climates, and sometimes in greenhouses, for ornament; propagated by cuttings under glass or by seeds.

aùrea (*C. lasiogyne*). To 15 ft.: lfts. oval, to 1¾ in. long: fls. about ½ in. long: pods linear, to 3 in. long. S. Afr.

lasiógyne: *C. aurea.*

CÁLTHA. *Ranunculaceæ.* Per. small herbs growing in marshes in the north temp. zone, having simple usually heart-shaped lvs. and yellow, white or pink fls. without petals but with petal-like sepals; grown in moist and boggy situations. Propagated by division of roots in autumn and by seed.

asarifòlia: *C. palustris.*

biflòra. To 10 in.: lvs. to 3 in. wide, broader than long: fls. white, to 1½ in. across, solitary or 2. June–Aug. Alaska to Calif.

Chelidònii (*C. uniflora*). To 3 in.: lvs. broad-cordate or ovate, to 1 in. long: fls. white, 1 in. across. July–Aug. B. C. to Mont.

leptosépala (*C. rotundifolia*). To 1 ft.: lvs. oval, to 4 in. long: fls. white tinged blue outside, about 1 in. across, solitary. June–Aug. Alaska to New Mex.

palústris (*C. asarifolia. C. parnassifolia*). Marsh-Marigold. To 2 ft.: lvs. cordate, to 7 in. wide: fls. bright yellow, to 2 in. across, several together, Apr.–June, making masses of yellow. Newf. to S. C. and Neb.—The young lvs. are eaten as greens under the name "cowslip." Var. **álba,** a white-fld. form. Var. **monstròsa-plèno** (var. *flore-pleno*) has large double fls.

parnassifòlia: *C. palustris.*

polypétala. To 2 ft.: lvs. to 1 ft. across: fls. golden-yellow, to 3 in. across, in spring. Caucasus, W. Asia.

rotundifòlia: *C. leptosepala.*

uniflòra: *C. Chelidonii.*

CALTROP FAMILY: *Zygophyllaceæ.*

CALYCANTHÀCEÆ. Calycanthus Family. Two or three genera of deciduous shrubs having aromatic bark, opposite entire lvs., bisexual solitary fls. with many similar sepals and petals, many stamens, and fr. of many 1-seeded achenes inclosed in the receptacle; native in N. Amer. and E. Asia. Calycanthus and Chimonanthus are cult.

CALYCÁNTHUS (*Butneria*). Sweet-scented Shrub. Sweet-Shrub. *Calycanthaceæ.* Deciduous N. American shrubs with large fragrant brownish fls. borne at the tips of short branchlets; hardy in the N. except *C. occidentalis.* They do best in rich well-drained soil. Propagated by seeds, layers, suckers, and division.

elongàtus: *C. fertilis* var. *ferax.*

fértilis (*C. glaucus*). To 10 ft.: lvs. ovate to oblong, to 6 in. long, glaucous and nearly glabrous beneath: fls. reddish-brown, to 2 in. across: fr. contracted at mouth. Pa. to Ga. and Ala. Var. **fèrax** (*C. lævigatus, C. elongatus*) has lvs. green beneath.

flóridus. Carolina Allspice. To 10 ft.: lvs. ovate or elliptic, to 5 in. long, densely pubescent and pale beneath: fls. dark reddish-brown, 2 in. across: fr. contracted at mouth. Va. to Fla. Var. **ovàtus,** lvs. ovate. Var. **rùber** is listed as having more reddish fls.

glaùcus: *C. fertilis.*

lævigàtus: *C. fertilis* var. *ferax.*

✓ **macrophýllus:** *C. occidentalis.*

occidentàlis (*C. macrophyllus*). To 12 ft.: lvs. ovate to oblong-lanceolate, to 8 in. long, green and nearly glabrous beneath: fls. light brown, to 3 in. across: fr. not contracted at mouth. Calif.

præcox: *Chimonanthus præcox.*

CALYCÓTOME. *Leguminosæ.* Spiny deciduous shrubs with lvs. of 3 lfts., yellow papilionaceous fls. solitary or in clusters, and linear-oblong pods with thickened or winged margin; native in the Medit. region. Sometimes grown in mild climates for ornament. Cult. as for Cytisus.

spinòsa. To 5 ft.: lfts. ½ in. long: fls. in clusters of 1–4, ½ in. long: pods about 1 in. long. S. Eu.

CALÝPSO (*Cytherea*). *Orchidaceæ.* One terrestrial orchid native in cool bogs in N. Amer., Eu. and Asia, and sometimes planted in similar places. **C. bulbòsa** (*C. borealis*). To 9 in., with small bulbs: lf. solitary, round-ovate, to 2½ in. long: fls. solitary, variegated purple, pink and yellow, with large saccate lip.

CALYPTRIDIUM: see *Spraguea umbellata.*

CALYSTEGIA PUBESCENS: *Convolvulus japonicus.*

CALỲTRIX. *Myrtaceæ.* Heath-like Australian shrubs with small scattered entire lvs. and yellow, pink, lilac or white fls., stamens commonly numerous; one species intro. in Calif.

Súllivanii. Shrub, glabrous or nearly so: lvs. linear-3-angled, to ¼ in. long: fls. probably white, in heads or short spikes terminal or lateral on branchlets; calyx-lobes awned.

CALYX: the outer circle of floral envelopes whose individual parts are termed sepals. The sepals may be separate or marginally coherent, in the latter case forming a saucer, cup, bell or tube.

CAMARÒTIS. *Orchidaceæ.* Epiphytes with narrow distichous lvs. and fls. in erect or stiffly spreading racemes, the sepals and petals similar, the lip consisting of a thick-walled sac or spur which is more or less 3-lobed, the column with an upright beak. Suitable for hothouse cult.; see *Orchids.*

Hártmannii: listed name of a plant said to have white fls. spotted with red.

Mánnii. Lvs. linear, very thick, to 4 in. long and ⅔ in. wide: fls. ¼ in. across, of pale color, in short racemes. India.

purpùrea: *C. rostrata.*

rostràta (*C. purpurea*). St. to 3 ft. long: lvs. to 4 in. long and ½ in. across: fls. about ½ in. across, in 5–20-fld. spreading racemes about length of lvs., sepals and petals pale purple, lip somewhat saccate, deeper purple. Mar.–May. India.

CAMÁSSIA (*Quamasia*). Camass. *Liliaceæ.* N. American bulbous herbs with linear basal lvs. and blue or nearly white fls. in bracted racemes terminating scapes, the perianth-segms. distinct.

Camassias are hardy and do well in loamy soils. Bulbs should be planted 3–4 inches apart in early autumn and not disturbed; also propagated by seeds. Useful in borders.

azùrea: *C. Leichtlinii.*

Cùsickii. To 3 ft.: lvs. 1 in. wide or more: scapes few to several; fls. pale blue, ¾ in. long, perianth-segms. not twisted over ovary after pollination. Ore.

esculénta (*C. Fraseri. Q. hyacinthina*). To 2 ft.: fls. light blue or rarely white, ½ in. long: caps. globose, to ⅓ in. high. Pa. to Ga. and Tex.

Fràseri: *C. esculenta.*

Hoẁellii. To 20 in.: basal lvs. linear, keeled, shorter than scape: fls. pale blue, the segms. twisted together over ovary after pollination: caps. to ⅓ in. long. Vancouver Isl. to Utah and N. Calif.

hyacínthina: *C. esculenta.*

hýbrida: hort. name.

Leichtlínii (*Q. azurea*). To 2 ft.: fls. dark blue to creamy-white, 1 in. long, the segms. twisted over ovary after pollination: caps. ⅝ in. long or more. B. C. to Calif. Var. **álba** has white fls. Var. **cærùlea** has blue fls.

Quámash (*C. esculenta* of some authors). To 3 ft.: lvs. to ¾ in. wide: scapes usually solitary; fls. dark blue to nearly white, 1 in. long, segms. not twisted over ovary after pollination. B. C. to Calif.

CAMEL-HAY: *Cymbopogon Schænanthus.* **-Thorn:** *Acacia Giraffæ.*

CAMÉLLIA. Camelia. *Theaceæ* or *Ternstrœmiaceæ.* Evergreen trees and shrubs native in E. Asia, having alternate simple toothed lvs., white to red showy sessile fls. with deciduous sepals, and capsular frs. Sometimes classified under Thea but that genus has smaller pedicelled fls. with persistent sepals.

Camellias are popular ornamentals for the greenhouse and out-of-doors in the South and on the Pacific Coast, blooming in winter and spring. When grown in the greenhouse a temperature of 50–55° F. is required during the flowering season. They are among the finest shrubs for growing in shaded locations. Usually grown from cuttings of the current seasons growth taken in summer; also propagated by grafting on stocks secured from seeds or from cuttings of easily rooted sorts.

cuspidàta: *Thea cuspidata.*

japónica (*Thea japonica*). Common C. Japonica. To 40 ft.: lvs. to 4 in. long, dark green and shining above: fls. red, pink, white, or variegated, to 5 in. across, single, partly or completely double. China, Japan.—Popular ornamental out-of-doors S., from N. C. along the Gulf of Mexico and on the Pacific Coast. Latin-named hort. vars. are: **álba-plèna,** white, self, imbricated, regular double, early; **álba-plèna fimbriàta,** identical with above except outer petals fimbriated; **althæaflòra,** semi-double, dark crimson; **amábilis,** single white; **americàna,** pale pink with darker stripes; **Bèalii ròsea,** fls. small, deep pink, regular double; **Bonomiàna,** variegated white with red, irregular double; **candidíssima,** white self, regular tiered; **Carswelliàna,** double, deep crimson; **Cliviàna,** large, rose-pink, white stripes, occasional irregular double; **Cóllettii maculàta,** semi-double, very dark red marked with white; **Derbyàna,** fls. large, deep pink to red, semi-double; **Donklaàri,** large, cherry-red, variegated, splotched white; **élegans Chándleri,** variegated, cerise-red splashed white, irregular double, numerous small petals, large; **Fèastii,** double, pink and white; **gigantèa,** large red fls.; **grandiflòra ròsea,** very large, semi-double, rose-madder with darker markings; **Gunéllii,** semi-double, rose-pink; **imbricàta rùbra-plèna,** double, deep carmine; **Leàna supérba,** semi-double, red; **Lílyi,** small, white with small phlox-pink markings; **magnoliæflòra,** medium, white flushed light pink, semi-double; **Mathotiàna,** large, carmine-pink, regular double and its forms **álba,** white and **rùbra** red to purplish-red; **nobilíssima,** medium, white, irregular double, outer petals large, inner small: **trícolor Sièboldii,** medium, semi-double, whitewashed, striped and blotched madder-rose; **variábilis,** semi-double, white and pink; **variegàta,** crimson and white; **Wìlderi,** medium, rose-pink, double. Some of the best-known English-named vars. are: Fred Sanders, semi-double, medium to large, carmine self or with scattered white splashes; Gloire de Nantes, medium to large, petals curved, cerise-red, irregular double; Hermes, medium irregular double, variegated, white ground with rose-madder; Jarvis Red, medium to large, self carmine, irregular double; Kumasaka, medium to large, self carmine or variegated with white splashes; Mme. de Strekaloff, medium, blush-pink with darker markings, irregular double; Mrs. Abby Wilder, medium, white with occasional phlox-pink markings, irregular double, center elevated of many twisted whorled petals; Mrs. Fred Sanders, medium, white, single; Pink Perfection, small, phlox-pink, regular double; Prince Eugene Napoleon, medium, self carmine, regular imbricated double; Prof. C. S. Sargent, medium, self crimson, white fleckings toward center occasional, double with center of many small elevated petals; Sarah Frost, medium, pink to lighter shade at center, double; Semi Double Blush, medium, pale neyron-rose, semi-double; Snowdrift, medium, semi-double, white; T. K. Variegated, medium, pink ground, with deeper shadings, semi-double.

reticulàta. Shrub: lvs. to 5 in. long, dull green, veins prominent: fls. large, to 7 in. across, crimson-rose, single (semi-double to double in cult. forms). China.

Sasánqua (*Thea Sasanqua*). Shrub: lvs. to 2 in. long, dark green, shining above: fls. white to red, to 2 in. across, single (double in some forms). China, Japan.—Important English-named forms are: Apple Blossom, medium, white shaded pink, single; Blanchette, medium, self white, single; Briar Rose, medium, clear pink, single; Cleopatra, large, cherry-red, petals creped, single to double; Hebe, medium, deep rose-pink, single; Judith, medium, clear pink, funnel-form, single; Mino-no-yuki, large, self white, irregular double; Tanya, medium, deep rose, single.

Thèa: *Thea sinensis.*

CAMOÉNSIA. *Leguminosæ.* Trop. African woody climbers with digitately 3-parted lvs., papilionaceous fls., and flattened pods; one species planted in tropics and intro. in S. Calif.

máxima. Lfts. obovate, to 6 in. long, shining: fls. white, to 4 in. across, petals frilled and edged with gold: pods to 8 in. long.

CAMPÁNULA. Bellflower. *Campanulaceæ.* Many herbs, ann., bien., per., prized for the erect, declined or drooping bright fls. which are usually in shades of violet although commonly called blue: lvs. alternate or sometimes only radical, of various shapes and sizes: corolla gamopetalous, mostly bell-shaped but sometimes rotate, lobes normally 5 or sometimes more numerous in cult.; stamens 5 on appressed broad-based filaments, soon collapsing, much exceeded by the style which is 3- or 5-lobed: fr. a caps. opening at bottom or top. Species perhaps 300, mostly in northern hemisphere from low lands to mts. and far northwards.

Bellflowers are popular for the flower-garden, rock-garden and borders, and *C. Rapunculus* is known as a vegetable, the roots and leaves being eaten as a salad. The perennial species are propagated by seeds under glass and transplanted to the open after danger of frost is over, and by cuttings and division; seeds are sometimes sown in summer to produce blooming plants the following season, and this is the procedure with the biennials as Canterbury bells. A covering of leaves is good winter protection in the North. Many choice montane species well adapted to rock-gardening are not yet in circulation in North America. The annuals are propagated by seed sown out-of-doors or under glass. In the following account, the species are perennial unless otherwise stated. In this enumeration the flowers may be called "blue," as is the custom, but are probably prevailingly in tones of violet.

abietìna. Diffuse but essentially erect, to 2 ft., glabrous, not very leafy: lvs. elliptic to lanceolate, crenate to entire: fls. toward top of st., erect or ascending, 1 in. or more long, deeply lobed, light violet. E. Eu.

acaùlis: dwarf form of *C. glomerata.*

acutángula: *C. arvatica.*

Àdria. Recently proposed name for the cult. *garganica-fenestrellata* complex, assumed to be hybrids. Another view, supported by European authors, is that the native plants of this group sometimes separated under binomials are only variables of a single widespread species. See *C. Elatines.*

affìnis: listed name of garden plants that may not be the *C. affinis* of botanists which is probably not in regular cult. here.

Aizoón. Small, about 1 ft., with basal rosette, glabrous: radical lvs. spatulate and obtuse, st.-lvs. triangular-lanceolate: fls. pale blue, erect, in a panicle, long-bell-shaped. Mts., Greece.

alaskàna: *C. rotundifolia* var.

albéscens: listed name.

alliariæfòlia (*C. lamiifolia*). Erect, to 3 ft. and more, pubescent: lvs. soft-pubescent, cordate-ovate to almost reniform: fls. white, in long raceme-like spikes, about 1 in. long, calyx-lobes auricled. Caucasus, Asia Minor.

Alliònii (*C. alpestris*). Very dwarf, usually only 2–3 in. high: lvs. linear to very narrowly oblong: fls. single on each st., erect or declined, blue or white, the broad corolla about 1¾ in. long. Mts., S. France, Italy.

alpéstris: *C. Allionii.*

alpìna. Dwarf, usually not exceeding 6 in.: lvs. linear to narrowly oblanceolate, hairy: fls. few to each st., deep blue, declined or nodding, about ¾ in. long. Eu., in Alps and Carpathian Mts.

amábilis: *C. phyctidocalyx.*

americàna. Tall, even sometimes to 6 ft., glabrous or hairy: lvs. ovate-lanceolate, 3–4 in. long, serrate: fls. small, ½–¾ in. long, blue or white. E. N. Amer. in shady places; ann. or bien.

ardonénsis. Small and slender, with grass-like foliage, cespitose: lvs. linear or filiform, sparsely serrate: fls. deep blue, solitary on st. scarcely surpassing radical lvs. Caucasus.

arvática (*C. acutangula*). Low, with partly prostrate leafy sts. that rise only 2 or 3 in.: basal lvs. small, about ⅓ in. long and usually somewhat broader, st.-lvs. narrower: fls. few to a st., violet to light purple, 1 in. or more across. Mts., N. Spain.—Once confused with *Wahlenbergia hederacea.*

asiática: garden name.

áttica: *C. drabifolia.*

Aùcheri. Small, pubescent, in clumps, 4–5 in. tall: lvs. lanceolate to narrowly spatulate, dentate, 2–3 in. long: fls. mostly solitary, large, violet-purple, about 1 in. across, erect or spreading. Mts., Armenia, Caucasus, Persia.

azùrea: *C. rhomboidalis.*

barbàta. Low hairy plant, but sometimes reaching 18 in., the st. nearly or quite simple: basal lvs. narrow-lanceolate to oblanceolate, to 5 in. long: fls. near top of st., light lilac, about 1 in. long. Mts., Eu. Var. **álba** is listed.

Bárbeyi: *C. Elatines* var.

bavárica: *C. Portenschlagiana.*

Bellárdii: apparently not in cult., the plants so named probably being *C. cæspitosa* or *C. cochlearifolia.*

bellidifòlia: confused name; the plant intended in cult. is probably *C. patula* or *C. Aucheri.*

betonicæfòlia. Bien. to 2½ ft., soft-pubescent: lvs. ovate-oblong, to 1 in. or more, crenate: fls. blue or bluish, about 1 in. long, narrow-bell-shaped. Mts., Greece.

bononiénsis. Erect, glabrous to canescent, often 3 ft. tall: lvs. broad-lanceolate to long-ovate, light colored underneath, 2–3 in. long: fls light purplish, spreading or drooping, 1 in. or less long, in long racemes. E. Eu., S. W. Asia.

cæspitòsa. Low, tufted, 3–6 in., erect, foliage glabrous and mostly basal and low down on st.: lvs. nearly or quite linear, radical ones ovate or broader and tapering to a short petiole: fls. ascending or declined, narrow-bell-shaped, lobes very short, blue, or var. **álba** white. Eu.—Often confused with *C. cochlearifolia.*

calaminthifòlia. Pubescent, 6–10 in., sts. simple and bearing 3–5 fls.: lvs. thickish, the radical ones oblong-spatulate and obtuse and nearly entire, the cauline ones ovate-orbicular: fls. about ½ in. long, blue, corolla narrow and tomentose. Greece.

calycánthema: race of *C. Medium.*

canarìna: listed name; perhaps *Canarina campanulata.*

cárnica. Low, slender, glabrous, 6–8 in.: early lower lvs. broad and obtuse and long-petioled with crenate margin, other lvs. linear and entire or remotely notched: fls. solitary or very few to each st., mostly upright but sometimes declined, blue, bell-shaped, lobes very short, very narrow calyx-lobes reflexed. S. Eu.—Plants grown under this name are likely to be *C. rotundifolia.*

carpática. Tussock B. Glabrous, making leafy clumps or tussocks above which are borne the fls., few to a st. or solitary, that stand erect, broad-bell-shaped to almost saucer-shaped, about 1½ in. across, in bright violet to white or whitish: lvs. ovate, 1½ in. long, dentate. E. Eu.—Common hardy summer-blooming plant in cult., in several statures and tints, as vars. **álba, cærùlea, cœlestìna, grandiflòra, nàna, pállida, turbinàta,** the last with more decumbent sts. and top-shaped fls.

cashmiriàna. Sts. zigzag or flexuous: lvs. oblong, entire or nearly so, hairy: fls. bright blue, to 1 in. across. India.

Cécilii: *C. propinqua* var. *grandiflora.*

celtidifòlia: *C. lactiflora.*

cenísia. To 2 in., tufted: lvs. obovate, ¼ in. long, entire and ciliate: fls. deep blue, to ½ in. long, solitary, erect. Alps.

Cervicària. Bien. to 30 in., hairy: lvs. linear-lanceolate to linear, to 6 in. long, toothed: fls. blue, ½ in. long, in axillary and terminal bracted heads. Eu.

cochlearifòlia (*C. pusilla*). Little nearly or quite glabrous open-growing plant 2–8 in. high: radical lvs. cordate-ovate to nearly reniform, not tapering to the very long petiole: fls. solitary or several on a st., mostly inclined or nodding, about ½ in. long, blue; also var. **álba** is listed. Mts., Eu.—Tractable rock-garden plant; often confused with *C. cæspitosa.*

collìna. Lightly hairy, 6–12 in.: lvs. oblong to lanceolate, the lower long-stalked: fls. several on a st., deep blue, in few-fld. one-sided racemes. Caucasus.

cristallócalyx. Glabrous, stout, to 3 ft.: lvs. in rosette, shining, broadly spatulate-oblong, crenate, those on st. lanceolate or linear: fls. many in long racemes, blue, broad-bell-shaped, lobed ⅓ the length. S. E. Eu.—Probably a form of *C. persicifolia.*

dahùrica: *C. glomerata* var.

dasyántha: *C. pilosa.*

dichroántha: listed.

divaricàta (*C. flexuosa*). Much branched, to 3 ft., glabrous: lvs. ovate-lanceolate, sharp-toothed, to 3 in. long: fls. pale blue, ¼ in. long, nodding, in compact panicles. Va. to Ga. and Tenn.

drabifòlia (*C. attica*). Ann. to 6 in., hairy: lvs. oval-oblong, to ½ in. long, toothed: fls. blue with white tube, to ½ in. long, solitary. Greece, Asia Minor.

Elatìnes. Plant slender, spreading, more or less vine-like, sts. ascending at ends to 6 or 8 in. and somewhat hairy to almost glabrous: lower lvs. cordate-ovate, very sharply long-toothed: fls. several or many, azure, nearly rotate (wide open), ½ in. or more across. S. Eu.—Variable group in the Adriatic region and eastward. The garden plants representing this species are not closely definable, although botanical varieties are distinguished; if the grower does not care to separate these vars. he may call the cult. group *Campanula Adria.* The species itself, *C. Elatines,* may not be much in cult. Var. **Bárbeyi** (*C. Barbeyi*). Plant very green and glabrous: corolla violet-blue, lobed ⅔ or more to the bottom; calyx-lobes ½ or more length of corolla. Var. **elatinoìdes** (*C. elatinoides*). Plant white-tomentose, compact in growth, lvs. thickish. Var. **fenestrellàta** (*C. fenestrellata*). Plant glabrous and shiny: corolla violet-blue, the recurved lobes comprising ¾ the length of fl.; style longer than corolla; calyx-lobes ½ or less as long as corolla. Var. **gargánica** (*C. garganica*). Plant gray-pubescent: corolla light violet-blue, spreading, with long lobes; style not much exserted; calyx-lobes ½ or less as long as corolla. Var. **istrìaca** (*C. istriaca*). Plant gray-pubescent or woolly: corolla lobed nearly to base, lobes spreading or recurved; style much exserted; calyx-lobes ⅓ or less length of corolla.

elatinoìdes: *C. Elatines* var.

élegans. St. pubescent, 1 ft. or more, simple: lvs. linear-lanceolate, entire, sessile, the lower ones broader and subpetiolate: fls. interruptedly spicate; calyx-lobes very narrow and as long as corolla. Siberia.—Plants cult. under this name are likely to be *C. rapunculoides.*

ephèsia. Erect, 1–2 ft.: lvs. ovate to oblong, sinuate, silvery-tomentose: fls. urn-shaped, pale lilac, lobes short and blunt. Ephesus, Asia Minor.

Erìnus. The name appears in hort. lists, probably in confusion with *C. Elatines.* The true *Erinus* is perhaps not in cult.: it is a thinly hairy ann. of S. Eu., erect, 6–15 in.: lvs. oblong and crenate-dentate: fls. very small and sessile in clusters.

excìsa. Slender little plant 4–6 in. tall, sts. glabrous: lvs. linear, and some of the lower ones narrow-spatulate and toothed: fls. solitary or 2–3 to a st., nearly or quite erect, violet, bell-shaped, about ¾ in. long, lobes sharp, calyx-lobes very narrow, shorter than corolla-tube. S. Eu.

exígua. Diffuse, 2–6 in. high, more or less hispid: lvs. obovate to linear: fls. erect, few or several, light blue, ⅓ in. or less long; calyx-lobes very narrow, prominent. Coast ranges, Calif.

fenestrellàta: *C. Elatines* var.

flexuòsa of Amer.: *C. divaricata.*

floridàna (*Rotantha floridana*). Sts. weak, branched and interlocking to make a ground-cover, 8–16 in. long, glabrous: lvs. elliptic to oblanceolate, shallowly crenate, about 1 in. or less long: fls. rotate, violet, ¾ in. across, lobes very narrow. Low lands, Fla., and has been brought into cult.

Formanekiàna. Erect to 2 ft. or so but a dwarf form does not develop the main st., dying after blooming which may be the second year from seed or later: lower lvs. in a rosette, silvery, long and narrow, cauline lvs. much smaller and nearly covered by the white horizontal or ascending tubular-bell-shaped large showy fls. with short reflexed lobes. Macedonia.

frágilis. Large-fld., vine-like, late-blooming, to 6 in., with trailing sts. to 16 in.: lvs. round-cordate to ovate-lanceolate, toothed, the lower long-stalked: fls. purplish-blue with white center, 1½ in. across, in corymbs. Italy.

Franchètii: listed name.

gargánica: *C. Elatines* var.

glomeràta. To 2 ft.: lvs. ovate, to 5 in. long, toothed, the basal long-stalked: fls. blue or white, to 1 in. long, often double, in dense clusters. Eu., Asia. Var. **acaùlis** (*nana*) has sts. to 5 in. high. Var. **dahùrica** has clusters 3 in. across. Var. **supérba** has deep violet fls. in large clusters.

grandiflòra: *C. persicifolia* var.

grándis: *C. latiloba.*

Gròssekii. To 2½ ft., stiff-hairy: lvs. ovate, basal ones very broad and coarsely toothed: fls. violet, large, in long racemes, with appendages or wings and stiff hairs on calyx-tube. S. Eu.—See *C. Trachelium.*

haylogénsis: listed name.

Hòstii: *C. rotundifolia* var.

imeretìna. To 6 in., branching: lvs. obovate, narrowed into winged petiole, 1 in. long: fls. violet-blue, ½ in. long. Caucasus.

imperiàlis ròsea: hort. name.

incàna: listed.

incúrva. Erect, 12–18 in., pubescent, dying after seeding: lvs. in rosette cordate or reniform, crenate, those on st. cordate-ovate: fls. pale blue, erect, 2 in. long, stigmas 3. Greece.

isophýlla. Sts. trailing, making good basket-plant: lvs. cordate-ovate, to 1½ in. long, the lower long-stalked: fls. pale blue, saucer-shaped, 1 in. across, solitary, numerous. Italy. Var. **álba** has white fls. Var. **Màyi** has larger white-hairy lvs. and bigger fls.

istrìaca: *C. Elatines* var.

kewénsis. Hybrid between *C. arvatica* and *C. excisa:* 3–4 in., glabrous or nearly so: lvs. small, narrow, the lower ones notched: fls. single terminating branches, not nodding, about ½ in. across, deep violet.

Kladniàna. Small plant with look of *C. rotundifolia* but st.-lvs. broader, radical lvs. oblong or elliptic rather than rounded, sts. 3–10 in. high: fls. large for size of plant, about 1 in. across, dark violet. E. Eu.

kolenatiàna. To 9 in.: lvs. ovate, toothed, 1 in. long: fls. bluish-violet, 1 in. long, nodding, in racemes. Caucasus.

lactiflòra (*C. celtidifolia*). To 4 ft. or more: lvs. oval-oblong, to 3 in. long, toothed: fls. milk-white (var. **álba**) or pale blue (var. **cærùlea**), 1 in. long, in terminal panicles. Caucasus.

lamiifòlia: *C. alliariæfolia.*

lanàta. Erect to 2 or even 3 ft., leafy: lvs. pubescent and silky-hairy, lower ones cordate, upper ones broadly ovate: fls. large, white or pale yellow, terminal and axillary, narrow-bell-shaped, more than 1 in. long, not drooping. S. E. Eu.—Probably *C. velutina* is a form of this species.

lasiocárpa. Small, 3–6 in., nearly glabrous: lvs. spatulate, obovate to linear, to 1¾ in. long, sharp-toothed: fls. blue, to 1 in. long, solitary, fragrant, calyx-lobes toothed. N. N. Amer., N. Asia.

latifòlia. To 4 ft., hairy: lvs. oblong-ovate, to 6 in. long, toothed, the lower long-stalked: fls. purplish-blue, 1¼ in. long, solitary. Eu., Asia. Var. **álba** has white fls.; var. **cærùlea** blue; var. **eriocárpa,** calyx hairy; var. **macrántha** (*C. macrantha*), fls. to 2¼ in. long.

latíloba (*C. grandis*). To 4 ft., glabrous: lvs. lanceolate, to 5 in. long, toothed: fls. blue, to 2 in. across, solitary or clustered, with 3 long styles. Caucasus. Var. **álba** has white fls.

Laùrii (*Loreyi*)*: C. ramosissima.*

Leùtweinii. The true species, from Greece, appears not to be in cult. here. *C. incurva* has been mistaken for it, and *C. Grossekii* and *C. rapunculoides* have been grown under the name.

lingulàta. Bien. to 15 in., bristly-hairy: lvs. oblong-spatulate, wavy-toothed: fls. violet, in sessile terminal and axillary strongly bracted heads. S. E. Eu.

linifòlia. Erect, to 18 in., lightly pubescent to nearly glabrous: st.-lvs. abundant, linear to linear-lanceolate, 2 in. or less long, more or less crenate: fls. several to many, violet, ¾–1 in. across. Eu.

longéstyla. To 2½ ft., hairy: lvs. oval to oblong, the basal lobed and with winged petiole: fls. blue-purple, constricted below middle, nodding. Caucasus. Var. **parviflòra** has smaller fls.

longifòlia: *C. speciosa.*

Lòreyi: *C. ramosissima.*

macrántha: *C. latifolia* var.

macrorrhìza. Tufted, with thick rootstocks: lvs. ovate to linear, toothed: fls. blue, solitary, erect. S. Eu.

macróstyla. Ann. to 2 ft., hairy: lvs. ovate-oblong, to 2 in. long, nearly entire: fls. purple, broad-bell-shaped, to 2½ in. across, solitary, erect, stigma to 1 in. long. Asia Minor.

Marcheséttii. Of the *C. rotundifolia* kind, and some of the cult. stock may be that species: radical lvs. less broad, st.-lvs. very narrow-linear, erect: fls. few or several, not hanging, narrow-bell-shaped, nearly 1 in. long. E. Eu.

Mèdium. CANTERBURY BELLS. Popular bien. to 4 ft., hairy: lvs. oblanceolate, to 10 in. long, toothed and wavy: fls. violet-blue, 1 in. across, 1–2 together and forming open racemes. S. Eu. Color forms are vars. **álba, cærùlea** and **ròsea.** Var. **calycánthema** has calyx resembling the corolla in the Hose-in-Hose or Duplex race, and in the Cup-and-Saucer race spreading or wheel-shaped.—All forms are excellent for late spring and early summer bloom.

michauxioìdes. To 4 ft., hairy: lvs. ovate-cordate to oblong, coarsely toothed, the lower long-stalked: fls. pale blue, nodding, in panicles. Asia Minor.

mirábilis. To 1 ft.: lvs. obovate, to 6 in. long, coarsely toothed, with winged petioles: fls. pale lilac, 2 in. across, erect, numerous. Caucasus.

Mòerheimii: *C. persicifolia* var.

móllis (*C. velutina* in part). Silvery-silky, 3–12 in. high: lvs. in the rosette spatulate and crenate, those on st. erect and usually entire: fls. blue, wide open, about ½ in. across, stigmas 5. S. Eu.—*C. incurva* has been grown under this name; also *C. sarmatica* and *Symphyandra pendula.*

Morettiàna. A very dwarf alpine in Eu., probably not planted with us; plants grown under this name are similar to *C. linifolia.*

muràlis: *C. Portenschlagiana.*

nítida: listed name, application uncertain.

nóbilis: *C. punctata.*

olýmpica. Bien., slightly pubescent, sts. slender and simple: radical lvs. slender, obovate, lightly crenate, cauline ones narrow-oblong to lanceolate: fls. solitary or in short racemes, pale blue. Mt. Olympus, Greece.—Other plants are grown under this name: see *C. rotundifolia* var. *olympica.*

Pallasiàna: *C. pilosa.*

Párryi. Erect, 3–10 in., glabrous: lvs. narrow-lanceolate or spatulate, upper ones linear, entire or slightly denticulate: fls. usually single, erect, broad, about 1 in. across, violet. Rocky Mts., subalpine.—This is the *C. planiflora* of American botanists.

pátula. Erect, to 2 ft., much forking, sts. hispid on angles: lvs. in rosette spatulate or oblanceolate, crenate, cauline lvs. lanceolate to linear, sessile: fls. terminating slender branches, very broad, sometimes 1¼ in. across, blue, calyx-lobes very long and spreading. S. Eu.

pentagònia: *Specularia pentagonia.*

persicifòlia. WILLOW B. Strong-growing, erect, stiffish, usually unbranched, to 3 ft. and more, glabrous: lvs. long, narrowly oblanceolate to linear, entire, 4–8 in.: fls. large, 1½ in. long and broad (larger in hort. vars.), blue. Eu. Vars. **álba** fls. white, **Báckhousei** white, **cærùlea** blue, **flòre-plèno** double; **gigantèa, grandiflòra** very large, **humòsa** double, **macrántha** very large, **Mòerheimii** double white, **Pfítzeri, spléndida.**—Favorite species.

petiolàta. Slender, erect, glabrous, to 18 in.: lvs. very narrow, ascending, the radical ones broad-ovate: fls. several on a st., blue, about 1 in. or less long. W. N. Amer.—Plant so named in gardens may be incorrect.

petræ̀a. Bien. to 1 ft.: lvs. lanceolate to ovate, toothed, gray-hairy beneath: fls. pale yellow, ½ in. long, in dense heads. S. Eu.

phyctidócalyx (*C. amabilis*). Small plant, 1 ft. in its native region, otherwise much resembling *C. persicifolia* (which may be grown under this name) but calyx-teeth much longer and acuminate, corolla smaller and short-bell-shaped. S. W. Asia.

pilòsa (*C. dasyantha. C. Pallasiana*). Little rock-garden pilose subject 3–9 in. high: lvs. oblanceolate to narrow-oblong, those on st. sessile: fl. single, large, 1 in. long, violet, narrow-bell-shaped, lobes acute. N. Asia, Alaska.

Pìperi. Small, tufted, 1–4 in. high in its native mts., glabrous, leafy: lvs. short, more or less spatulate, serrate: fls. 1-several, bright blue, corolla opening broadly. Olympics, Wash.

planiflòra: probably *C. versicolor* is meant; the American *planiflora* is *C. Parryi.*

Portenschlagiàna (*C. muralis. C. bavarica*). Related to the Adria bellflowers and may be compared with the many forms of *C. Elatines:* corolla bell-shaped, longer than broad, to 1 in. long, lobes about ⅓ length and outwardly curved. Dalmatia.

Poscharskyàna. Allied to the Adria bellflowers, larger, corolla cut ⅔ or more to base, broader than long, lobes sharp and erect: fls. twice larger than in the *C. Elatines* group. Dalmatia.

prenanthoìdes. Erect and slender, 1–3 ft., glabrous or puberulent, not branched: lvs. lance-ovate to lanceolate, 1½ in. or less long, dentate: fls. remotely racemose, corolla ⅓–½ in. long, very narrow, style long-exserted. Calif., Ore.

primulæfòlia. Erect, to 3 ft., hairy: lvs. lanceolate to oblong, coarsely toothed: fls. violet or purple, tomentose at bottom, wheel-shaped, in close racemes. Portugal.

propínqua. Ann., hispid, 1 ft., forked: lvs. oblong and obtuse, entire or nearly so, upper ones sessile: fls. violet and mauve, broad-campanulate. Var. **grandiflòra** (*C. Cecilii*) has large fls. 1½ in. long and somewhat broader. Armenia, Persia.

pseùdo-Ràineri: name in hort. for a dwarf form of *C. carpatica*.

pulchérrima. Erect, nearly glabrous, 1–2 ft.: radical lvs. cordate-ovate, st.-lvs. lanceolate, all dentate: fls. violet, sharply lobed half way down, in an axial raceme. Apparently one of the *C. rapunculoides* variants.

púlla. Alpine, 2–6 in. high, erect, glabrous: lvs. many, ovate, blunt, crenate, 1 in. or less long: fls. solitary, dark purple, bell-shaped, lobes short, nodding. S. E. Eu.—Other species are grown under this name.

pulloìdes. Supposed hybrid between *C. pulla* and *C. carpatica* var. *turbinata:* plants to 8 in. tall: fls. blue-purple, very large and broad.

Pulsatílla: listed name.

punctàta (*C. nobilis*). To 2 ft., hairy, showy: lvs. ovate, to 5 in. long, coarsely toothed, the lower long-stalked and cordate: fls. many, white spotted inside or lilac-blue in "Marian Gehring," 2 in. long, nodding, solitary. Asia.

pusílla: *C. cochlearifolia.*

pyramidàlis. Chimney B. Strict, to 5 ft., glabrous: lvs. ovate, 2 in. long, toothed, the lower long-stalked and cordate: fls. pale blue, 1 in. or more long, saucer-shaped, in narrow racemose panicles. S. Eu. Var. **álba** has white fls., **compácta** a dwarf dense large-fld. form.

pyravérsi. Hybrid between *C. pyramidalis* and *C. versicolor* (as the name suggests), shown in France in 1912, with habit of the former: fls. close together in long spike-like racemes, wide open and parted nearly to base, light violet with dark ring in center. It does not follow that stock now raised from seeds maintains the hybrid characteristics.

pyrenàica. Sts. simple, to 1 ft., soft-hairy: radical lvs. rounded and crenate, st.-lvs. lanceolate: fl. terminal, about ½ in. long, corolla blue, scarcely longer than calyx-lobes. Pyrenees, Balearic Isls.

Raddeàna. To 1 ft., glabrous: lvs. ovate, toothed, the lower deeply cordate and long-stalked: fls. hanging, dark purple, ¾ in. long, solitary in axils. Caucasus.

Ràineri. Small, to 3 or 4 in., leafy, lightly hirsute: lvs. spatulate to oblanceolate, obtuse, crenate: fl. solitary, erect, deep violet, 1–1½ in. long, broad, lobes short. Alps, N. Italy.—Plant bearing this name in cult. is a dwarf compact form of *C. carpatica*, and to this the var. *alba* also probably belongs.

rádula. Low, 1 ft. or less, hispid, erect and stiffish: lvs. ovate, denticulate, the upper ones small and sessile: fls. 1–3 on branches of panicle, blue, corolla densely rough-pubescent. S. W. Asia.

ramosíssima (*C. Loreyi*). Ann. to 1 ft., nearly glabrous: lvs. obovate to lanceolate, to 2 in. long, toothed: fls. violet, whitish at base, 1 in. across, saucer-shaped, solitary, erect. S. E. Eu. Var. **álba** has white fls.

rapunculoìdes. Rover B. Vigorous persistent invading plant often occupying the place in gardens of other bellflowers that have died out, and if roots or seeds are distributed confusion in names results: erect, to 3 ft., mostly very lightly pubescent: radical lvs. long-petioled, cordate-ovate, acuminate, dentate, st.-lvs. narrow-ovate to lanceolate and upper ones sessile: fls. many in a long raceme, hanging or declined, 1 in. and more long, violet-purple, lobed about half way down, calyx not hispid but perhaps thinly pubescent. Eurasia; nat. about properties and along roadsides, making large colonies; variable; spreading by stolons.

Rapúnculus. Rampion. To 3 ft., with thick tap-root, usually bien.: basal lvs. oval, to 8 in. long, long-stalked, wavy-toothed, st.-lvs. linear-lanceolate: fls. lilac, ½ in. long, in narrow racemes. Eu.—First-year roots and radical lvs. sometimes used as salad.

rhomboidàlis (*C. azurea*). Erect, to 2 ft., nearly glabrous: lvs. ovate, to 2 in. long, toothed: fls. purplish-blue, to 1 in. long, nodding, in racemes, calyx glabrous. Eu. Var. **álba** has white fls.

Róbsonii. Described as a hybrid between *C. carpatica* var. *turbinata* and *C. Scheuchzeri*, with deep blue fls.

rotundifòlia. Harebell. Erect, or spreading at base, simple or branched, mostly glabrous, to 1½ ft., slender: basal lvs. ovate or orbicular, 1 in. across, long-stalked, st.-lvs. linear or lanceolate, to 3 in. long: fls. bright blue, to 1 in. long, in loose racemes or in some forms solitary. Eu., Asia, N. Amer. Var. **alaskàna** (*C. alaskana*) is leafy to top, corolla 1 in. or more long, bright violet. Var. **árctica,** a stiffer or rigid little plant with 1 or few fls. to st., in high N. Var. **Hòstii** has larger fls. Var. **soldanellæflòra** has fls. partially double and the corolla split into shreds. Other listed garden vars. are **álba, arcuàta, Baùmgartenii, cœlestìna, grandiflòra, Marchesiàna, olýmpica** (not *C. olympica*), **Róbsonii** (see *C. Robsonii*), **supérba.**

rupéstris: confused name in the trade; perhaps the true plant of Greece is not cult. with us.

salicifòlia: dubious name in hort., probably not a Campanula.

sarmática. Soft-hairy and grayish, 1–2 ft., erect, mostly not branched: radical lvs. hastate-lanceolate, 3 in. long, unequally dentate, st.-lvs. oblong: fls. nodding in raceme, violet, about 1 in. long, lobes curving. Caucasus. Var. **Wátkinsii** is listed.—Sometimes labelled *C. mollis.*

Sartòri. Velutinous, 6–10 in., st. somewhat fleshy: lvs. very small, orbicular: fls. white, narrow-bell-shaped, hairy outside, much like those of *C. Portenschlagiana.* Greece.

saxátilis. Bien., tufted, to 6 in.: basal lvs. in rosettes, oblong-spatulate, to 2 in. long, toothed: fls. lilac, ¾ in. long, in 2–5-fld. racemes. Crete.—*C. alliariæfolia* has been distributed under this name.

Saxífraga. To 6 in.: lvs. linear or linear-lanceolate, nearly entire, ciliate: fls. violet, to 1 in. long, solitary. Caucasus.

scabrélla. Sts. many, 2–4-fld. and 2–5 in. tall, puberulent to glabrous: radical lvs. spatulate, upper ones linear: fls. blue, more erect than in *C. uniflora*, to which it may be referred, and larger. Mts., Calif. northward.

Scheùchzeri. Low, to 6 or 12 in., usually thinly pubescent: lower lvs. lance-linear, upper ones very narrow: fls. large, to 1 in. long, bell-shaped, blue. Mts., Eu., Asia.

Scoùleri. Low soft plant, 3–12 in., making offshoots at base, leafy, glabrous or nearly so: lvs. ovate to oblong, upper ones linear, serrate: fls. small, ½ in. long, drooping, pale blue. Woods, Calif. northward.

sibírica. Bien. or per. to 1½ ft., bristly-hairy: lvs. obovate and crenulate, those on st. lance-acuminate: fls. violet, 25 or more in a panicle, drooping. Eu., Asia. Var. **álba** is listed.—Variable.

spathulàta: name of doubtful botanical meaning.

speciòsa (*C. longifolia*). To 1 ft., very hairy: lvs. oblong- to linear-lanceolate, toothed: fls. blue, 1 in. long, solitary in the axils and forming a pyramidal raceme. S. Eu.

spectábilis: hort. name.

Spéculum: *Specularia Speculum-Veneris.*

spicàta. Bien. to 2 ft., hairy: lvs. linear-lanceolate, nearly entire: fls. blue, in a long interrupted spike. Eu.

Spruneriàna (*C. Spruneri*). Sts. erect and slender, 8–14 in., usually long-forked, glabrous: lvs. obovate, the upper ones lanceolate or narrower, sessile: fls. terminal, bell-shaped, nearly or quite 1 in. long, blue, corolla lobed ½ way down, calyx-lobes slender and long. S. E. Eu.

Stánsfieldii. Supposed hybrid, perhaps between *C. carpatica* and *C. Waldsteiniana;* described as a creeper with deep purple fls.

stenocòdon. Similar to *C. rotundifolia* but more slender, with narrower st.-lvs. and tubular rich lilac-purple fls. Alps.

Stèvenii. Low, in clumps or mats, with ascending sts.: lvs. oblong-spatulate, entire or crenate, those on sts. linear: fls. purple-blue, 1–4 on a st. Caucasus, Siberia, in mts. Var. **álba** is listed.

strigòsa. Ann., white-setose, erect, forking above: lvs. oblong to oblong-lanceolate, entire, sessile: corolla glabrous, twice or more as long as calyx. S. W. Asia.

subpyrenàica. Per.: lvs. long and narrow, curving outward: fls. blue or white, in racemes, larger than *C. persicifolia* and having a bigger hairy calyx. Montserrat, N. E. Spain.

thessàla. Decumbent, gray-pubescent: basal lvs. oblong, pinnate or pinnately lobed, st.-lvs. toothed: fls. pale violet, 1 in. long, in loose racemes. Thessaly.

thessálica, thessalónica: listed; probably *C. thessala.*

thyrsoìdes. Erect unbranched very leafy bien., 6–30 in., hairy: lvs. long-lanceolate or narrower, ascending, sessile: fls. creamy or yellowish, in a dense bracted spike. Eu. Vars. **carniólica** and **lùtea** are listed.

Tommasiniàna. Sts. 6–15 in. long, strict at first, becoming diffuse or lopping over rocks, glabrous: lvs. lanceolate or narrower, about ¾ in. long, tapering both ways, crenate: fls. violet, ¾ in. long, mostly drooping, narrow, lobes blunt and very short. Istria.—It has been confused with *C. Waldsteiniana* of Croatia but that plant has fls. sharply lobed half way down and the lower lvs. are obtuse and apparently not in cult. with us.

Trachèlium. To 3 ft., rough-hairy: lvs. ovate-lanceolate, to 3 in. long, coarsely toothed, the lower long-stalked: fls. blue-purple, to 1 in. long, sometimes double, nodding, in loose racemes. Eu., Asia; escaped in N. Amer. Var. **álba** has white fls.—Sometimes grown as *C. Grossekii*, but it has no appendages on calyx-tube.

tridentàta. To 5 in.: lvs. oblong to linear, ciliate, entire except the 3-toothed apex: fls. deep blue, solitary. Asia Minor.

tubulòsa. Bien., soft-pubescent, 1 ft. or less, sparsely branched: radical lvs. ovate-oblong and dentate, those on st. ovate-lanceolate: fls. 1–3, corolla tubular and pubescent outside. Crete.

turbinàta: *C. carpatica* var.

uliginòsa. Very weak branching plant, sts. 1–2 ft. long: lvs. linear or linear-lanceolate, pointed, 1–2 in. long: fls. blue, about ½ in. across, deeply lobed. Moist land, Ind. and Neb. northward.

uniflòra. St. simple, nearly or quite glabrous, 1-fld., 6 in. or less high: lvs. linear-oblong, blunt, practically entire: fls. erect, calyx turbinate, corolla about ½ in. long, blue. High N. and on mts., Eu. and N. Amer.

Van Hoùttei. Garden plant described in France in 1878 with aspect of *C. nobilis* (*punctata*) of which it may be a hybrid: radical lvs. usually more or less lobed, st.-lvs. oval-lanceolate, toothed: fls. blue or violet, more than 2 in. long.

velùtina: probably *C. lanata* is usually meant.

versícolor. To 4 ft., glabrous: lvs. ovate to ovate-lanceolate, toothed, the lower long-stalked: fls. pale blue with violet throat, in long spike-like racemes. Greece.

villicaùlis: plants grown under this name may be *C. punctata*.

Vidàlii. To 2 ft., glabrous and clammy: lvs. oblong, to 4 in. long, coarsely toothed: fls. white with yellow base, 2 in. long, nodding, in short racemes. Azores.

Waldsteiniàna: see under *C. Tommasiniana*.

warleyénsis and var. **álba:** garden forms.

Wóckii. Dwarf, 2–5 in., glabrous: lvs. ½ in. long more or less, oblong and tapering both ways, crenate: fls. lavender, erect, small, deeply lobed.

Zóysii. To 4 in., tufted, the sts. few-fld.: lvs. ovate or obovate, entire, those on st. becoming oblanceolate: fls. pale blue, mostly terminal on 1-fld. peduncles, the corolla cylindrical and constricted at apex. Austria, alpine.

CAMPANULÀCEÆ. Bellflower Family. Probably 40 genera of widely distributed herbs, shrubs or trees, with usually alternate simple lvs., bisexual mostly showy fls. prevailingly in blue, and having gamopetalous 5-lobed corolla, 5 stamens, mostly inferior 1–5-celled ovary, and fr. a dehiscent caps. or sometimes berry-like. Several herbaceous genera are flower-garden subjects, as Adenophora, Campanula, Canarina, Codonopsis, Cyananthus, Edraianthus, Jasione, Michauxia, Ostrowskia, Phyteuma, Platycodon, Specularia, Symphyandra, Trachelium, Wahlenbergia. For the most part they are of simple cultural requirements.

CAMPANULATE: bell-shaped.

CAMPE: *Barbarea*.

CAMPHORA OFFICINARUM: *Cinnamomum Camphora*.

CAMPHORÓSMA. *Chenopodiaceæ*. Small shrubs or herbs with camphor-like odor, native in Eu., Asia and Afr., having needle-like lvs. and small fls. in dense spikes toward ends of branches; intro. in Calif.

monspelìaca. Hairy subshrub to 2 ft.: lvs. clustered: fls. whitish, solitary in the axils and forming leafy spikes. Medit. region.

CAMPHOR-TREE: *Cinnamomum Camphora*.

CAMPION: *Lychnis, Silene*.

CAMPSÍDIUM. *Bignoniaceæ*. Evergreen climbing shrubs with pinnate lvs., orange tubular 5-lobed fls. in terminal racemes, and narrow capsular frs.; grown out-of-doors in S. U. S. Propagated by cuttings of green wood under glass.

valdiviànum. Lvs. of 11–13 oval-oblong sessile lfts. to 1½ in. long, toothed at tip: fls. 1½ in. long, the racemes drooping: caps. to 4 in. long. Chile.

CÁMPSIS. Trumpet-Creeper. *Bignoniaceæ*. Two shrubs climbing by aërial rootlets, having deciduous pinnate lvs. with toothed lfts., orange or scarlet funnelform fls. in late summer with spreading 5-lobed limb, and fr. a long dehiscent caps.

The trumpet-creepers thrive in fertile soil in sunny locations. *C. radicans* is fairly hardy North and both species do well in southern United States. Propagated by seeds, cuttings of green wood under glass, layers, and cuttings of mature wood or roots.

chinénsis: *C. grandiflora*.

grandiflòra (*C. chinensis. Bignonia chinensis. Tecoma* and *Bignonia grandiflora*). Chinese T. Lvs. of 7–9 ovate or ovate-lanceolate glabrous lfts. to 2½ in. long: fls. scarlet, to 3 in. across, the tube only slightly longer than the deeply 5-lobed calyx. China.

hýbrida: *C. Tagliabuana*.

radìcans (*Bignonia* and *Tecoma radicans*). Trumpet-Vine. Lvs. of 9–11 oval lfts. to 2½ in. long, pubescent at least on midrib beneath: fls. orange with scarlet limb 2 in. across, the tube 3 in. long, about 3 times as long as short-toothed calyx. Pa. to Fla. and Tex. Var. **flàva** (var. *aurea*), fls. orange-yellow.

Tagliabuàna (*C. hybrida. Bignonia* and *Tecoma Princei*). Hybrid between *C. grandiflora* and *C. radicans* with fls. to 3 in. long and 2 in. across.

CAMPTOSÒRUS. Walking-Fern. *Polypodiaceæ*. Hardy small ferns with simple long-pointed fronds that root at the tip and therefore are called "walking fern" or "walking leaf"; sori linear or oblong, irregularly scattered; 2 species, the native one, growing usually on lime-bearing rocks, used somewhat in rock- and wild-gardens; the other is N. Asian.

rhizophýllus. Fronds evergreen, to 9 in. long, heart-shaped at base, tapering to a long often thread-like point. Que. to Ga., Ala. and Okla.

CAMPTOTHÈCA. *Nyssaceæ*. One decidous tree native in China and intro. into S. Calif. **C. acuminàta.** To 75 ft., quick-growing, with pale gray smooth bark: lvs. alternate, ovate, to 6 in. long: fls. small, polygamous, in heads which are solitary or racemose, the white stamens long-exserted: fr. a samara about 1 in. long, brown and shining.

CAMPYLÁNTHUS. *Scrophulariaceæ*. Small shrubs of semi-trop. regions, having alternate fleshy lvs. and tubular fls. in terminal racemes. About 8 species are known of which one from the Canary Isls., **C. salsoloìdes** is cult. Lvs. oblanceolate to lanceolate, to 1 in. long, entire, glabrous: fls. in racemes to 4 in. long, sticky-pubescent, on recurved pedicels. Var. **péndulus** is listed, but may not differ from type.

CAMPYLOBOTRYS: *Hoffmannia Ghiesbreghtii*.

CAMPYLONEURON: *Polypodium Phyllitidis*.

CAMPYLÓTROPIS. *Leguminosæ*. Deciduous shrubs and subshrubs of Asia distinguished from Lespedeza by the pedicels mostly solitary in the axils of usually deciduous bracts and jointed below the calyx rather than usually 2 in the axils of persistent bracts and not jointed.

macrocárpa (*Lespedeza macrocarpa. L. chinensis. L. ciliata*). To 3 ft.: lfts. 3, oblong, to 2 in. long, not pointed, silky underneath: fls. purple, about ½ in. long, in attractive racemes. China; hardy N.

CAMWOOD: *Baphia racemosa*.

CANAIGRE: *Rumex hymenosepalus*.

CANALICULATE: channelled, with a longitudinal groove.

CANÁNGA (*Canangium*). *Annonaceæ*. Malayan trees with alternate simple lvs., large fls. in axillary clusters, and fr. of many oblong fleshy carpels; one species is grown for ornament and for the perfume derived from the fls. It requires a warm or trop. climate.

odoràta. Ylang-Ylang. To 80 ft.: lvs. oblong-ovate, to 8 in. long: fls. greenish or yellowish, drooping, very fragrant, with narrow petals to 2 in. long: fr. greenish, 1 in. long.

CANANGIUM: *Cananga.*

CANARÌNA. *Campanulaceæ*. Bellflower-like per. herbs that differ from Campanula in producing a berry rather than a dry caps. and fl. parts in 6's; native in Canary Isls. and Afr. They may be grown in a cool greenhouse or in the S. perhaps with protection.

Campánula: *C. campanulata.*

campanulàta (*C. Campanula*). St. slender, 6-8 ft., semi-scandent, nearly or quite glabrous, arising from a tuber: lvs. opposite or ternate, petioled, narrowly ovate-oblong, lobed at base and notched on margins, blade about 3 in. long: fls. solitary on axis and branches, open-bell-shaped, about 2 in. long, yellowish overlaid with brick-red or purplish-brown. Canaries.

Emínii. Lvs. ovate, about 2 in. or less long, not decidedly lobed at base but notched: fls. 2½ in. long and broad, open-bell-shaped, orange-yellow with red lengthwise nerves. Trop. E. Afr.

CANARY-BIRD-FLOWER: *Tropæolum peregrinum.*

CANAVÀLIA. *Leguminosæ*. Trop. herbs or sts. somewhat woody, twining or nearly erect, with pinnate lvs. of 3 lfts., papilionaceous fls. in axillary racemes, and large flat woody pods strongly ribbed near upper margin.

Sometimes grown for ornament in warm countries, as stock feed, a green-manure crop, and the beans for human food. Adapted to about the same climatic conditions as cotton and require a long season. Seeds should be planted 6 to 12 inches apart in rows 3 feet apart.

ensifórmis. Jack Bean. Ann., partially erect, to 4 ft.: fls. purple: pods to 14 in. long, with white seeds. W. Indies.

gladiàta. Sword Bean. Twining: pods to 12 in. long, with seeds usually red, pink or brown. Tropics of Old World.

CANDELILLA: *Euphorbia antisyphilitica.*

CANDLE-BERRY-TREE: *Aleurites moluccana.* **-Plant:** *Kleinia articulata.* **-Tree:** *Parmentiera cereifera.*

CANDLENUT: *Aleurites moluccana.*

CANDÓLLEA. *Dilleniaceæ*. Shrubs or herbs with alternate simple lvs. and mostly yellow fls. few or solitary at ends of branches, the parts mostly in 5's; grown in S. Calif. or sometimes under glass.

cuneifórmis (*Hibbertia cuneiformis*). Shrub to 6 ft.: lvs. oblong, 1 in. long, toothed at apex: fls. ½ in. or more long, solitary and sessile. Australia.

CANDYTUFT: *Iberis.*

CANE, DUMB: *Dieffenbachia Seguine.* **Southern:** *Arundinaria gigantea.*

CANÉLLA. *Canellaceæ*. One evergreen tree of S. Fla. and W. Indies. **C. Winteràna** (*C. alba*). Wild Cinnamon. To 45 ft., often shrubby, with gray aromatic bark: lvs. oblanceolate or spatulate, to 4 in. long, obtuse, shining above: fls. purple, red or violet, to ¾ in. long, in corymbs, anthers yellow: fr. a crimson berry ¼ in. across.

CANELLÀCEÆ. Canella Family. Five genera of aromatic trees or shrubs native in trop. Amer. and Afr., having alternate entire lvs., bisexual fls. of 3 sepals, 4-12 or no petals, many stamens with filaments united in tube, superior 1-celled ovary, and fr. a berry. Canella may be grown in S. Fla. or S. Calif.

CANESCENT: gray-pubescent and hoary, or becoming so.

CANISTEL: *Lucuma nervosa.*

CANÍSTRUM. *Bromeliaceæ*. Brazilian terrestrial or epiphytic herbs with lvs. in a basal rosette and green, yellow or blue fls. in heads or spikes subtended by colored bract-lvs.; occasionally cult. in the greenhouse. Cult. as for *Bromelia.*

amazónicum (*Nidularium amazonicum*). Lvs. to 1½ ft. long and 3 in. wide, finely toothed, brownish: fls. greenish-white, in dense heads.

aurantìacum. Lvs. to 2 ft. long and 2 in. wide, finely toothed, spotted with dark green when young: fls. orange-yellow, in dense heads, the inner bract-lvs. bright red.

Líndenii (*Nidularium Lindenii*). Lvs. to 2 ft. long and 3 in. wide, finely toothed, green spotted with darker green: fls. pure white, in dense heads.

CÁNNA. *Cannaceæ*. Striking tall erect tender per. herbs with thick branching rootstocks and mostly simple main sts., grown usually in masses and lines for foliage effect and the showy terminal fl.-clusters; botanical characters of the family (Cannaceæ); native in tropics and subtropics. They reach 2½ to 10 ft. in height, bearing large simple lvs. that are sometimes bronzy. Few of the original species are in common cult., those known to hort. being hybrid or other derivatives.

Of easy cultivation in fertile moist deeply-prepared soil; in the North, cannas should not be planted out until all danger of frost is past. In spring, old roots should be divided before planting; for mass effects, plants may stand 12-24 inches apart. In autumn the roots should be dug and stored over winter in a warm dry place. The usual method of rapid multiplication is by division of the roots, each piece having a bud. These pieces should be started in heat in early April, covering them 2 or 3 inches in loose soil. Also propagated by seed sown in flats or pots in February and March and grown over heat; the seedlings usually bloom the first year; new varieties are obtained this way. To hasten germination, seeds may be soaked in warm water before sowing, or the seed-coat notched or filed.

edùlis. Edible C. Bearing edible tubers which are cult. under the name "Tous-les-mois": to 10 ft., st. purple: lvs. to 2 ft. long, purplish beneath: fls. bright red, 3 upper staminodia varying to orange and 2½ in. long. W. Indies, S. Amer.

fláccida. To 5 ft., st. green: lvs. to 2 ft. long and 5 in. wide: fls. tubular at base, yellow, the petals strongly reflexed and the 3 staminodia to 3 in. long. S. C. to Fla.—The most important parent of the orchid-fld. cannas.

generàlis. Common Garden C. Varying in height and color of foliage but usually glaucous: fls. not tubular at base, in many colors, to 4 in. across, with commonly 4 erect staminodes, and petals not reflexing. Of garden origin.—The original Crozy or French cannas are incorporated in this group.

glaùca. To 6 ft., st. glaucous: lvs. 1½ ft. long and 4 in. wide, white-edged: fls. yellow, sometimes spotted or tinged with red in hort. forms, the 3 upper staminodia to 3 in. long. Trop. Amer.

índica. Indian Shot. To 4 ft., st. green: lvs. to 1½ in. long and 8 in. wide: fls. bright red, the lip orange spotted with red, 3 upper staminodia 2 in. long. Trop. Amer.; spontaneous in S. U. S.

iridiflòra. To 10 ft., st. green: lvs. to 4 ft. long and 1½ ft. wide: fls. rose, drooping, the corolla-tube 2½ in. long. Peru.

orchiòdes. Orchid-flowered C. Foliage green or bronzy: fls. tubular at base, yellow to red, striped and splashed, to 6 in. across, with soft flowing outlines, the petals reflexed after first day, having 5 staminodes. Of garden origin.—To this group belong such varieties as Italia and Austria.

Warscewíczii. To 5 ft., st. purplish or brown-purple: lvs. about twice as long as broad: fls. scarlet often tinged with blue, the 2 or 3 upper staminodia to 3 in. long. Costa Rica, S. Amer.

CÁNNABIS. *Moraceæ*. One variable ann. herb native in temp. Asia and nat. in E. N. Amer., grown for the fiber obtained from the inner bark and used for cordage. **C. satìva** (*C. gigantea*). Hemp. To 12 ft.: lvs. alternate, digitately divided into 3-7 narrow toothed lfts.

to 9 in. long: staminate fls. in panicled racemes to 1 ft. or more long; pistillate spikes short and leafy: fr. a small achene.

The dried leaves and flowers of the hemp plant have been used as a narcotic in this country and abroad and have received considerable publicity under the names of marijuana, hashish, and bhang. The dried flowering tops of the pistillate plants are very rich in the narcotic drug marijuana which, for medicinal purposes, is extracted with alcohol and in the illicit narcotic trade pulverized and made into the form of cigarettes or mixed with tobacco for the same use. Three active ingredients, cannabinene, tenanocannabinene and cannabinol have been obtained from the resinous exudate of the plant: the first two are alkaloids, the last a dangerous narcotic glucoside. The principal effects of the smoking of marijuana are due to changes in the central nervous system in which it produces a mixture of depression and stimulation, the latter accompanied by irrational hallucinations and incoördination of the locomotor muscular system of the body during which period the subject is not responsible for his actions. Continual use of the narcotic causes deterioration of the nervous system.

Under the Federal Marihuana Tax Act (passed in 1937) any person in the United States who cultivates the plants or deals in them or their parts must register with the Federal Bureau of Narcotics and pay a tax.

CANNÀCEÆ. Canna Family. One trop. or subtrop. genus of some 30 species, having alternate entire lvs. with sheathing petioles and red or yellow fls. in terminal spikes, racemes or panicles, of peculiar structure: sepals 3, small; petals 3 and sepal-like, remaining erect or reflexing; showy part of fls. represented by 2–5 petal-like staminodia, one reflexed and forming the lip; ovary inferior, 3-celled: fr. a dry caps.

CANNON-BALL TREE: *Couroupita guianensis.*

CANTALOUPE: *Cucumis Melo*; see *Melon.*

CANTERBURY BELLS: *Campanula Medium.*

CÁNTUA. *Polemoniaceæ.* S. American shrubs or small trees with opposite simple lvs. and red, violet or white long-tubular fls. in terminal clusters; grown in a cool greenhouse or out-of-doors in mild climates. Propagated by cuttings under glass.

bícolor. Similar to *C. buxifolia* but with shorter lvs. and solitary fls. with a short yellow tube. Peru.

buxifòlia. Shrub to 10 ft.: lvs. 1 in. or less long, entire: fls. narrow, pinkish-red striped with yellow, to 3 in. or somewhat more long, handsome. Peru, Bolivia, N. Chile.

CAOUTCHOUC TREE: *Hevea brasiliensis;* see *Cryptostegia.*

CAPER-BUSH: *Capparis spinosa.*

CAPILLARY: hair-like; very slender.

CAPITATE: headed; in heads; formed like a head; aggregated into a very dense or compact cluster.

CAPNOIDES: *Corydalis.*

CAPOLLIN: *Prunus Capuli.*

CAPPARIDÀCEÆ. Caper Family. About 35 trop., subtrop. and temp. genera of herbs and shrubs, sometimes trees, with simple or palmately compound lvs., mostly bisexual irregular fls. with 4–8 sepals and petals or rarely petals lacking, 6 to many stamens, superior sessile or stalked 1-celled ovary, and fr. a caps. or berry. Capparis, Cleome and Polanisia are known to hort.

CÁPPARIS. *Capparidaceæ.* Shrubs or trees with simple lvs., large white fls. in corymbs, the ovary long-stalked, and berry-like frs.; one species grown for the flower-buds which are pickled and sold as capers. Propagated by cuttings in heat or by seeds. Not hardy N., but may be grown as annual.

rupéstris: *C. spinosa.*

spinòsa (*C. rupestris*). Caper-Bush. Spiny shrub to 3 ft.: lvs. roundish, to 2 in. long: fls. about 1 in. long, solitary on thick stalks. Medit. region. Var. **inérmis** is unarmed.

CAPRIFOLIÀCEÆ. Honeysuckle Family. Thirteen widely distributed genera consisting mainly of shrubby plants: lvs. opposite, simple or pinnate: fls. bisexual, with 4–5-toothed calyx, gamopetalous 4–5-lobed corolla, 4–5 stamens, and inferior usually 1–5-celled ovary: fr. a berry, drupe, achene or caps. The family furnishes many very attractive ornamental plants in the genera Abelia, Alseuosmia, Diervilla, Dipelta, Kolkwitzia, Leycesteria, Linnæa, Lonicera, Sambucus, Symphoricarpos, Triosteum, Viburnum, Weigela.

CAPRIOLA: *Cynodon.*

CÁPSICUM. Red-Pepper. *Solanaceæ.* Shrubs but grown mostly as herbaceous annuals in the N., much branching and glabrous: lvs. simple and entire: fls. small, white or greenish-white sometimes tinged violet, corolla wheel-shaped: fr. a pod-like many-seeded fleshy indehiscent berry varying widely in size, shape, color and pungency under cult. ·For cult. see *Pepper.*

abbreviàtum: *C. frutescens* var.

ánnuum: *C. frutescens.*

baccàtum: *C. frutescens.*

frutéscens (*C. annuum. C. baccatum*). Shrub to 8 ft., trunk becoming 3 in. through: lvs. from 1–5 in. long: fls. about ½ in. across: fr. variable, erect, declined or drooping. Native in warm countries. The type of *C. frutescens* is the Bird Pepper, with erect spherical or oblong fr. to ¾ in. long, usually red. The races with developed frs. may be grouped as follows: Var. **abbreviàtum** (*C. abbreviatum*). Fr. ovoid, to 2 in. long or less, usually rugose; grown for ornament or pickling. Var. **cerasifórme.** Cherry P. Fr. erect or declined, spherical, to 1 in. across, yellow or purplish, very pungent. Var. **conoìdes.** Cone P. Fr. conical or oblong-cylindrical, to 2 in. long, usually erect. Var. **fasciculàtum.** Red Cluster P. Fr. erect, fascicled, very slender, to 3 in. long, red, very pungent. Var. **gróssum.** Bell or Sweet P. Tall, stout: fr. large and puffy with depression at base, sides usually furrowed, oblong, bell-shaped or apple-shaped, red or yellow, mild in flavor. Var. **lóngum.** Long P. Fr. mostly drooping, elongated to 1 ft. long, usually tapering to apex, often 2 in. across at base; includes Long Red, Long Yellow, Chilli, Cayenne and others.

CAPSULE: a dry fruit of more than one carpel, usually opening at maturity; compound pod.

CARAGÀNA. Pea-Tree. Pea-Shrub. *Leguminosæ.* Shrubs or small trees mostly from Cent. Asia, with deciduous pinnate lvs., papilionaceous mostly yellow fls. borne singly or in few-fld. clusters, and linear cylindrical 1-celled pods; grown for ornament, hardy in central and northern states.

Pea-trees should be planted in sunny positions in sandy soil. Propagated by seeds sown in fall, or in spring after being soaked in warm water; by root-cuttings, layers, or grafting on *C. arborescens.*

Altagàna: *C. microphylla.*

arboréscens. To 20 ft.: lfts. 4–6 pairs, the stipules spiny and much shorter than petioles: fls. yellow, calyx-teeth very short: pod 1½–2 in. long. May–June. Siberia, Manchuria. Var. **albéscens** has lighter green and more glaucous foliage. Var. **Lórbergii** (*C. Lorbergii*) has lfts. narrower than type, also standard and wings of fls. Var. **nàna** is smaller than type and with twisted branches. Var. **péndula** has pendulous branches.

aurantìaca. To 4 ft.: lfts. of 2 pairs, the stipules spiny: fls. orange-yellow. May–June. Cent. Asia.—Differs from *C. pygmæa* in its persistent rachis and broad calyx.

Boìsii. To 6 ft.: lfts. 5–6 pairs, to ¾ in. long, somewhat pubescent beneath, stipules spiny, to ⅜ in. long: fls. yellow, solitary, calyx-teeth not spiny. W. China.

brevispìna. To 8 ft.: lfts. 5–7 pairs, rachis and stipules spiny: fls. yellow, usually 3–4 on a peduncle. June. Himalayas.

Chámlagu. To 4 ft.: lfts. of 2 pairs, not close together, obovate, the lf.-stalk spine-tipped: fls. reddish-yellow. May. N. China.

decórticans. Lfts. 3–6 pairs, to ⅜ in. long, not pubescent beneath, stipules spiny: fls. yellow, to 1 in. long, calyx-teeth spiny. June. Afghanistan.

fèrox: *C. spinosa.*

frutéscens: *C. frutex.*

frùtex (*C. frutescens*). To 10 ft.: lfts. of 2 pairs close together, obovate: fls. bright yellow. May. S. Russia to Japan. Var. **macrántha** (var. *grandiflora*) has larger fls.

Lórbergii: *C. arborescens* var.

Maximowicziàna. To 6 ft.: lfts. of 2–3 pairs, the stipules spiny: fls. bronzy-yellow. W. China.

microphýlla (*C. Altagana*). To 10 ft.: lfts. of 6–9 pairs, the lf.-stalk with short deciduous spine: fls. yellow. May–June. Siberia, China.

pygmæ̀a. To 4 ft. or sometimes prostrate: lfts. of 2 pairs, rachis deciduous, the lf.-stalk spine-tipped: fls. yellow, calyx narrow-campanulate. May–June. Caucasus to Tibet. Var. **aurantiàca erécta** is *C. aurantiaca.*

sophoræfòlia. A hort. hybrid between *C. arborescens* and *C. microphylla*, differing from the former in its pod about ¾ in. long and somewhat shorter lfts.

spinòsa (*C. ferox*). To 6 ft. or sometimes prostrate, the branches spiny: lfts. of 2–4 pairs, those of spurs with 2 pairs. Siberia.

CARALLÙMA. *Asclepiadaceæ.* Succulent leafless herbs with angled sts., allied to Stapelia and of similar cult.: fls. usually in clusters, with 5-lobed corolla and crown of 2 series.

Búrchardii. Similar to *C. europæa*, with very irregular sts., corolla unmarked inside and covered with white hairs. Canary Isls.

caudàta. Sts. with 4 rounded toothed angles: fls. near base of sts., 3½ in. across, yellow mottled with purple, corolla-lobes tapering into long narrow tails. Cent. Afr.

europæ̀a. Sts. erect or prostrate, 4-angled, with blunt teeth and rudimentary lvs.: fls. at tips of sts., ½ in. across, greenish-yellow with transverse brown lines and brown hairs, tips of corolla-lobes red-brown. Medit. region.

Leendértziæ: *C. melanantha.*

lùtea. Sts. to 4 in. high, 4-angled, with sharp teeth, mottled with purple: fls. near middle of sts., to 2½ in. across, yellow, corolla-lobes ciliate with purple hairs. S. Afr.

melanántha (*C. Leendertziæ*). Sts. to 4 in., 4-angled, with sharp teeth: fls. at sides of sts., 2 in. across, purple-black, corolla rough inside, ciliate with long hairs. S. Afr.

Nebrowǹii. Sts. to 7 in., 4-angled, with prominent teeth having small side stipules: fls. in large clusters, 4 in. across, dark red-brown, ciliate with purple hairs. S. Afr.

pseùdo-Nebrowǹii. Similar to *C. Nebrownii* but fls. in smaller clusters and marked with yellow. S. Afr.

ramòsa. To 1 ft., with many slender 4-angled branches: fls. purplish, small, in clusters along grooves near branch tips. S. Afr.

Spréngeri. To 5 in., sts. branched, 4-angled, angles coarsely toothed, dark green mottled purple: fls. purple, to ¾ in. across, annular and inner corona reddish. Ethiopia.

CARAMBOLA: *Averrhoa Carambola.*

CARARA CORONOPUS: *Coronopus procumbens.*

CARAWAY: *Carum Carvi.*

CARDÁMINE. Bitter-Cress. *Cruciferæ.* Erect ann., bien. or per. herbs with fibrous roots or bulbiferous rootstocks, entire or dissected lvs., white to purple fls. and elongate flat dehiscent siliques. The genus is confined to temp. regions of both hemispheres, has about 150 species some of which are showy, but they appear not to be in general cult.

angulàta. Per. to 2 ft.: lvs. of 3 or rarely 5 rhombic lfts. which are 3-lobed or -toothed: fls. white, ½ in. long. B. C. to Ore. and Wyo.

cordifòlia. Per. to 2 ft.: lvs. cordate, to 2 in. long, wavy-toothed: fls. white, about ⅓ in. long. Wyo. to New Mex.

praténsis (*Dentaria digitata*). Ladies-Smock or Cuckoo-Flower. Per. to 1½ ft.: lvs. lanceolate to oblong, pinnately divided, segms. of 3–7 pairs, or if unlobed entire or toothed: fls. white to rose-colored, often double. Eu., Asia and N. N. Amer.—Adapted to rock-gardens and cool moist borders or to bog-margins. In parts of Eu. the lvs. are said to be used as a cress. Propagated usually by offsets, but may be started from seed.

CARDAMON: *Elettaria.*

CARDIÁNDRA. *Saxifragaceæ.* Japanese and Chinese subshrubs, sometimes essentially herbaceous, with alternate lvs. and small fls. surrounded by large sterile fls. borne in summer in terminal corymbs; not hardy N. Propagated by cuttings of young wood under glass.

alternifòlia. To 3 ft.: lvs. elliptic, to 7 in. long, coarsely toothed: fls. pink, lilac or white. Japan.

CARDINAL-CLIMBER: *Quamoclit Sloteri.* **-Flower:** *Lobelia cardinalis.*

CARDIOSPÉRMUM. Heart-Seed. *Sapindaceæ.* Herbaceous vines with alternate bipinnate coarsely toothed lvs., small irregular polygamous or diœcious fls. in axillary corymbs which have two opposite tendrils, and fr. an attractive inflated caps.

These vines are grown for ornament and for covering trellises and bushes. Propagated by seeds sown where plants are to grow and treated as annuals; in mild regions they may self-sow.

grandiflòrum. Slender essentially glabrous vine, probably ann. or bien., with white fls. about ½ in. across and oblong pods to 2 in. long. W. Indies, S. Amer.

Halicácabum. Balloon-Vine. Ann. or bien., perhaps sometimes per., climbing to 10 ft.: fls. white, very small: fr. much inflated, nearly globular but 3-angled, about 1 in. long and broad. Bermuda, Fla., Tex., trop. Amer. but nat. in many parts of world and commonly cult.

hirsùtum. Probably ann. or bien., perhaps per., with densely hairy st.: fls. white: fr. much inflated, 3-angled, pubescent, to 2 in. long and much narrower. Afr.

CARDOON: *Cynara Cardunculus.*

CÁRDUUS. Plumeless Thistle. *Compositæ.* Stout herbs with sessile spiny-toothed or lobed lvs. and spiny heads, solitary or in panicles, the fls. all tubular; pappus bristly but not plumose (see *Cirsium*); native from the Canary Isls. to Japan.

The plumeless thistles grow well in ordinary soil, and are easily propagated by seeds or division. They are employed for bold effects of herbage and bloom.

arábicus: *C. pycnocephalus;* see also *Silybum eburneum.*

benedíctus: *Cnicus benedictus.*

Kérneri. Bien. or per., much branched, to 3 ft., sts. with spiny wings: lvs. pinnately lobed: heads solitary or in pairs, rose-purple, to 2½ in. across. Probably Balkans.

Mariànus: *Silybum Marianum.*

pycnocéphalus (*C. arabicus*). Ann. to 3 ft. or more, spiny: lvs. pinnatifid: heads 2–5, purple. Medit. region.

CÀREX. Sedge. *Cyperaceæ.* Per. grass-like herbs of about 900 widely distributed species, having inconspicuous unisexual fls. borne in dense spikes, and achenes inclosed in a sac (perigynium); mostly monœcious.

Sedges are sometimes planted for edgings in the greenhouse or as pot-plants; many of the native species, with pendent spikes, are useful for colonizing in bogs and along pond borders; some of them make attractive clumps. Propagated by division of the clumps or rhizomes, or by seeds sown in autumn.

còmans. Densely tufted: lvs. thread-like, to 1½ ft. long. New Zeal.

crinìta. To 5 ft.: lvs. several ft. long and to ⅓ in. wide: spikes hanging. Newf. to Fla. and Tex.

elegantíssima: listed name.

Fràseri (*Cymophyllus Fraseri*). Lvs. evergreen, flat, to 1½ ft. long and 2 in. wide, without midnerve. Va. to N. C.

japónica: *C. Morrowii.*

Mórrowii (*C. japonica*). Tufted: lvs. evergreen, flat, to 1 ft. long and ¼ in. wide, often white-striped. Japan.

péndula. More or less tufted: lvs. to 3 ft. long, glabrous. Eu., W. Asia and N. Afr., in moist dense woods.

plantagínea. Woods plant with flat persistent strongly ribbed lvs. to 1 in. broad and 1 ft. or more long, and early culms with red-brown sheaths and 3 or 4 fertile spikes. N. B. south and west.—Useful for colonizing and in rock-gardens.

CÀRICA. *Caricaceæ.* More or less succulent trees, commonly diœcious or often imperfectly so, with straight trunks bearing at summit a crown of palmately lobed lvs., and fr. a fleshy berry resembling a melon; one species is widely grown in the tropics for the edible fr. Commercial papain is also extracted from the fr. and other parts of the plant.

Papayas require tropical temperatures but withstand a few degrees of frost. They do best on rich well-drained loam. Trees bear within a few months after planting but are short-lived. For orchard cultivation they should be set about 10 feet apart. Care must be taken to have both staminate and pistillate plants, although some varieties have bisexual flowers. Propagated by seeds although sometimes cuttings or grafts are employed.

Papàya. Papaya. Pawpaw. To 25 ft.: lvs. to 2 ft. across, deeply 7-lobed, the lobes themselves pinnately lobed: fls. yellow, the staminate slender and long-tubed, to 1 in. or more long, in racemes to 3 ft. long, pistillate much broader, solitary or few together; staminate plant sometimes bearing a few pistillate fls.: fr. yellow or orange, to 20 in. long, with thick yellow flesh. Trop. Amer.

CARICÀCEÆ. Pawpaw Family. Two genera of trees with milky juice, Carica grown for the edible fr. The family is characterized by palmately lobed lvs. in terminal clusters, mostly diœcious fls. having 5-lobed calyx and corolla, 10 stamens, superior 1-celled ovary, and fr. a berry.

CARINATE: keeled: provided with a projecting central longitudinal line or ridge on the lower or under surface, like the keel of a boat.

CARÍSSA. *Apocynaceæ.* Spiny much branched evergreen shrubs of the tropics of Afr., Asia and Australia, with opposite leathery lvs., milky juice, white or pink mostly fragrant fls. in terminal cymes, and berry-like often showy fr.; grown as popular hedge plants and for the edible frs.

Carissas are grown on almost any soil in regions having only a few degrees of frost. Propagated by cuttings, layers and shield-budding.

acuminàta: *C. Arduina.*

Arduìna (*C. acuminata. C. bispinosa*). Hedge-Thorn. To 10 ft.: lvs. ovate to oblong, to 3 in. long: fls. white, ½ in. across: fr. bright red, ½ in. long. S. Afr.

bispinòsa: *C. Arduina.*

Carándas. Karanda. Lvs. ovate or oblong, to 3 in. long: fls. white or pink, fragrant: fr. red but becoming black, to 1 in. long. India.

edùlis. Straggling much branched shrub: lvs. ovate, to 2 in. long: fls. white or purple, ¾ in. long: fr. purple to black, ⅕ in. across, edible. Egypt.

grandiflòra. Natal-Plum. Amatungula. To 18 ft.: lvs. ovate, to 3 in. long: fls. white, fragrant, about 2 in. across: fr. scarlet, 1–2 in. long, edible. S. Afr. Var. **nàna compácta** is listed as a low dense form.

ovàta. To 4 ft.: lvs. ovate, usually ¾ in. long: fls. ⅕ in. long: fr. to ¾ in. long, edible. Australia.

spinàrum. Lvs. ovate, to 1½ in. long: fls. white, ½ in. long: fr. black, ¼ in. across. India, Ceylon.

CARLÌNA. *Compositæ.* Herbs with spiny usually pinnately cut lvs. and large heads of tubular fls.; involucre with outer row leaf-like, inner often ray-like; pappus with plumose branches; native in Eu. and Asia. Sometimes grown in the rock-garden or similar places.

acanthifòlia. Stemless per.: outer lvs. pinnatifid, inner entire, white-tomentose beneath: heads white, solitary, 4 in. across. S. Eu. to W. Asia.

acaùlis (*Cirsium acaule. Cnicus acaulis*). Stemless per. to 9 in.: lvs. pinnatifid, glabrous or pubescent beneath: heads white, solitary, to 6 in. across. S. Eu.

CARLUDOVÌCA. *Cyclanthaceæ.* Shrubby or herbaceous plants with palm-like lvs. and unisexual fls. borne in a dense spadix subtended by bract-like spathes, as in many aroids; about 40 trop. American species.

Carludovicas are grown in greenhouses and require abundant water and good drainage after the manner of palms. Propagated by division or by seeds sown on surface of finely chopped sphagnum, after the pulp has been washed off.

atróvirens. Stemless: lvs. 2-lobed to below the middle, glabrous, very dark green. N. S. Amer.

hùmilis. Dwarf, nearly stemless: lvs. angular, 2-lobed and jagged at tip. Colombia.

Laucheàna (*Ludovia Laucheana*). St. very short: lvs. to 12 in. long, 2-lobed to middle or below, the segms. linear-oblong, acuminate, 5- to 7-ribbed. Colombia.

palmàta. Stemless: lvs. fan-shaped, 4-lobed nearly to base and the lobes cut, ends drooping. Peru.—The lvs. furnish fiber from which Panama hats are made; frequent in greenhouses.

plicàta. Sts. to 1 ft.: lvs. deeply 2-lobed, the segms. 1-nerved. Colombia.

CARMICHÆLIA. *Leguminosæ.* New Zealand shrubs with flattened or cylindrical green branches functioning as lvs., simple or pinnate lvs. which soon fall and leave the plants with bare odd twigs, small papilionaceous fls. in lateral racemes, and small leathery pods; occasionally cult. in warm regions for ornament and interest, as in Calif.

austràlis. To 12 ft., much branched: lvs. to 2 in. long, of 1–5 lfts.: fls. pale purple, to ⅙ in. long, in 3–12-fld. racemes: pods to ½ in. long.

Énysii. Much branched, forming dense patches 2 in. high: fls. reddish, to ¼ in. long, solitary or in 3–6-fld. racemes: pods to ⅓ in. long.

flagellifórmis. To 8 ft., much branched: lvs. to 1½ in. long, of 3–5-lfts.: fls. minute, in 3–7-fld. racemes: pods to ⅓ in. long.

grandiflòra. To 6 ft., much branched: lvs. of 3–5 lfts.: fls. purplish veined with violet, ¼ in. long, in 5–12-fld. racemes: pods to ½ in. long.

odoràta. To 10 ft., with pendulous branchlets: lvs. to ¾ in. long, pinnately 3–7-parted: fls. white or lilac, ⅙ in. long, in 10–20-fld. racemes: pods to ¼ in. long.

uniflòra. Matted, sts. to 2 in. high: fls. purplish-red, ⅓ in. long, solitary: pods to ½ in. long.

Wìlliamsii. To 12 ft. or more, much branched: lvs. of 1–3 lfts.: fls. pale yellow marked with purple, to 1 in. long, solitary or in 2–6-fld. racemes: pods to 1¼ in. long.

CARNATION (*Dianthus Caryophyllus*). Perennial herbaceous fragrant pinks or dianthus of many forms, some of which are hardy with protection in the northern states and parts of Canada. In North America the name carnation is ordinarily understood to mean the florists plant, grown under glass for cut-flowers, but it rightly belongs to all the forms of the species. The highly developed large-flowered forms are of two general groups, the border or outdoor carnations and the glasshouse or florists carnations; these are commonly propagated by means of cuttings to perpetuate particular varieties and sometimes by means of layers. The border carnations are little raised or fancied in North America although they are charming plants when well grown. The interest in this general group of plants is represented in the American Carnation Society.

Another group comprises the marguerite carnations, mostly propagated from seeds and that usually bloom the first year, although unspent plants may be carried over winter in the open outside the severer parts of the country and should flower freely the second year. The marguerites make attractive house plants if potted in autumn. The seeds of these carnations may be sown in boxes in March and the young plants set out as early as possible, pinching out the center of the plant to make it branch freely. Give the same space as for other garden pinks, 8–15 inches apart.

The winter-flowering or perpetual carnations have long been favorites although in the commercial field demands change from year to year. They may be considered either as house plants or as florists stock grown in glass ranges. The propagation and general cultural requirements are the same in either case, although the extent of the operations may be very different.

Propagation of carnations for window-garden and greenhouse is by means of cuttings taken from the strong shoots that arise at the base, the side shoots of the flowering stem, or the main shoots before they show flower-buds. The cuttings from the base make the best plants in most cases, or from the middle of strong flower-stems.

For window-garden use, the cuttings may be taken at any time in autumn or winter, rooted in sand and potted up, to be held in pots until planting out time in spring, usually in April, or any time when the ground is ready to handle. Care should be taken to pinch out the tops of young plants while growing in the pot, and later while in the ground, causing them to grow stocky and send out new growths along the stem. The young plants should be grown cool, a temperature of about 50° suiting them well. Attention should be given to syringing the cuttings each day while in the house to keep down red-spider. In summer, the plants are grown in the field, and not in pots. The soil in which they are to be planted should be moderately rich and loose. Clean cultivation should be given throughout the summer. Frequently pinch out the tops. The plants are taken up in September and potted firmly, and well watered; then set in a cool partially shaded situation until root growth has started. They are then taken to the residence, on approach of cold weather, to bloom. The usual living-room conditions as to moisture and heat are not such as the carnation demands, and care must be taken to overcome the heat and dryness. Pick off most or all the side buds, to add to the size of the leading flowers. It is probably advisable in most cases to purchase plants from a florist, and after blooming either throw them away or store them for planting in the spring, when they will bloom in the summer. Be sure that plants and cuttings are free from disease.

For commercial or florists work cuttings are preferred from good flowering stems, not choosing either the soft tip or the hardened base. They are cut midway between the joints and inserted a half inch or so in sand, the lower leaves having been removed. The illustration in Fig. 15, (Propagation), shows a good carnation cutting. The cuttings are set close together in a well-prepared sand bed on a bench. Cuttings are usually taken December to March, for the following winter bloom. When well struck the cuttings are potted, to make ready for planting out in summer.

The plants grow thereafter in the field, being set in late spring when the weather has become settled, and turned out of the pots; the soil should be deep and in a good state of cultivation. They are set 8–10 inches apart in the row. The space between rows is determined by the ground available, and by the method of tillage; it varies from 16–24 inches or even more. Late in summer or at least before freezing weather the plants are dug and removed to greenhouse benches for winter bloom. The exact date of digging must depend somewhat on the strength of the plants and also on the time at which bloom is required. In some cases plants are grown continuously in the house for summer or very early bloom. Blooms may be expected in a month or six weeks after benching.

Benches are refilled with good soil in summer or autumn, the house being thoroughly cleaned. Plants are spaced regularly about 9 by 12 inches on the benches. The beds should be kept uniformly moist until the plants are well rooted. The field stock is assorted before it is brought to the house, and all weak and diseased plants discarded. If plants are dug early, the weak ones may be left for later digging if they are healthy.

Carnations are cool-temperature plants. If the house is too warm the growth becomes soft and the flowers are fewer and of poor quality. About 50° F. night temperature is commonly advised; it may run 10° higher by day; it should be steadily maintained. The house should be well ventilated but cold currents should not strike the plants.

The varieties of florists carnation are many, and new ones are continuously introduced. The intending grower will need to keep informed on them. The character of bloom depends on the skill in growing as well as on the particular variety. For cut-flowers, the plants are grown to single long stems by pinching out side shoots. The usual blooming season is September or October to May or June, and in this period a plant should yield 18–24 good flowers.

Red-spider is combatted by fumigation with proprietary materials. Similar treatment may be given for thrips, under glass. Aphis is controlled by rotenone sprays. Rust and other diseases are controlled by propagating only from healthy stock, by disease-free soil, by keeping benches clean and sterile, by maintaining uniform temperature and plenty of fresh air and general good growing conditions with care not to keep the plants wet, by removal of affected plants, and then by dusting with sulfur or by other fungicide.

CARNÈGIEA. *Cactaceæ.* One great desert cactus of Ariz., S. E. Calif. and Sonora, Mex., with an erect columnar trunk sometimes with a few akimbo branches, many ribs and strong spines: fls. at or near top of plant. See *Cacti.* **C. gigantèa** (*Cereus* and *Pilocereus giganteus*). Sahuaro. Giant Cactus. Post-like, 20–60 ft., sometimes 2 ft. diam., tapering to either end; ribs 18–21 in mature plants; spines different on fertile and sterile areoles: fls. white, diurnal, 4 in. long or somewhat more: fr. 2–3 in. long, pale red, edible.—Sometimes transplanted from the wild in its native regions or similar climates, but does not thrive under cult.

CARO: *Enterolobium cyclocarpum.*

CAROB: *Ceratonia Siliqua.*

CAROLINEA PRINCEPS: *Pachira aquatica.*

CAROSELLA: *Fœniculum vulgare* var. *piperitum.*

CARPÁNTHEA. *Aizoaceæ.* One S. African plant separated from Mesembryanthemum (which see for cult.): stigmas and cells of fr. 12–20; expanding keels of caps. terminating in awns. **C. pomeridiàna** (*M. pomeridianum*). Ann., with ascending branches to 1 ft.: lvs. spatulate or somewhat narrower, to 4 in. long, flat, narrowed to petiole: fls. yellow, to 2 in. across, on peduncles to 5 in. long, opening in the afternoon.

CARPEL: one of the units of a compound pistil; a simple pistil is one carpel.

CARPENTÈRIA. *Saxifragaceæ.* One evergreen shrub native in the southern parts of the Sierra Nevada Mts., Calif. **C. califórnica.** To 10 ft.: lvs. opposite, oblong to lanceolate, to 4 in. long, bright green above, whitish-tomentose beneath: fls. pure white, 2–3 in. across, fragrant, showy, single or few in a cluster, June–July.—Hardy only in warm-temp. regions. It requires a well-drained light and sandy soil, and a sunny sheltered position; the excess of water in winter is especially harmful, probably more than the cold. Propagated by greenwood cuttings under glass in summer, by suckers which are freely produced, and by seeds sown in spring.

CARPET-WEED FAMILY: *Aizoaceæ.*

CARPHÉPHORUS. *Compositæ.* Simple per. herbs with narrow alternate lvs. and rose-purple fls. in terminal cymose infl. Two species are offered.

bellidifòlius. To 20 in., sts. glabrous or glabrescent: lvs. linear-spatulate, to 3 in. long: heads in open slenderly branched cymes. Coastal plain, N. C. to Fla.

corymbòsus. To 3 ft., pubescent: lvs. spatulate to elliptic-ovate: heads in compact cymes. N. C. to Fla.

CARPÌNUS. HORNBEAM. *Betulaceæ.* Northern hemisphere deciduous monœcious trees of medium or small size, with smooth gray bark, alternate toothed lvs., unisexual fls. in catkins, and fr. a small achene-like nut subtended by a 3-lobed leafy bract; planted for hedges and specimen plants.

Hornbeams are hardy North and thrive in most soils. Propagated by seeds in fall; if seeds do not germinate the next spring the bed should be covered with moss and kept moist until the remaining seed sprout. Varieties may be grafted or budded on seedling stocks.

americàna: *C. caroliniana.*

Bétulus. EUROPEAN H. To 70 ft.: lvs. ovate or ovate-oblong, to 4 in. long: fruiting catkins to 5 in. long, bracts to 2 in. long, the middle lobe much larger. Eu. to Persia. Some of the hort. vars. are: **Carpinízza,** lvs. smaller and often cordate; **columnàris,** of slender pyramidal habit; **fastigiàta** (var. *pyramidalis*), of pyramidal form; **incìsa,** lvs. deeply lobed; **péndula,** branches drooping; **purpùrea,** young lvs. purple; **quercifòlia,** lvs. with deep toothed lobes.

caroliniàna (*C. americana*). AMERICAN H. BLUE BEECH. To 40 ft., but usually small: lvs. ovate-oblong, to 4 in. long: fruiting catkins to 4 in. long, bracts about 1 in. long, the middle lobe largest. Que. to Fla. and Tex.

cordàta. To 50 ft.: lvs. ovate or oblong-ovate, cordate, to 5 in. long: fruiting catkins to 3 in. long, the bracts overlapping. N. Asia.

japónica. To 50 ft.: lvs. oblong-ovate or oblong-lanceolate, to 4 in. long: fruiting catkins to 2½ in. long, the ovate bracts ¾ in. long and overlapping. Japan.

laxiflòra. Tree to 50 ft.: lvs. usually ovate, to 2¾ in. long, pubescent only in axils of veins beneath, base heart-shaped: catkins loose, to 2¾ in. long. Japan.

populifòlia: listed name of unknown botanical standing.

Tschonóskii (*C. yedoensis*). To 50 ft., young branches densely pubescent: lvs. ovate or oblong-ovate, to 3½ in. long: fruiting catkins to 3 in. long, bracts lobed on one side. N. Asia.

yedoénsis: *C. Tschonoskii.*

CARPOBRÒTUS. *Aizoaceæ.* A widely dispersed group separated from Mesembryanthemum on the mostly 10–16 stigmas and fleshy fr.: per. with sts. trailing or decumbent: lvs. opposite, sharply 3-angled and very fleshy: fls. large, showy in sunlight, yellow to reddish and purple: fr. indehiscent, edible. S. Afr., Australia, New Zeal., Calif., Chile. For cult. see *Mesembryanthemum.*

acinacifórmis (*M. acinaciforme*). Sts. angled, to 4 ft.: lvs. scimitar-shaped (incurved, acinaciform), widely keeled, to 3 in. long: fls. very large, purple, on 2-bracted peduncle; stigmas 14. S. Afr.

æquiláterus: see *C. chilensis.*

chilénsis (*M. chilense*). Trailing several ft.: lvs. fleshy-triangular, 2½ in. or less long: fls. rose-purple, diurnal, 2 in. or less broad, the petals 1 in. or less long, anthers yellow or yellowish. Coasts Ore., Calif., Chile, making a good sand-cover.—Heretofore known in N. Amer. as *M. æquilaterale,* but that name is properly a synonym of *C. æquilaterus,* an Australian plant not native in N. Amer. nor in cult.

edùlis (*M. edule*). HOTTENTOT-FIG. Much like *C. chilensis* but parts larger: lvs. to 3 in. and more long: fls. yellow varying to rose-purple, opening wide, to 3 in. across, petals about 1½ in. long: fr. very large. S. Afr., planted and somewhat escaped in Calif.—Usually seen with yellow fls.: frequently grown under glass.

glaucéscens (*M. glaucescens*). Similar to the other species: stouter than *C. chilensis,* with smoky-brown anthers: plant more or less glaucous: sts. stout, ¼ in. thick: lvs. 2 in. or less long and ¼ in. to nearly ½ in. thick near tip: fls. rose-purple. Australia.

CARPOCERAS: *Thlaspi cilicicum.*

CARPÓDETUS. *Saxifragaceæ.* One New Zeal. shrub or small tree to 30 ft., intro. to cult. in Calif. **C. serràtus.** Lvs. alternate, ovate-oblong, to 2 in. long, coarsely toothed, often lobed when young: fls. white, ⅕ in. across, in many-fld. panicles: caps. black and shining, globose, to ¼ in. diam.

CARRIÈREA. *Flacourtiaceæ.* One or 2 deciduous trees native in Cent. China; one is planted in Calif. and has been fairly hardy in the S. E.; attractive for its foliage. Propagated by seeds and by cuttings of green wood and roots.

calýcina. To 30 ft.: lvs. alternate, oval or ovate, to 6 in. long, toothed, shining: fls. diœcious, with white sepals ¾ in. long and no petals, in corymbs or racemes: fr. a caps. to 2½ in. long.

CARRION-FLOWER: *Stapelia, Smilax herbacea.*

CARROT (*Daucus Carota* var. *sativa*). Biennial or sometimes annual plant, grown for the thick edible root. It is an esteemed garden vegetable and also a farm crop raised for stock feed.

Carrots require deep friable soil for the largest and most shapely roots. They are hardy and easily grown. The extra-early varieties may be forced in a hotbed, or seed may be sown as soon as the ground is fit to work in the spring. The stump-rooted, or half-long varieties, are sown for the early garden crop. Well-enriched mellow loam, deeply dug or plowed, is best suited to the requirements of carrots. The time of planting of the seed for the main crop is determined by the appearance of the several broods of carrot rust-fly maggots. In the North, plantings made after the first week of June will avoid the early brood. These carrots can be harvested in September before the late brood of maggots does much damage. Sow thickly, thinning to 3–4 inches in the row. The rows, if in a garden that is hand-worked, may be 12 inches apart. If the cultivation is by horse, the rows should be 2 to 3 feet apart. One ounce will sow 100 feet of drill. Seeds germinate slowly, and they should not be placed in land that is likely to become hard and crusted.

CARRUÁNTHUS. *Aizoaceæ.* One S. African succulent similar to Bergeranthus. **C. canìnus** (*Mesembryanthemum caninum*). Short-stemmed, much branched: lvs. clustered, 3-angled, to 2 in. long and ¾ in. wide, toothed toward tip, grayish-green: fls. usually solitary, yellow, reddish outside, 2 in. across, petals linear.

CÁRTHAMUS (*Kentrophyllum*). *Compositæ.* Stiff spiny-lvd. annuals with yellow, purple or whitish heads of disk-fls. subtended by leafy spiny involucres; pappus scale-like or lacking; native from the Canary Isls. to Cent. Asia. Cult. for ornament and for the dye obtained from the fls. of one species. Propagated by seeds.

lanàtus. Ann. or bien. to 3 ft. high, sometimes cobwebby: root-lvs. lyrate, st.-lvs. lanceolate and spiny pinnatifid: heads yellow, 1 in. long. Medit. region.

leucocaùlos. Glabrous: lvs. pinnatifid into lanceolate spiny segms., shining: heads pale rose. Greece.

tinctòrius. Safflower. False Saffron. To 3 ft., glabrous: lvs. broadly ovate, minutely spiny-toothed: heads orange, 1 in. long, with broad short lower bracts. Asia.

CÀRUM. *Umbelliferæ.* Thick-rooted herbs with pinnately or ternately compound lvs., small white or yellow fls. in compound umbels, and somewhat compressed frs. Of easy cult. in any garden soil. Propagated by seeds sown in spring.

Cárvi. Caraway. Ann. or bien. to 2 ft.: lvs. pinnately cut into linear or thread-like segms.: fls. white. Eu.; nat. in N. Amer.—Grown for its seeds which are used as flavoring.

Gàirdneri. Squaw-Root. To 4 ft., with tuberous root: lvs. pinnate into linear lfts., upper lvs. usually simple: fls. white. Calif. to B. C.

oregànum. Differs from *C. Gairdneri* in its more divided lvs. with shorter lfts. B. C. to Ore.

CARUMBIUM: *Homalanthus populifolius.*

CÀRYA (*Hicoria*). Hickory. *Juglandaceæ.* Deciduous monœcious trees, all but one native in N. Amer., with alternate odd-pinnate lvs., unisexual fls., the staminate borne in drooping catkins, and fr. a nut inclosed in a thick green husk which splits into 4 valves; grown for ornament, the edible nuts, and for the strong hard wood.

Any of the native hickories may be transferred to parks and private grounds. Hickories are of slow growth and not readily transplanted. Propagated by seeds stratified and sown in spring, by root-sprouts, or special varieties by grafting. For cultural details see *Hickory-Nut* and *Pecan.*

álba: *C. tomentosa.*

aquática. Bitter Pecan. To 90 ft.: lvs. of 7–13 lanceolate lfts. to 5 in. long, yellow-tomentose when young: nut broad-obovoid, compressed and 4-angled, reddish-brown. Va. to Fla. and Tex.

cathayénsis. Chinese H. To 60 ft.: lvs. of 5–7 ovate to ovate-lanceolate lfts. to 6 in. long, yellowish beneath: nut ovoid, slightly angled. China.

cordifórmis. Bitternut. To 90 ft.: lvs. of 5–9 ovate-lanceolate to lanceolate lfts. to 6 in. long: nut almost globose, nearly smooth, gray. Que. to Fla. and La.

glàbra (*C. porcina*). Pignut. Tree to 40 ft., with close not shaggy bark: lfts. mostly 5, oblong or somewhat oblanceolate, acuminate, serrate, to 6 in. long: nut obovoid and somewhat ridged, to 1 in. long, the kernel astringent. Me. and Ont. to Fla.

laciniòsa (*C. sulcata*). Big Shellbark H. To 120 ft.: lvs. of 7–9 oblong-lanceolate lfts. to 8 in. long, pubescent beneath: nut nearly globose, compressed and angled, yellow or reddish. N. Y. to Okla.

olivæfórmis: *C. Pecan.*

ovàta. Shagbark H. To 120 ft.: lvs. of usually 5 elliptic lfts. to 6 in. long: nut ellipsoid, slightly angled, white. Que. to Fla. and Tex.

Pecán (*C. olivæformis*). Pecan. To 150 ft.: lvs. of 11–17 oblong-lanceolate lfts. to 7 in. long: nut ovoid or oblong, smooth, light brown. Ind. to Mex.

porcìna: *C. glabra.*

sulcàta: *C. laciniosa.*

tomentòsa (*C. alba*). Mockernut. To 90 ft.: lvs. of 7–9 oblong lfts. to 7 in. long, tomentose beneath: nut nearly globose, angled, light brown. Mass. to Fla. and Tex.

CARYOLOPHA: *Pentaglottis.*

CARЎOPHYLLÀCEÆ. Pink Family. Herbs or sometimes subshrubs, of about 75 widely distributed genera, with sts. usually swollen at the joints, opposite entire lvs. with parallel veins, regular mostly bright colored fls. having 4–5 sepals, commonly 4–5 petals, 8–10 stamens, superior 1-celled ovary with 2–5 styles, and fr. a caps. or rarely a berry. The family furnishes many ornamental subjects, such as Acanthophyllum, Agrostemma, Arenaria, Cerastium, Dianthus, Gypsophila, Lychnis, Petrocoptis, Sagina, Saponaria, Silene, Spergula, Spergularia, Stellaria, Telephium, Tunica.

Most of the species are outdoor plants, but the carnation (*Dianthus Caryophyllus*) is extensively grown under glass for cut-flowers. Some of them are annuals, others essentially biennials, and many are good low perennials for borders. They are plants of simple culture, grown from seeds, cuttings and sometimes from layers and division of the stools. They require open sunny situations.

CARYOPHYLLUS: *Eugenia.*

CARЎÓPTERIS. Bluebeard. *Verbenaceæ.* Asian deciduous shrubs or herbs with opposite toothed lvs. and lavender or white fls. in cymes, the stamens exserted.

Grown in pots in the greenhouse in a compost of peat and loam. Not fully hardy out-doors in the North, but in the southern states may bloom from root shoots. Propagated by seeds in spring or by cuttings in autumn under glass.

incàna (*C. Mastacanthus. C. tangutica*). Shrub to 5 ft. but often dying back and treated essentially as a per. herb: lvs. ovate, to 3 in. long, grayish-tomentose beneath: fls. violet or lavender-blue, ¼ in. long, in autumn. China, Japan.—Sometimes called "blue spirea." Var. **cándida** has white fls. Var. **nàna** is a dwarf form. Var. **supérba** is listed.

Mastacánthus: *C. incana.*

monghólica. Shrub: lvs. linear-lanceolate, to 2 in. long, nearly entire: fls. ½ in. long. N. China, Mongolia.

tangùtica: *C. incana.*

CARЎÒTA. Fish-tail Palms. *Palmaceæ.* Irregularly pinnate monœcious unarmed often soboliferous palms, perhaps 20 species, trop. Asia, Malaya to Australia, monocarpic (dying after fruiting): lvs. 2-pinnate or -pinnatisect, the pinnæ or lfts. broadly cuneate and widening upwards and variously jagged or lobed at apex and many-veined: spadices axillary, long and narrowly branched and mostly hanging, the staminate and pistillate blooming alternately from the top of the tree downward and the tree perishing when the bottom infl. has fruited; stamens many: fr. globose or short-oblong, ½–¾ in. diam. Attractive as tub specimens, and grown in the open in S. Fla. See *Palm.*

mìtis (*C. sobolifera*). Soboliferous, trunks ringed, to 25 or 40 ft.: lvs. 4–9 ft. long and light green; pinnæ rather thin and with many light ribs or nerves, the toothed edge or end usually not occupying more than half the length and the outer margin produced into a short point: spadix not greatly elongated, the stamens 15–25. Burma.

Rumphiàna. Trunk solitary, 60 ft. or more: lvs. to 20 ft. long; pinnæ very oblique and about half-fan-shaped, as much as 1 ft. and more long, rigid, obtusely toothed, the lower margin sometimes extended into a long obtuse lobe: spadix to 2 ft. and more; stamens more than 30. Malaya, Australia.

sobolífera: *C. mitis.*

ùrens. Wine Palm. Trunk solitary, to 60 ft.: lvs. to 20 ft. long and 10–15 ft. broad, dark green; pinnæ thick and rigid, strongly ribbed, lateral ones long-oblique so that the prominently toothed edge commonly occupies more than half the length, the outer margin mostly produced into a long finger-like lobe: spadix 10–12 ft. long, pendent; stamens 40 or more. India, Malaya.

CASCARA SAGRADA: *Rhamnus Purshiana.*

CASHEW: *Anacardium occidentale.*

CASIMÍROA. *Rutaceæ.* Trop. American trees with leathery digitate lvs., small fls. in axillary panicles or corymbs, and fr. a large 2–5-seeded drupe; one species is grown in warm countries for its edible fruit.

The white sapote thrives on any well-drained soil. Propagated by seeds sown in flats or pots. Seedlings should not be planted out until about 3 feet high and should then receive liberal watering. The terminal bud should be pinched off to induce branching. For quick results and to reproduce special varieties, shield-budding should be practiced.

edùlis. White Sapote. To 50 ft.: lvs. of 3–7 ovate to lanceolate lfts. to 5 in. long: fls. greenish: fr. 3–4 in. across, globular, smooth, yellowish-green, with soft cream-colored edible pulp bearing 3 or 4 seeds.

tetramèria. Similar to *C. edulis* but lfts. densely pubescent beneath.

CASSABANANA: *Sicana odorifera.*

CASSANDRA: *Chamædaphne calyculata.*

CASSAVA: *Manihot esculenta.*

CASSENA: *Ilex vomitoria.*

CÁSSIA. Senna. *Leguminosæ.* Very large genus as here accepted but by some authors divided into several, comprising herbs, shrubs and trees native in trop. and temp. regions, having pinnate lvs., showy nearly regular fls. often in large racemes, and flattened or cylindrical sometimes winged pods; grown for ornament, and many species of medicinal value for the senna lvs. used as a cathartic.

The woody species require a tropical climate and can be grown only under glass in the North. Propagated by division and cuttings. The herbaceous kinds may be grown in the border from seeds or division.

abyssínica: see *Acacia abyssinica.*

alàta (*Herpetica alata*). Ringworm C. Shrub to 8 ft.: lvs. very large, of 12–28 oblong lfts. to 2½ in. long: fls. yellow, in spike-like racemes: pods winged, to 6 in. long. Tropics.

artemisioìdes. Wormwood S. Shrub covered with silky gray pubescence: lvs. of 6–8 linear needle-like lfts. to 1 in. long: fls. sulfur-yellow, in axillary racemes: pods flattened, to 3 in. long. Australia.

austràlis. Tall shrub: lvs. of 12–24 oblong-lanceolate to linear lfts. to 1 in. long: fls. yellow, in clusters of 2–6: pods to 4 in. long, often curved. Australia.

Beareàna. Tree to 30 ft.: lvs. of 16–20 elliptic lfts. to 2 in. long: fls. canary-yellow, veined with red or brown, in short racemes: pods cylindrical, to 2½ ft. long. Trop. Afr.

bicapsulàris (*Adipera bicapsularis*). Shrub to 10 ft.: lvs. thickish, lfts. 3–5 pairs and oblong or obovate to nearly orbicular: fls. yellow, not large: pods slender, to 6 in. long, nearly terete. W. Indies and continental tropics; planted in S. Fla.

Chamæcrísta. Per., sts. often woody at base, prostrate or ascending, rarely erect, to 1 ft. long: lvs. of 5–16 pairs of linear lfts.: fls. to ¼ in. long, stamens 5–7: pods linear, to 1¼ in. long. W. Indies, probably not planted in U. S.—For the ann. plant escaped or cult. here see *C. fasciculata.*

cinèrea (*Chamæcrista cinerea*). Shrub with ascending or prostrate sts. to 6 in. long: lvs. of 12–15 linear lfts. to ¼ in. long: fls. yellow, solitary or clustered: pods to 2 in. long. Mex.

corymbòsa (*Adipera corymbosa*). Shrub to 10 ft.: lvs. of 6 oblong-lanceolate lfts. that are nearly or quite obtuse and not much more than ½ in. broad: fls. yellow, in axillary corymbs, blooming under glass from spring to autumn: pods cylindrical, 3 in. long. Argentina; nat. in southern states and frequent in cult. Var. **plurijuga** (*C. floribunda*) has broader more acute lfts. and larger fls. S. Amer.; often planted.

didymobòtrya (*Chamæsenna didymobotrya*). Shrub to 10 ft.: lvs. about 1 ft. long; lfts. 8–16 pairs, oblong to ovate-elliptic, to 2 in. long, apex mucronate, base rounded; stipules ovate, about ¼ in. long: fls. to ¾ in. long, racemes erect, to 1 ft. long: pods to 4 in. long and ¾ in. wide. Trop. Afr.; nat. locally in S. Fla.

fasciculàta (*C. Chamæcrista* of hort.). Partridge-Pea. Ann. to 1½ ft.: lvs. of 12–44 linear-oblong sensitive lfts. to ⅔ in. long: fls. yellow, clustered in axils, to ¾ in. long, stamens 10: pods flat, linear, to 1½ in. long. N. Amer., W. Indies.

Fístula. Golden-Shower. Pudding-Pipe-Tree. Tree to 30 ft.: lvs. large, of 8–16 ovate lfts. to 2½ in. across: fls. pale yellow, in racemes 1 ft. or more long, blooming in spring before the lvs.: pods cylindrical, to 2 ft. long. India.

floribúnda: *C. corymbosa* var. *plurijuga.*

glaùca. Tall shrub or tree: lvs. of 12–20 obovate lfts. about 1½ in. long: fls. bright yellow, in umbel-like racemes: pods flat, to 6 in. long. Trop. Asia.

grandiflòra: *C. lævigata.*

grándis. Pink-Shower. Tree to 50 ft.: lvs. of 16–40 oblong lfts. to 2½ in. long, tomentose beneath: fls. rose-colored, in lateral racemes: pods somewhat flattened, to 2 ft. long. Trop. Amer.

hirsùta (*Ditremexa hirsuta*). Per. to 6 ft.: lvs. hirsute; lfts. ovate to ovate-lanceolate, 3–5 pairs, to 3 in. long, acute or acuminate: fls. to ¾ in. long, in short axillary racemes: pods linear, to 6 in. long, densely hairy. Trop. Amer.

javánica. Small tree: lvs. of many oval lfts. to 2 in. long: fls. rosy-pink: pods cylindrical, to 2 ft. long. Sumatra, Java.

lævigàta (*C. grandiflora. Adipera lævigata*). Shrub to 6 ft.: lvs. of 6–8 ovate-lanceolate lfts. to 3 in. long: fls. yellow, in axillary racemes: pods cylindrical, to 3½ in. long. Tropics.

magnífica is referred to *C. multijuga.*

marilándica (*Ditremexa marilandica*). Wild S. Per. herb to 4 ft.: lvs. of 10–20 oblong lfts. to 2 in. long: fls. yellow, in axillary racemes: pods linear, flat, to 4 in. long. E. U. S.

Médsgeri (*Ditremexa Medsgeri*). Per.: lvs. of 8–16 oblong or elliptic lfts. to 2 in. long: fls. yellow, in axillary racemes: pods linear, curved, to 4 in. long. Pa. to Ga. and Tex.

moschàta. Tree to 30 ft. and more: lvs. of 10 or more pairs of oblong lfts. pubescent beneath: fls. yellow or orange-red, 1 in. across, in drooping racemes to 8 in. long: pods cylindrical. Trop. Amer.

multíjuga (*Peiranisia multijuga*). Tree to 20 ft.: lvs. of 18–40 pairs of linear-oblong lfts. to ¾ in. long: fls. yellow, to 2 in. across: pods flattened, 6 in. long. S. Amer., W. Indies.

nairobénsis. Shrub to 10 ft.: lvs. of numerous oblong lfts. to 2 in. long: fls. yellow, 1½ in. across, in racemes: pods flattened, 4 in. or more long. Afr.

níctitans (*Chamæcrista procumbens*). Wild Sensitive-Plant. Ann. to 18 in., erect or decumbent, somewhat pubescent: lvs. sensitive; lfts. linear, 6–22 pairs, to ⅜ in. long: fls. yellow, very small, axillary: pods linear, to 1½ in. long. Me. to Ga. west to Ind. and Tex., W. Indies.

nodòsa. Jointwood. Tree to 50 ft.: lvs. of 12–24 oblong lfts. to 4 in. long: fls. bright pink, in dense racemes: pods cylindrical, to 15 in. long. E. Himalayas to Malaya.

pilífera. Herb or subshrub to 6 ft.: lvs. of 4 ovate lfts.: fls. 1 in. across, petals contracted into long claw. Brazil.

polyántha (*Pterocassia polyantha*). Shrub or small tree to 18 ft.: lvs. of 16–28 elliptic-oblong lfts. to ¾ in. long: fls. yellow: pods flattened, winged, about 2½ in. long. Mex.

Roemeriàna (*Earleocassia Roemeriana*). Per. to 1½ ft.: lvs. of 2 linear-lanceolate lfts. to 2½ in. long: fls. orange-yellow, in terminal corymbose racemes: pods about 1 in. long. Tex. to Mex.

siàmea (*Sciacassia siamea*). Kassod-Tree. Tree to 40 ft.: lvs. of 16–18 oblong lfts. to 3 in. long: fls. bright yellow, in corymbs forming a large terminal panicle: pods flat, to 9 in. long. E. Indies and Malaya.

spectábilis (*Pseudocassia spectabilis*). Tree to 40 ft.: lvs. of 8–15 pairs of lanceolate lfts. to 3 in. long: fls. bright yellow, 1½ in. across, in racemes to 2 ft. long: pods cylindrical, 1 ft. long. Trop. Amer.

spléndida. Shrub to 10 ft.: lvs. of 4 oval to oblong lfts. to 3 in. long: fls. yellow, large, in panicled racemes: pods nearly cylindrical, to 1½ in. long. Brazil.

stenopétala: listed name.

tomentòsa (*Adipera tomentosa*). Shrub to 12 ft.: lvs. of 12–16 oblong lfts. to 2½ in. long, white-tomentose beneath: fls. deep yellow: pods flattened, to 5 in. long. Mex.

CASSIA-BARK-TREE: *Cinnamomum Cassia.* **-Flower-Tree:** *Cinnamomum Loureiri.*

CASSIE: *Acacia Farnesiana.*

CASSÍNIA. *Compositæ.* Evergreen shrubs native in Australia, New Zeal. and S. Afr., with alternate entire lvs. and small heads of disk-fls. borne in corymbs or panicles; pappus bristly. A few species are grown out-of-doors in Calif.

álbida: *C. Vauvilliersii* var.

aùrea. Lvs. linear-lanceolate, to 2 in. long, glandular beneath, glabrous above: heads in compound corymbs; scales with bright yellow tips. Australia.

fúlvida. To 6 ft.: lvs. crowded, to ⅛ in. long, yellowish-tomentose beneath, sticky above: heads white, in dense corymbs to 2 in. across; scales lacking or few among the florets. New Zeal.

leptophýlla. To 15 ft.: lvs. crowded, to ⅛ in. long, white- or yellowish-tomentose beneath: heads white, in terminal corymbs; scales many among florets. New Zeal.

Vauvilliérsii. To 6 ft.: lvs. crowded, ⅓ in. long, white- or yellowish-tomentose beneath, sticky above: heads white, in terminal corymbs; scales many among florets. New Zeal. Var. **álbida** (*C. albida*) has lvs. whitish beneath.

CASSÌOPE. *Ericaceæ.* Low evergreen shrubs with scale-like or linear lvs., small solitary nodding white or pinkish fls., and capsular frs.; useful for rock-gardens.

Cassiopes should be planted in moist and partially shady locations, in peaty or sandy soil. Propagated by cuttings of mature wood in August under glass; also by layers and seeds.

fastigiàta. Densely tufted shrub 6–12 in. high: lvs. ovate-oblong, imbricated, ciliate: fls. white, broadly campanulate, to ⅓ in. long, axillary. Himalayas.

hypnoìdes. To 3 in. or more, sts. densely tufted, branched, ascending: lvs. linear-subulate, to ⅙ in. long, not grooved: fls. clear white or tinged pink, 5-cleft, on terminal peduncles to 1 in. long. Arctic regions of northern hemisphere.

lycopodioìdes. Sts. creeping and filiform: lvs. about ⅙ in. long, closely imbricated in 4 ranks: fls. white, style slender. Siberia, Alaska to Ore.

Mertensiàna. To 1 ft., tufted, the sts. covered with small thick crowded lvs. ⅛ in. long: fls. white, to ⅓ in. across. Alaska to Calif.

Stelleriàna (*Harrimanella Stelleriana*). Spreading, with matted sts.: lvs. spreading, oblong-linear, ⅛ in. long: fls. white, ¼ in. long. Alaska to Wash.

tetragòna. To 1 ft., sts. erect or ascending: lvs. to ⅙ in. long, with deep dorsal furrow, usually pubescent when young: fls. 5-lobed, on lateral peduncles to 1 in. long. Ore. to Alaska and eastward.

CASTALIA: *Nymphæa.*

CASTÀNEA. Chestnut. *Fagaceæ.* Attractive hardy deciduous trees and shrubs of the north temp. zone, having alternate, toothed, oblong or lanceolate lvs., unisexual fls. in catkins, and 1–7 large brown nuts inclosed in a prickly dehiscent involucre or bur; grown for ornament and the edible nuts. For cult. see *Chestnut.*

americàna: *C. dentata.*

crenàta (*C. japonica*). Japanese C. To 30 ft.: lvs. to 6 in. long, closely toothed with sinuses between, commonly tomentose beneath: nuts usually 2–3, about 1 in. across. Japan.

dentàta (*C. americana*). American C. To 100 ft.: lvs. to 10 in. long, coarsely toothed, glabrous beneath, mostly tapering or narrow at base: nuts usually 2–3, 1 in. or less across. Me. to Miss.

Hénryi. Tree to 90 ft.: lvs. ovate to lanceolate, to 6 in. long, apex acuminate, tapering to base or broadly obtuse to heart-shaped, margin sharply dentate, glabrous: nut usually solitary, about ½ in. across. China.

japónica: *C. crenata.*

koraiénsis: trade name.

mollíssima. Chinese C. To 60 ft.: lvs. to 6 in. long, coarsely toothed, pubescent beneath: nuts usually 2–3, about 1 in. across. China, Korea.

pubinérvis: referable to *C. crenata.*

pùmila. Chinquapin. Shrub or tree to 45 ft.: lvs. to 5 in. long, coarsely toothed, white-tomentose beneath: nut usually solitary, ½ in. or less across. Pa. to Fla. and Tex.

satìva (*C. vesca*). Spanish or Eurasian C. To 100 ft.: lvs. to 8 in. long, with coarse spreading teeth, pubescent beneath when young, mostly rounded or broad at base: nuts 1–3, 1 in. or more across. S. Eu., N. Afr., W. Asia.—There are forms with variegated lvs., var. **asplenifòlia** has lobed and abnormal lvs., and var. **macrocárpa** has larger frs.

Seguìnii. Tree or shrub to 30 ft.: lvs. lanceolate, elliptical or obovate, to 5½ in. long, apex acuminate, base obtuse to heart-shaped, pubescent on veins beneath: nuts usually 3, about ½ in. across. China.

támba: listed name.

vésca: *C. sativa.*

CASTANÓPSIS. *Fagaceæ.* Evergreen trees and shrubs native in Asia and W. N. Amer., with alternate entire or dentate lvs., unisexual fls. usually in separate catkins, and 1–3 nuts inclosed in a spiny or tubercled involucre; not hardy in cold climates. Cult. as for *Chestnut.*

caudàta. Shrub to 20 ft., much branched: lvs. usually glaucescent, coriaceous and glossy. China.

chrysophýlla. Giant Chinquapin. To 100 ft. or more although sometimes shrub-like: lvs. oblong, to 6 in. long, entire, shining dark green above and with golden-yellow scales beneath: fr. with spiny husk. Ore., Calif., Nev. Var. **sempérvirens** (*C. sempervirens*) is a shrubby form.

cuspidàta (*Quercus cuspidata*). Lvs. ovate or oblong, to 3 in. long, entire or toothed toward tip, gray-tomentose beneath: fr. with tubercled husk. Japan.

Delavàyi. Lvs. stiff, elliptic to obovate, toothed or crenate, glabrous at maturity, grayish underneath: fr. about ½ in. across, spiny. W. China.

sclerophýlla. Lvs. oblong-ovate, to 6 in. long, toothed above middle: fr. with tubercled husk. China.

sempérvirens: *C. chrysophylla* var.

CASTANOSPÉRMUM. *Leguminosæ.* Two species, only one from Australia planted in trop. and semi-trop. regions. **C. austràle.** Moreton-Bay-Chestnut. Black Bean. Evergreen tree to 60 ft. with large pinnate lvs. composed of 11–15 broadly oblong lfts. to 5 in. long, striking yellow to orange and reddish papilionaceous long-stamened fls. in racemes to 6 in. long, and cylindrical pods to 9 in. long. Propagated by seeds; the latter are eaten by the natives.

CASTÍLLA (*Castilloa*). *Moraceæ.* Trop. American trees with milky juice from which commercial rubber is obtained, having large alternate lvs. and unisexual fls. in dense heads.

Propagated by seeds and the seedlings should be transplanted to a permanent position when about 1 foot high. Trees are ready for tapping at about eight years old.

elástica. Mexican Rubber-Tree. To 60 ft.: lvs. elliptic-obovate, to 1½ ft. long, densely pubescent beneath, short-stalked. Mex., Cent. Amer., N. S. Amer.

CASTILLÈJA. Painted-Cup. *Scrophulariaceæ.* Herbs usually parasitic on roots of other plants, ann., bien., per., with narrow alternate lvs., small 2-lipped tubular fls. in terminal gaudy-bracted heads or spikes; mostly native in western hemisphere, many of them in U. S. They are seldom grown in the garden.

affìnis. Per. to 2 ft.: lvs. linear to lanceolate, to 4 in. long: fl.-bracts scarlet; fls. yellowish, 1¼ in. long. Calif. Var. **lineariæfòlia** is *C. lineariæfolia.*

angustifòlia. Per. to 1 ft., sts. pilose-hispid: lvs. lanceolate, to 1¾ in. long, entire or 3-parted: fl.-bracts reddish; corolla to 1¼ in. long. B. C. to Colo. and Calif.

califórnica. Indian Paint-Brush. Per., slender, to 1½ ft.: lvs. linear, to 1½ in. long: fl.-bracts red or red-tipped; fls. bright red, the tube greenish-yellow, 1 in. long. Calif.

coccínea. Scarlet P. Ann. or bien. to 2 ft., hairy: lvs. oblong to linear, to 3 in. long; st.-lvs. 3–5-lobed: fl.-bracts scarlet; fls. pale yellow, to 1 in. long. Me. to N. C. and Tex.

collìna. Cespitose per. to 1 ft., sts. somewhat white-villous: lvs. to 2 in. long, segms. linear, dark green: fl.-bracts green near base, scarlet above, deeply lobed; corolla green, crimson rimmed, to 1¼ in. long. Wyo. to Colo.

foliolòsa. Woolly P. Per., white-woolly, to 1½ ft., base woody: lvs. linear, 1 in. long: fls. yellowish or greenish, ¾ in. long. Calif.

Hàydenii. Per. to 10 in., sts. glabrous below infl.: lvs. linear to lanceolate, entire to 3–5-parted: fl.-bracts dark crimson, deeply 3–7-cleft; corolla green tipped dark crimson, to 1 in. long. Mts. of Colo.

indivìsa. Texas P. Ann. to 2 ft.: lvs. linear or linear-lanceolate, to 4 in. long: bracts bright red, calyx red and about length of corolla. Tex.

íntegra. Per. to 1 ft., tomentose: lvs. narrow-linear, to 3 in. long: fl.-bracts crimson, pink or yellowish; fls. green bordered with crimson, 1 in. long. Colo. to Mex.

lancifòlia. Per. to 2 ft., sts. solitary: lvs. lanceolate, to 2 in. long, entire, usually glabrous: fl.-bracts crimson, lanceolate and often cleft. Alaska to Ore. and Alta. south to Colo.

latifòlia. Per., viscid-pubescent, to 1½ ft.: lvs. thick, mostly oval or obovate, to 1 in. long (usually shorter), the upper ones sometimes 3-lobed at apex: fls. in leafy spike, the bracts yellow or red; corolla about ¾ in. long. Calif.

Líndheimeri. Per. to 1 ft., hairy: lvs. cut into 3–5 linear segms., to 2 in. long: bracts rose or brick-red; fls. green edged with pink, 1 in. long. Tex., Colo.

lineariæfòlia (*C. affinis* var. *lineariæfolia*). Lvs. linear, sometimes cut into linear segms., to 4 in. long: fl.-bracts crimson; fls. greenish-yellow tinged red, 2 in. long. Calif. to Wyo. and New Mex.

lutéscens. Per. to 20 in., sts. hairy: lvs. linear to lanceolate, entire, the upper ones 3-cleft and 5-ribbed: fl.-bracts yellow tipped brown or red, mostly entire or only slightly lobed. Mont. to Wash. and Ida.

Mártinii. Per. with woody decumbent base, branches ascending, sticky-hairy: lvs. linear, 1 in. long: bracts scarlet-tipped; fls. reddish, 1 in. long. Calif.

miniàta. Per. to 3 ft.: lvs. linear-lanceolate, to 2 in. long: fl.-bracts tipped brick-red; fls. green edged with red, ¾ in. long. Alaska to Calif.

occidentàlis. Per. to 8 in., sts. hairy: lvs. linear to lanceolate, to 2 in. long: fl.-bracts brownish-crimson to yellowish-green, villous; corolla to ⅝ in. long. B. C. to Alta. south to Utah and Colo.

parviflòra. To 2 ft., hairy: lvs. cut into lanceolate or linear segms., or the upper ones entire: corolla about 1 in. long, the bracts red, yellow to white. Colo., Calif. and elsewhere.—Variable.

pinetòrum. To 1½ ft., sticky-pubescent: lvs. linear-lanceolate, to 2 in. long: fls.-bracts red above; fls. 1 in. long. Ore., Calif., Nev.

rhexifòlia. Per. to 2 ft.: lvs. oblong-lanceolate to ovate, 2 in. long: fl.-bracts scarlet or rose; fls. green bordered with scarlet, 1 in. long. Rocky Mts.

sessiliflòra. To 1 ft., sts. villous: lvs. linear or linear-lobed, to 2 in. long, entire, puberulent: fls. yellow, to 2 in. long, in loose terminal leafy spikes. Ill. to Sask. south to Mo. and Ariz.

stenántha. Ann. to 2½ ft., glandular-pubescent: lvs. linear-lanceolate, to 3 in. long: bracts tipped with scarlet; fls. green or yellowish, lower lip with scarlet teeth, to 1½ in. long. Calif.

sulphùrea. Per. to 1½ ft.: lvs. lanceolate to ovate, 2 in. long: fl.-bracts light yellow; fls. greenish, 1 in. long. Rocky Mts.

CASTILLOA: *Castilla.*

CASTOR-OIL PLANT: *Ricinus communis.*

CASUARÌNA. Beefwood. She-Oak. Australian-Pine. *Casuarinaceæ.* Hardwooded trees or shrubs native in Australia and Pacific Isls., having jointed branches resembling the horsetail or equisetum, lvs. reduced to minute scales or teeth, unisexual fls., the staminate borne in spikes and the pistillate in dense heads becoming dry cones in fr.

Casuarinas are much planted as avenue trees in Florida and other warm regions; they do well near salt water. Propagated by cuttings of half-ripened wood, and also by seeds.

Cunninghamiàna. To 70 ft.: cones globular, ⅛ in. or less across, with glabrous valves: teeth on branchlets 8–10.

dístyla. Shrub or small tree: cones oblong, to 1 in. long, the valves with dorsal protuberance: teeth on branchlets usually 6.

equisetifòlia. Horsetail-Tree. To 70 ft., the branches drooping: cones globular, ½ in. across, with pubescent valves: teeth on branchlets commonly 7. Nat. in Fla.

glaùca. To 50 ft., glaucous: cones globular, ½ in. across: teeth on branchlets about 16.

hórrida. Shrub to 9 ft. with erect stiff branches: cones nearly globular, about ½ in. across, bristly: teeth on branchlets 10 or 12.

lepidophlòia. To 40, or rarely to 70 ft., twigs smooth or faintly ribbed, ascending: cones 1 in. or more in diam., globose, pubescent: teeth on branchlets 9–16.

quadriválvis: *C. stricta.*

strícta (*C. quadrivalvis*). To 30 ft., the branches drooping: cones globular or ovoid, 1 in. or more across: teeth on branchlets about 10.

suberòsa. To 50 ft.: cones cylindrical-oblong, ½ in. across: teeth on branchlets 6–8.

CASUARINÀCEÆ. Casuarina Family. Only one genus, trees or tree-like, Casuarina which is employed for ornamental planting in Calif., Fla. and other southern parts.

CATABRÒSA. *Gramineæ.* Aquatic per. grasses with creeping rhizomes, 2-fld. spikelets in open panicles. N. Amer., Eurasia. **C. aquática** (*Glyceria aquatica* and *G. spectabilis*). Brook-Grass. To 4 ft.: lvs. to 4 in. long and ¼ in. across, glabrous: panicle erect to 8 in. high, usually pyramidal, yellowish-brown. Wet places.

CATÁLPA. *Bignoniaceæ.* Small or large trees with large, simple, long-stalked lvs., mostly deciduous, bell-shaped irregular white, whitish or rose-colored fls. in terminal panicles or racemes, and fr. a long narrow caps. 1 ft. or more long; native in N. Amer. and E. Asia.

Catalpas are popular lawn and avenue trees and mostly hardy North, very showy when in bloom in late spring and early summer; sometimes planted for small timber. They do well in any good soil. Propagated by seeds in spring and cuttings of mature wood; also by layers, root-cuttings, cuttings of young wood in early summer, and named varieties by grafting on seedlings or cuttings of young trees.

bignonioìdes (*C. syringæfolia. C. cordifolia*). Common C. Indian-Bean. To 60 ft.: lvs. ovate, to 8 in. long, abruptly short-acuminate, pubescent beneath: fls. white with 2 yellow stripes and brown spotted, 2 in. across, in panicles 8 in. long. Ga. to Fla. and Miss. Var. **aùrea** has yellow lvs. and var. **nàna** is dwarf, and is usually grafted on upright boles forming standards with dense umbrella-like heads and is the *C. Bungei* of horticulturists.

Búngei. Small tree: lvs. triangular-ovate, to 6 in. long, long-acuminate, sometimes toothed or angled near base, glabrous: fls. white spotted purple, 1½ in. long. China.—This name is often applied to *C. bignonioides* var. *nana.*

cordifòlia: *C. bignonioides.*

Ducloùxii: *C. Fargesii* var.

Fárgesii. To 60 ft.: lvs. ovate, to 6 in. long, long-acuminate, densely pubescent beneath, 3-lobed on young plants: fls. pink or purplish spotted with brown, 1½ in. long. China. Var. **Ducloùxii** (*C. Duclouxii*), to 80 ft., lvs. somewhat larger, glabrous and fls. rose marked with orange.

hýbrida (*C. Teasii*). Hybrid between *C. bignonioides* and *C. ovata*, intermediate in character: lvs. larger than in *C. ovata*, mostly purplish when young, sometimes angled or shallowly lobed: fls. resembling *C. bignonioides* but smaller. Much planted.

Kaémpferi: *C. ovata.*

longíssima. Tree to 50 ft.: lvs. small, oblong-pointed to broad-lanceolate, 4–5 in. long and less than one-half as broad: fls. 1 in. or less long, white with fine purple or pink lines: pod very slender, to 18 in. or more. W. Indies.—Planted in S. Fla.

ovàta (*C. Kaempferi*). To 30 ft. or more: lvs. broad-ovate, sometimes 3–5-lobed, to 10 in. long, abruptly acuminate, pubescent on veins beneath: fls. yellowish-white marked with orange and violet, to ¾ in. long, in panicles to 10 in. long. China.

speciòsa. Western C. To 100 ft.: lvs. ovate, to 1 ft. long, long-acuminate, densely pubescent beneath: fls. white spotted with brown, 2½ in. across, in panicles 6 in. long. Ill. to Ark.

syringæfòlia: *C. bignonioides.*

Tèasii: *C. hybrida.*

CATANÁNCHE. Cupids-Dart. *Compositæ.* Herbaceous annuals and perennials with narrow lvs. borne near base of st. and long-stalked blue or yellow heads of ray- and disk-fls. and chaffy involucre; pappus of bristles or scales; native to Medit. region.

One is cultivated in the flower-garden and as an everlasting. It grows well in the average garden soil and under the usual treatment for perennials. Raised from seed sown in spring and blooming the same year; also by division.

cærùlea. Per. to 2 ft., blooming first year from seed: lvs. lanceolate, few-toothed, tomentose: heads 2 in. across, ray-fls. blue, involucre chaff-like, June–Aug. S. Eu. Var. **álba** has white rays and **bícolor** blue rays edged with white.

CATASÈTUM. *Orchidaceæ.* Trop. American terrestrial or epiphytic orchids, having pseudobulbs bearing 2 or more plaited lvs., polygamous fls. of 3 different forms borne in racemes, the pollen-masses flying out when the appendages of the column are touched. Cult. in the hothouse, commonly suspended and given a resting period. See *Orchids*.

Bungeròthii: *C. pileatum.*

callòsum. Fls. in 10–15-fld. racemes to 1 ft. high; sepals and petals brown, about 2 in. long; lip green spotted with red, shortly saccate at base. Dec. Venezuela, Colombia.

Christyànum: *C. saccatum* var.

integérrimum (*C. maculatum*). Fls. in 6–12-fld. racemes to 16 in. high; sepals and petals bright green often spotted with purple; lip green without (sometimes purple spotted), purple-suffused within. Jan.–Dec. Cent. Amer.

macrocárpum (*C. tridentatum*). Pseudobulbs oblong, to 8 in. long, striated: lvs. to 1⅓ ft. long, elliptic-lanceolate, keeled: scape erect or arching, 6 in.–1⅓ ft. tall, about 5–14 fls. in male spike; sepals and petals yellowish-green spotted with red or purple within; lip bright yellow with greenish at apex or bright green, usually purple-spotted within. Trinidad, S. Amer.—Somewhat variable in fl. coloration.

maculàtum: *C. integerrimum.*

mèdium. Fls. small, in many-fld. racemes; sepals and petals greenish-yellow barred with brown; lip yellowish, purple-spotted. Habitat unknown.

pileàtum (*C. Bungerothii*). Racemes several- to many-fld., to 1 ft. high; fls. white or yellowish-white or light rose sometimes purple-spotted; sepals about 2 in. long; lip transversely oblong or semiorbicular and shortly saccate. June. Trinidad, Venezuela, Brazil.—Varieties have red, orange or yellow in their fls.

Russelliànum. Racemes pendent, many-fld., nearly 1½ ft. long; sepals and petals oblong, about 1½ in. long, pale green; lip sac-like with a double fringe of teeth. Aug.–Sept. Cent. Amer.

saccàtum var. **Christyànum** (*C. Christyanum*). Fls. in 5–8- or more-fld. loose pendent racemes to 1⅓ ft. long; sepals and petals about 2 in. long, narrowly lanceolate, acute, greenish with brownish-red spots; lip greenish fringed with rose-red hairs, the mouth of the central saccate area white. Nov.–Mar. Brazil.

scúrra: *C. Warscewiczii.*

tridentàtum: *C. macrocarpum.*

viridiflàvum. Pseudobulbs oblong, to 5 in. long: lvs. lanceolate-elliptic, acute, to about 1 ft. long, striate: spike shorter than lvs., up to 12-fld.; petals wider than sepals, all uniformly yellow-green; lip yellow or yellow-green without, deep yellow within, margin ciliate. Cent. Amer. (Panama).

Warscewíczii (*C. scurra*). Fls. pale straw-color or white with green veins, in drooping racemes, fragrant, the lip with the 2 fringed side lobes and the protuberant middle lobe bilobed and fringed at the apex. Cent. Amer., Colombia, Venezuela, British Guiana.

CAT-BRIER: *Smilax glauca.*

CATCHFLY: *Silene.* **German:** *Lychnis Viscaria.*

CATESBÆA. *Rubiaceæ.* W. Indian spiny shrubs or small trees with opposite or whorled lvs., white, funnelform or campanulate, 4-lobed, solitary fls., and fr. a white berry; one species grown in S. Fla. and other warm regions.

spinòsa. LILY-THORN. To 15 ft., with spines 1 in. or more long: lvs. ovate, to 1 in. long: fls. creamy, to 6 in. long, much exceeding the small lvs.: berries to 2 in. long. Cuba, Bahamas.

CÀTHA. *Celastraceæ.* Evergreen shrub native from Abyssinia to S. Afr., the lvs. much used by the Arabs in the preparation of a drink. **C. edùlis.** KHAT. CAFTA. To 10 ft.: lvs. opposite, sometimes alternate on infertile shoots, oval, to 4 in. long, toothed: fls. small, white, in axillary clusters: fr. a 3-angled caps., about ¼ in. long.—Planted in S. Fla. and Calif., and also sometimes under glass for its economic interest. See *Gymnosporia*.

CATHARTOLINUM: *Linum.*

CATHCARTIA: *Meconopsis.*

CATJANG: *Vigna Catjang.*

CATKIN: a scaly-bracted spike with unisexual flowers; ament; prominent in willows and poplars.

CATMINT: *Nepeta Cataria.*

CATNEP, CATNIP: *Nepeta Cataria.*

CATS-CLAW: *Doxantha Unguis-cati, Pithecellobium Unguis-cati.* **-Ear:** *Calochortus cæruleus, Hypochæris.*

CAT-TAIL: *Typha.* **Redhot:** *Acalypha hispida.*

CÁTTLEYA. *Orchidaceæ.* Epiphytes native in trop. Amer., having pseudobulbs with 1–3 very thick lvs. and fls. in terminal clusters or rarely solitary, the sepals similar, the petals broader, lip of commonly 2 lateral lobes which form a tube around the column, and spreading middle lobe. Popular orchids grown in the intermediate house; see *Orchids* for cult. There are large numbers of hybrids and hort. forms.

Aclándiæ. Pseudobulbs to 6 in. long, with 2 broadly elliptic lvs. to nearly 3 in. long: fls. to 4 in. across, 1 or 2 together; sepals and petals yellowish-green spotted with purple-brown; lip with short whitish-rose side lobes and magenta wavy middle lobe. May–June, Sept.–Oct. Brazil.

Álwynii álba. Hybrid between *C. Enid alba* and *C. amabilis alba.*

amábilis. Hybrid between *C. labiata* and *C. Warscewiczii.*

amethystoglóssa. Lvs. 2, elliptic-oblong, to over 8 in. long: fls. about 4 in. across, 5–8 together; sepals and petals white suffused with rose and spotted with violet; lip with whitish side lobes and bluish-violet middle lobe. Nov.–July. Brazil.

ardentíssima. Hybrid between *C. fabia* and *C. Petersii.*

armainvillierénsis. Hybrid between *C. Mendelii* and *C. Warscewiczii.*

Ármstrongiæ. Hybrid between *C. Hardyana* and *C. Harrisoniana.*

Áshtonii. Hybrid between *C. Harrisoniana* and *C. Warscewiczii.*

aurantìaca (*Epidendrum aurantiacum*). Fls. orange-red, to 1½ in. across. Dec.–May. Cent. Amer.

aùrea: *C. Dowiana* var.

Ballantineàna. Hybrid between *C. Trianæi* and *C. Warscewiczii.*

Ballaùrea. Hybrid between *C. Ballantineana* and *C. Dowiana* var. *aurea.*

Bánksiæ. Hybrid between *C.* Catherine and *C. Mendelii.*

belairénsis. Hybrid between *C. intermedia* and *C. Skinneri.*

belairénsis álba. Hybrid between *C. intermedia* var. *alba* and *C. Skinneri* var. *alba.*

Bértii. Hybrid between *C. Harrisoniana* and *C. labiata.*

Beyrodtiàna: *C. labiata* var.

bícolor. Lvs. oblong-lanceolate, to about 6 in. long: fls. 3–4½ in. across, 2–8 together; sepals and petals bronze-green; lip rose-purple sometimes edged with white, toothed, without side lobes. Jan.–Apr., Sept.-Nov. Brazil.

Bláckii. Hybrid between *C. Gaskelliana* and *C. Mendelii.*

Bowringiàna. Lvs. oblong or elliptic-oblong, to 8 in. long: fls. about 3 in. across, 5–13 together; sepals and petals rose-violet; lip rose, lilac within, white edged with chestnut-brown in throat. Oct.–Dec. Cent. Amer. Var. **triúmphans** has rich purple fls.

Cáppei. Hybrid between *C. Trianæi* and its var. *Schroederiana.*

Cáppei álba. Hybrid between *C. Trianæi* var. *Schroederiana* and var. *alba.*

Chápmanii. Hybrid between *C. Bowringiana* and *C. Warneri.*

chocoénsis: *C. Trianæi* var.

chrysotóxa: *C. Dowiana.*

citrìna. TULIP C. Lvs. strap-shaped, to 9½ in. long: fls. citron-yellow, usually solitary on drooping stalks slightly longer or shorter than lvs.; lip white on edges and wavy. Apr.–June. Mex.

Clárkiæ. Hybrid between *C. labiata* and *C. bicolor.*

Coòksonii. Hybrid between *C. Hardyana* and *C. Trianæi.*

Coòksonii álba. Hybrid with same parents as *C. Cooksonii.*

Dowiàna (*C. labiata* var. *Dowiana. C. chrysotoxa*). QUEEN C. Lvs. solitary, to 1 ft. long: fls. to nearly 7 in. across, 2–6 together; sepals and petals nankeen-yellow; lip dark purple lined with radiating golden threads. Mar.–May, July–Aug. Costa Rica. Var. **aùrea** (*C. aurea*). Lip with more and deeper yellow lines. Colombia. Var. **rosìta** has creamy-white sepals tinged with purple, and rose-purple petals tinged with yellow.

Dupreàna. Hybrid between *C. Warneri* and *C. Warscewiczii.*

Dússeldorfii. Hybrid between *C. intermedia* var. *alba* and *C. Mossiæ* var. *alba.*

Èdithiæ álba. Hybrid between *C.* Suzanne Hye and *C. Trianæi* var. *alba.*

Édwardii. Hybrid between *C. Schilleriana* and *C. Warscewiczii.*

Eldoràdo. Pseudobulbs to 8 in., 1-lvd., stout: lvs. oblong or elliptic-oblong, to 12 in.: fls. fragrant, to about 6 in. across, pale rosy-lilac shading to white; lip crisped, centrally blotched with orange and with purple margins. Brazil.

elongàta. Pseudobulbs elongate, 2-lvd.: lvs. elliptic, to 6 in. long: fls. 3–4 in. across, 2–8 together; sepals and petals red-brown or orange, undulate on the margins; lip rose, darker lined. Mar., Oct. Brazil.

Ènid. Hybrid between *C. Mossiæ* and *C. Warscewiczii.*

Fernándii. Hybrid between *C. Warscewiczii* and *C. Aclandiæ.*

Fórbesii. Pseudobulbs stem-like, 2-lvd.: lvs. elliptic-oblong, to 5 in. long: fls. 3–4 in. across, 1–5 together; sepals and petals olive- or yellow-green; lip white or pale yellow outside, yellow inside often marked with red. May–Oct. Brazil.

Gaskellià na (*C. labiata* var. *Gaskelliana*). SUMMER C. Pseudobulbs 1-lvd.: lvs. oblong, to almost 1 ft. long: fls. to 7 in. across, 2–3 together; sepals and petals purple-violet suffused with white; lip purple-violet with a saddle-shaped yellow blotch, crisped on margin. May–Sept. Venezuela, Brazil. Var. **álba** has pure white sepals and petals, creamy-white lip with yellow throat. Var. **cærùlea** has pure white fls. with bluish spot on base of lip. Var. **delicàta** has very pale purple-violet fls.

gìgas: *C. Warscewiczii.*

Gíldenii. Hybrid between *C. Hardyana* and *C.* Maggie Raphael.

granulòsa. Lvs. 2, elliptic-oblong, to 6 in. long: fls. to 4 in. across, 5–8 together; sepals and petals olive-green more or less spotted with red-brown; lip white dotted with purple, the claw of the middle lobe yellowish marked with red, wavy. Aug.–Sept. Guatemala, Brazil.

guttàta. Lvs. 2, oblong-elliptic, to 9 in. long: fls. to 4 in. across, about 4–6 together; sepals and petals green spotted with red-purple; lip with side lobes rose or white, and middle lobe violet-purple. Apr.–Oct. Brazil.

Hardyàna. Hybrid between *C. Dowiana* and *C. Warscewiczii.* Named variants of this hybrid are **álba, aùrea, delicàta, élegans, éxcellens.**

Harrisoniàna. Lvs. 2, oblong-lanceolate, to 6 in. long: fls. to 4 in. across, 2–5 together, rose-lilac, the middle lobe of lip whitish-rose with yellow spot. Jan.–Feb., July–Oct. Brazil.

Hássellii. Hybrid between *C. labiata* and *C.* Empress Frederick.

Helòisiæ. Hybrid between *C. Forbesii* and *C. Mossiæ.*

Héntschelii. Hybrid between *C. Dupreana* and *C. Warscewiczii.*

intermèdia. Lvs. 2, oblong, to 6 in. long: fls. to 5 in. across, usually 3–5 together, pale rose with middle lobe of lip purple and crisped. Apr.–June, Sept.–Nov. Brazil. Var. **álba** has pure white fls.

intertéxta. Hybrid between *C. Mossiæ* and *C. Warneri.*

iridéscens. Hybrid between *C. Eldorado* and *C. bicolor.*

Kienastiàna. Hybrid between *C. Dowiana* and *C. Lueddemanniana.*

labiàta. AUTUMN C. Lvs. solitary, oblong, to 10 in. long: fls. to 6 in. across, 2–5 together, rose-lilac, the very wavy limb of lip violet-purple bordered with rose-lilac with deeper streaks and yellow throat. Oct.–Mar. W. Indies, Brazil. Var. **álba** has white fls. with a yellow throat. Var. **Amesiàna** has white fls. with lilac lip. Var. **Beyrodtiàna** has yellow lip streaked with purple. Var. **Coòksoniæ** has white fls. with crimson-purple lip edged with white. Var. **ròsea** has very light rose fls.

Lawrenceàna. Lvs. solitary, oblong or elliptic-oblong, to 9 in. long: fls. to 5 in. across, 5–7 or more together, rose-purple, the limb of lip purple with a maroon band and a white throat below. Feb.–Apr. British Guiana, Venezuela.

Lèopoldii (*C. guttata* var. *Leopoldii*). Lvs. 2–3, oblong-elliptic, to 8 in. long: fls. to 4 in. across, 10–25 together; sepals and petals brown dotted with purple-red; lip white in the throat, purple above, wavy. Oct.–Nov. Brazil.

lobàta: *Lælia lobata.*

Lóddigesii. Pseudobulbs to 12 in. long, 2-lvd., cylindric: lvs. elliptic-oblong, to 5 in. long: fls. to 4 in. or more across, rose-lilac, the lip 3-lobed and white inside with yellow at base, crisped on the margins. Brazil.

Lueddemanniàna (*C. labiata* var. *Lueddemanniana. C. speciosissima*). Lvs. solitary, oblong or elliptic-oblong, to 10 in. long: fls. to 6 in. across, 2–5 together, rose-purple, the lip with wavy amethyst-purple limb, throat spotted with yellow or white. July–Sept. Brazil, Venezuela. Var. **álba** has white fls. In var. **Stánleyi** the white fls. have the limb lined with purple.

Lùegeæ. Hybrid of *C. Dowiana* var. Rosita and *C. Enid.*

lutèola. Lvs. solitary, oblong-elliptic, to 9 in. long: fls. to 2 in. across, 2–6 together, citron-yellow sometimes with lilac stripes, the middle lobe of lip whitish and wavy. Nov.–Aug. Brazil, Ecuador, Peru, Bolivia.

Mántinii. Hybrid between *C. Bowringiana* and *C. Dowiana* var. *aurea.*

Marliàta. Hybrid between *C. labiata* and *C. Marriottiana.*

Máronii. Hybrid between *C. Dowiana* and *C. velutina.*

Marriottiàna. Hybrid between *C. Eldorado* and *C. Warscewiczii.*

máxima. Lvs. solitary, oblong, to 10 in. long: fls. to 5 in. across, 3–7 together, lilac or pale rose, the limb of lip whitish to crimson-purple with darker veins and orange-yellow central band, wavy. Apr.–July, Oct.–Nov. Colombia, Ecuador, Peru.

McMástersiæ. Hybrid between *C. Schilleriana* and *C. Mendelii.*

Méndelii (*C. labiata* var. *Mendelii*). VIRGINS C. Lvs. solitary, oblong, to 10 in. long: fls. to 8 in. across, 2–3 together, white or rosy, the limb of lip very wavy, white or rosy at base, purple near apex, with yellow throat. Apr.–Sept. Colombia.

Mendelíssima. Hybrid between *C. Lueddemanniana* and *C. Mendelii.*

Minùcia. Hybrid between *C. Loddigesii* and *C. Warscewiczii.*

Móssiæ. SPRING C. Lvs. oblong, to 8 in. long: fls. 5–8 in. across, 3–5 together, rose, the very wavy lip with purple limb variegated with violet and edged with rose, the throat yellow and orange. Mar.–Aug. Venezuela. Var. **álba** has white fls. In var. **cærùlea** the sepals and petals are blue-violet. Var. **Reineckiàna** has white fls. with yellow throat and violet limb. Var. **Wágeneri** has white fls. with yellow spot on lip. Other listed varieties include **aùrea, delicàta, grandiflòra, lutèola** and **matùtina.**

Mossmaniàna. Hybrid between *C.* A. Dimmock and *C. Trianæi.*

Múrrayi. Hybrid between *C. Mendelii* and *C. Lawrenceana.*

Orátinii. Hybrid between *C.* Princess Royal and *C. Enid.*

Peètersii. Hybrid between *C. Hardyana* and *C. labiata.*

Peètersii álba. Hybrid between *C. Hardyana* var. *alba* and *C. labiata.*

Percivalliàna (*C. labiata* var. *Percivalliana*). CHRISTMAS C. Similar to *C. Mossiæ* but with smaller somewhat darker colored fls. Jan.–Mar. Venezuela. Var. **álba,** fls. white. Var. **Roeblingiàna,** fls. white with rose-purple lip.

Pittiàna. Hybrid between *C. Dowiana* and *C. granulosa.*

Ráfaeliæ. Hybrid between *C. Dowiana* and *C. Trianæi.*

Réx. Lvs. solitary, oblong, to 1 ft. or more long: fls. 6–7 in. across, 3–6 together; sepals and petals yellowish-white; lip yellow with crimson limb edged with white, wavy. July–Sept. Peru.

Roehrsiàna. Hybrid between *C. Hardyana* and *C. Mendelii.*

Rothschildiàna. Hybrid between *C. Dowiana* and *C. Gaskelliana.*

Sanderiàna: *C. Warscewiczii.*

Schilleriàna. Lvs. 2, elliptic, to 4 in. long: fls. to 4 in. across, 1–2 together; sepals and petals wavy on the margin, green spotted with brown; lip within yellow near base, purplish-crimson above, fimbriate. Apr.–May, Sept.–Oct. Brazil.

Schroederiàna: *C. Trianæi* var.

Skínneri. Lvs. 2, elliptic, to 8 in. long: fls. 4–5 in. across, 4–rarely 13 together, rose-purple with yellowish-white in throat of lip. Jan.–Aug. Cent. Amer. Var. **álba** has white fls.

speciosíssima: *C. Lueddemanniana.*

Stùartii. Hybrid between *C. Mendelii* and *C. Mossiæ.*

suàvior. Hybrid between *C. Mendelii* and *C. intermedia.*

supérba: *C. violacea.*

Thayeriàna. Hybrid between *C. intermedia* and *C. Trianæi* var. *Schroederiana.*

Thayeriàna álba. Hybrid between *C. intermedia* var. *alba* and *C. Trianæi* var. *Schroederiana alba.*

Thurgoodiàna. Hybrid between *C. Hardyana* and *C. Lueddemanniana.*

Triànæi (*C. labiata* var. *Trianæi*). WINTER C. Lvs. solitary, oblong, to 8 in. long: fls. to 7 in. across, 2–3 together, rose, the lip with dark purple wavy limb and yellow throat. Dec.–Mar. Colombia. Var. **álba** has white fls. and var. **atropurpùrea** crimson-purple. Var. **Backhousiàna**

has rose-purple sepals and petals with darker spot at tip. Var. **chocoénsis** has fragrant white fls. sometimes tinged with pale lilac. Var. **Schroederiàna,** Easter C., has fragrant pink fls. with purple-tipped lip. Forms of this var. are *alba*, *cærulea*, *citrina* and *refulgens*. Var. **triúmphans** has rose-pink sepals and petals with purple lip and golden-yellow tube. Var. **variegàta** is listed. Var. **Wéllesleyæ** (*C. Wellesleyæ*) has white fls.

triúmphans. Hybrid between *C. Dowiana* and *C. Rex.*

velùtina. Lvs. 2, broadly lanceolate, to 10 in. long: fls. 3½-4 in. across, 2-8 together, fragrant; sepals and petals orange-yellow spotted with purple; lip whitish with purple lines, throat yellow. Feb.-May, Aug.-Oct. Brazil.

veriflòra. Hybrid between *C. labiata* and *C. Trianæi.*

vestàlis. Hybrid between *C. Dowiana* and *C. maxima.*

violàcea (*C. superba*). Lvs. 2, elliptic or oval, to 6 in. long: fls. 4-almost 5½ in. across, 3-6 together, fragrant; sepals and petals rose-purple; lip deep purple, the throat with a central band of yellow separating 2 white blotches. Jan.-Dec. Colombia, Venezuela, British Guiana, Brazil, Peru.

Walkeriàna. Pseudobulbs to 5 in. high, furrowed, 1- or 2-lvd.: lvs. elliptic-oblong, to 5 in. long: fls. 1-3, to 5 in. across; sepals and petals pale to deep lilac-purple, disk of lip yellow streaked with purple and with a deep border of purple. Brazil, Bolivia.

Wárneri (*C. labiata* var. *Warneri*). Lvs. solitary, oblong, to 7 in. long: fls. to 8 in. across, 3-5 together, rosy, with limb of lip carmine and very wavy and yellow throat. May-July. Brazil. In var. **álba** the fls. are white except for the yellow throat.

Warscewíczii (*C. labiata* var. *Warscewiczii. C. gigas. C. Sanderiana*). St. Johns C. Lvs. solitary, oblong, to 10 in. long: fls. to 9 in. across, 2-3 together; sepals and petals violet-rose; lip deep purple with 2 yellow spots in throat, wavy. May-Aug. Colombia. Forms are **álba** with pure white fls. and **rochellénsis** with white fls. having lip tinged with color.

Wavriniàna. Hybrid between *C. granulosa* and *C. Warscewiczii.*

Wéllesleyæ: *C. Trianæi* var.

Wendlandiàna. Hybrid between *C. Bowringiana* and *C. Warscewiczii.*

Whitei. Hybrid between *C. Schilleriana* and *C. Warneri.*

Wiganii. Hybrid between *C. Dowiana* and *C. Schilleriana.*

Williamsiæ. Hybrid between *C. Gaskelliana* and *C. Harrisoniana.*

CAUDOXALIS: *Oxalis Bowieana.*

CAULÁNTHUS. Wild Cabbage. *Cruciferæ.* Mostly ann. herbs, fls. with narrow and usually crisped petals, fr. a terete or compressed nearly sessile pod with short beak; sometimes confused with Streptanthus, a per. with lyrate basal lvs. and pods not beaked.

inflàtus (*Streptanthus inflatus*). Squaw-Cabbage. Ann. to 2 ft., sts. conspicuously inflated, glabrous: lvs. clasping, oblanceolate to ovate: fls. white, to ¾ in. across or more, petals crisped near tip, stigma deeply 2-lobed: pods stout, to 4 in. long, ascending.

CAULESCENT: more or less stemmed or stem-bearing; having an evident stem above ground.

CAULIFLOWER, BROCCOLI (*Brassica oleracea* var. *botrytis*). Biennial plants (running to seed the second year) of the cabbage tribe but more tender to frost and untoward conditions, the edible part being a head formed of the condensed and thickened malformed flower-cluster rather than an aggregation of leaves. If the old plant is set out the following year, good flowering and seed-bearing shoots will arise from the stump and from such parts of the head as may not have been removed, as in the cabbage.

Cauliflower is not as cosmopolitan as to conditions as cabbage, or as easy to grow. It does best in a rather cool moist soil and under equable conditions; only highly selected seed should be used; the plant must be kept in a continuous state of thrift. Insects and diseases must be kept under full control; they are the same as the pests of cabbage.

The great heats and dryness of midsummer are to be avoided as far as possible at heading time, if the crop is to be grown in untoward regions. To this end, very early varieties may be grown, starting them under glass and harvesting the crop in June or early summer. The plants are handled as are cabbages, and the distances for the early varieties may be 18 inches in the row. For the late or main crop, seeds may be sown in seed-beds in late spring or early summer, and as these varieties make bigger plants the distances should be 2 feet in the row or even more for the larger kinds. Far South the crop may be grown for early spring use from seeds sown in autumn. In parts of California the crop is grown in winter. Wherever irrigation is available, many of the difficulties of cauliflower growing may be overcome.

A continuous steady growth from high-class seeds and well-grown plants should produce a solid head of regular shape, without "buttons" or breaks or straggling branches. To whiten the head, the outer leaves are sometimes tied together over it, but openings should be left on the sides for ventilation or the head may decay from the accumulation of moisture. Heads should be harvested as fast as they mature or they may crack or become discolored or develop decayed spots. In harvesting, a good circle of leaves should go with the head, and these leaves are trimmed a little above the head to serve as a protection, and to provide a cup in which the head sits attractively.

A race of very late large cauliflower is known as broccoli; the culture is in general the same as for the ordinary cauliflower except that it requires the entire season in which to grow; in mild climates it may be left in the field over winter, maturing its heads in spring. The Asparagus or Sprouting broccoli, Calabrese, is a different plant, *Brassica oleracea* var. *italica* (or var. *asparagoides*). It does not produce a thick solid white head but rather a small greenish head on the main stalk and similar heads on thick branches after the first head is cut; all these shoots are edible and are prized by those who know them. It may be started early in plant beds and brought to maturity in late spring or in autumn of the same year. All the broccolis are specially prized by Italians.

Another plant sometimes but erroneously known as broccoli or "Italian kale" is the Seven-top turnip; see *Brassica septiceps;* also *B. Ruvo.*

CAULINE: pertaining or belonging to the stem.

CAULOPHÝLLUM. *Berberidaceæ.* Two erect per. rhizomatous herbs, one in E. N. Amer., and one in E. Asia, the former sometimes planted in the wild-garden or border. The genus is distinguished by the naked seeds left by the bursting of the pericarp and which become blue and berry-like. Fls. small, in a cluster, with the young ternately compound rue-like lvs.

thalictroìdes. Blue Cohosh. To 3 ft.: fls. yellow-green, about ½ in. across, in early spring: fr. ornamental, ⅓ in. across. Deep woods; requires shade.—The Asian *C. robustum* (sometimes considered a var. of the American plant) has less deeply toothed and more pointed lfts.

CEANÒTHUS. *Rhamnaceæ.* N. American shrubs, particularly on the Pacific Coast, or small trees, with simple deciduous or persistent lvs., mostly showy blue or white small fls. in dense panicles or racemes, and 3-lobed capsular fr.; furnishes many ornamental subjects, among them many hybrids of European origin and giving rise to named hort. vars. The Pacific species and their derivatives are not hardy in the northeastern states. The following species are mostly deciduous.

Ceanothus thrives best in light well-drained soil in sunny positions. Few species are hardy North and plants may be dug in fall, stored in a frost-proof place, and set out again in spring. Propagated by seeds sown in spring, layers, and varieties by grafting on roots of *C. americanus* in spring under glass; also by cuttings of mature wood in autumn or soft-wood cuttings in spring from forced plants. Those native in the eastern parts of the country are sometimes transferred to grounds in that region.

americànus (*C. procumbens*). New-Jersey-Tea. To 3 ft.: lvs. alternate, ovate, finely toothed: fls. white. Me. to S. C. and Tex.

arbòreus. Evergreen shrub or tree to 20 ft.: lvs. alternate, ovate, finely toothed. white-tomentose beneath: fls. pale to deep blue, fragrant. Isls. off Calif. coast.—The plant cult. in Calif. as *C. hybridus* is said to be a hybrid between *C. arboreus* and *C. spinosus*.

Árnouldii: *C. Delilianus.*

austromontànus. Similar to *C. foliosus*, growing to 8 ft. high. Mts. of S. Calif.

azùreus: *C. cæruleus.*

cærùleus (*C. azureus*). Shrub or small tree to 20 ft. and more: lvs. alternate, oblong-lanceolate to ovate, finely toothed, rusty-tomentose beneath: fls. blue or nearly white. Mex., Guatemala.

califórnicus: *C. integerrimus.*

cordulàtus. Much branched spiny shrub to 4 ft., forming flattened clumps: lvs. alternate, ovate, entire or finely toothed: fls. white. Ore., Calif.

crassifòlius. Shrub to 6 ft., young sts. pubescent: lvs. opposite, elliptic to obovate, to 1 in. long, white-pubescent beneath, somewhat fleshy, margins usually revolute and dentate: fls. white. S. and Lower Calif. Var. **plànus** has lvs. entire without revolute margins.

cuneàtus. Buck-Brush. Erect shrub to 8 ft.: lvs. opposite, persistent, spatulate-obovate, to 1 in. long: fls. white, lavender or blue. Calif.

cyàneus. Shrub to 10 ft.: lvs. alternate, persistent, ovate-elliptic, to 2 in. long, glossy, margins entire to glandular-toothed: fls. dark blue becoming paler, in clusters to 1 ft. long. S. Calif.

Deliliànus (*C. Arnouldii. C. hybridus*). A hybrid between *C. americanus* and *C. cæruleus:* to 3 ft.: lvs. alternate, ovate, finely toothed: fls. pale or deep blue. The commonly cult. "Gloire de Versailles" belongs here.

dentàtus. To 3 ft., densely branched, evergreen: lvs. alternate, obovate, margins revolute: fls. blue. Calif. Var. **impréssus** is *C. impressus.*

divaricàtus: the material in cult. under this name is *C. leucodermis.*

Féndleri. To 1½ ft., spiny: lvs. alternate, ovate, entire, silky beneath: fls. white. S. D. to Wyo. and N. Mex.

foliòsus. Evergreen, to 1 ft. or more, densely branched: lvs. alternate, oblong, to ¾ in. long, pale beneath: fls. blue. Cent. Calif.

gloriòsus. Prostrate shrub to 1 ft.: lvs. opposite, persistent, broadly elliptic to round, to 1½ in. long, dark green, leathery, usually spiny-toothed: fls. deep blue to purple. S. Calif. Var. **exaltàtus** is an upright plant to 12 ft.

Gréggii. Shrub to 6 ft.: lvs. elliptic-oblong, to ⅝ in. long, grayish on both sides, entire or with 1–3 small teeth near the base, rarely concave above: fls. white, in small umbels. N. Mex. to New Mex. and S. Calif. Var. **perpléxans** has yellowish-green lvs. broadly elliptic to obovate, to ¾ in. long or more, usually more pungently tipped.

hýbridus: see *C. Delilianus* and *C. arboreus.*

impréssus (*C. dentatus* var. *impressus*). Spreading shrub to 8 ft. high and 20 ft. across: lvs. alternate, persistent, broadly elliptic to round, to 1 in. long, loosely villous: fls. dark blue. S. Calif.

incànus. To 8 ft., bark white: lvs. alternate, ovate, usually entire, whitish-pubescent beneath: fls. white. Calif.

integérrimus (*C. californicus*). Deer-Brush. To 12 ft.: lvs. alternate, ovate, entire: fls. white, rarely pale blue or pink. Calif.

Jépsonii. To 5 ft.: lvs. opposite, elliptic, leathery, spiny-toothed: fls. white or blue. Calif. Var. **purpùreus** is *C. purpureus.*

leucodérmis (*C. divaricatus*). To 12 ft.: lvs. alternate, persistent, elliptic-oblong to ovate, to 1½ in. long, 3-veined from base, entire to serrulate, glabrous: fls. pale blue to white: fr. globose. Calif., Lower Calif.

Lobbiànus. Hybrid between *C. dentatus* and *C. thyrsiflorus:* evergreen shrub to 10 ft.: lvs. alternate, oblong, remotely toothed, whitish beneath: fls. dark blue.

macrocárpus: *C. megacarpus* var. *insularis.*

megacárpus. Shrub to 12 ft.: lvs. mostly alternate, cuneate-obovate, to 1 in. long, apex truncate or notched: fls. white, in small clusters: fr. globose, to ½ in. diam., with large dorsal horns. S. Calif. Var. **insulàris** (*C. macrocarpus*) has lvs. often opposite with fr. scarcely if at all horned. Var. **péndulus** has long slender arching or drooping branches.

microphýllus. Shrub to 2 ft., sts. erect, diffuse: lvs. suborbicular to elliptic, to ¼ in. long, entire, somewhat fleshy: fls. white, to ⅛ in. across, in loose terminal and axillary panicles. Ga. to Fla. and Ala.

oligánthus. To 12 ft.: lvs. alternate, ovate, finely toothed, pale green or brown beneath: fls. deep blue or purplish. Calif.

ovàtus. To 3 ft.: lvs. alternate, oblong or oval, toothed, shining above: fls. white. Vt. to Colo. and Tex.

pállidus. Hybrid between *C. Delilianus* and *C. ovatus:* to 3 ft. or less: lvs. alternate, oblong, finely toothed: fls. light blue. "Marie Simon," with flesh-colored fls. belongs here.

papillòsus. To 6 ft., evergreen: lvs. alternate, oblong to linear, margins revolute, upper surface papillose, pubescent beneath: fls. blue. Calif. Var. **Roweànus** is spreading, to 3 ft. high, of compact habit with narrower lvs. Var. **supréssus**, prostrate.

Párryi. To 6 ft. or more, evergreen: lvs. alternate, oblong, finely toothed but margins becoming revolute, tomentose beneath: fls. blue. Calif.

parvifòlius. Spreading shrub to 3 ft.: lvs. alternate, deciduous, oblong-elliptic to elliptic, to 1 in. long, entire or sometimes toothed: fls. pale to deep blue, in clusters to 3 in. long. Calif.

procúmbens: *C. americanus.*

prostràtus. Mahala Mat. Prostrate: lvs. evergreen, opposite, obovate, coarsely spiny-toothed: fls. blue. Wash. to Calif. Var. **divérgens** has horizontally spreading or trailing branches.

pùmilus. Prostrate shrub to 8 in. or less high, sts. mat-forming, to 18 in. long, much branched: lvs. cuneate to obovate, to ½ in. long, finely white-pubescent beneath, nearly sessile: fls. blue to white. Ore.

purpùreus (*C. Jepsonii* var. *purpureus*). Holly-leaf C. Erect or spreading shrub to 4 ft. high: lvs. opposite, persistent, orbicular to broadly elliptic, sinuate, to ¾ in. long, dark green, glossy: fls. deep blue to purple, in umbellate clusters to 2 in. across. Calif.

ramulòsus. To 4 ft., branches spreading, arching or procumbent: lvs. opposite, persistent, oblanceolate, obovate or nearly round, to ⅝ in. long, nearly sessile: fls. blue, lavender or white, in small umbels. Calif.—Grown in rocky sandy situations.

rígidus. To 6 ft., stiffly branched: lvs. opposite, cuneate-obovate, entire or toothed near tip: fls. bright blue. Calif. Var. **álbus,** fls. white.

sanguíneus. Shrub to 10 ft., young twigs greenish, long-pubescent, older sts. reddish: lvs. alternate, oval, to 2¼ in. long, obtuse at apex: fls. white. B. C. to Mont. and N. Calif.

servidiàtus. To 7 ft., stiffly branched: lvs. alternate, ovate, finely toothed, pale beneath: fls. blue or nearly white. Calif.

spinòsus. To 10 ft., sometimes tree to 24 ft., often spiny: lvs. alternate, oblong, entire or finely toothed: fls. pale blue or white. Calif.

thyrsiflòrus. Blue-Blossom. Evergreen, to 8 ft. or tree to 25 ft.: lvs. alternate, oblong, finely toothed, shining above: fls. blue or rarely white. Ore. to Calif. Var. **gríseus** has lvs. densely silky-pubescent beneath, margins revolute between teeth and infl. more dense and compact. Calif.; said to be more hardy.

Veitchiànus. Hybrid between *C. rigidus* and *C. thyrsiflorus:* to 10 ft.: lvs. evergreen, alternate, obovate, remotely toothed, shining above, whitish beneath: fls. deep blue.

velùtinus. To 15 ft., evergreen: lvs. alternate, elliptic, finely toothed, shining above, tomentose beneath: fls. white. B. C. to Calif. and Colo.

verrucòsus. Low shrub: lvs. alternate, obovate, entire or slightly toothed, small, pale beneath: fls. white. S. and Lower Calif.

CEBATHA: *Cocculus.*

CECRÒPIA. *Moraceæ.* Trop. American trees with milky juice, large palmately-lobed peltate lvs. and unisexual fls. in dense spikes; grown in trop. countries and sometimes in S. Fla. and S. Calif. As plants are diœcious both pistillate and staminate should be planted if fruiting specimens are desired.

palmàta. SNAKEWOOD TREE. To 50 ft., with soft wood: lvs. borne at ends of branches, 7–11-lobed to middle or below, rough above, white-tomentose beneath. W. Indies, S. Amer.

CEDAR: *Cedrus.* **Cigarbox-:** *Cedrela odorata.* **Ground-:** *Lycopodium complanatum.* **Incense-:** *Libocedrus.* **Red-:** *Juniperus.* **Spanish-:** *Cedrela odorata.* **Stinking-:** *Torreya taxifolia.* **West-Indian-:** *Cedrela odorata.* **White-:** *Chamæcyparis, Tabebuia pallida.*

CÉDRELA. *Meliaceæ.* Trees with colored wood furnishing valuable timber, that of *C. odorata* extensively used for cigar-boxes, also several species grown for ornament: deciduous or evergreen; lvs. alternate, many-pinnate and somewhat ailanthus-like: fls. small and whitish, in panicles: fr. a woody caps., with winged seeds: occidental and oriental tropics and warm regions.

Cedrelas thrive in fertile loamy soil. Propagated by seeds, cuttings of mature wood, and root-cuttings, over heat.

austràlis: *C. Toona.*

físsilis. Tree to 50 ft. or more: lfts. oblong-lanceolate, densely pubescent beneath: fls. yellowish, in pubescent panicles longer than lvs., petals velvety: fr. 1 in. or more long. Panama, S. Amer., perhaps Mex.

odoràta. WEST-INDIAN- or SPANISH-CEDAR. CIGAR-BOX-CEDAR. To 100 ft.: lfts. entire: fls. yellowish, in panicles shorter than lvs.: fr. to 1½ in. long, the seeds winged below middle. W. Indies, S. Amer.

sinénsis (*Toona sinensis*). To 50 ft.: lfts. toothed: fls. white, in very long pendulous panicles: fr. 1 in. long, the seeds winged above. China; stands in N. Y. and S. New England.

Toòna (*C. australis. Toona ciliata*). To 70 ft., nearly evergreen: lfts. entire or wavy-margined: fls. white, fragrant, in panicles shorter than lvs.: fr. to 1 in. long, the seeds winged at both ends. Himalayas; planted in S. Fla.

CEDRONÉLLA. *Labiatæ.* One per. shrubby herb to 4 ft. high, native in Canary Isls. and grown in the flower-garden. Propagated by cuttings. **C. canariénsis** (*C. triphylla. Dracocephalum canariense*). CANARY-BALM. Lvs. of 3 oblong or lanceolate toothed lfts.: fls. white or lilac, in whorls in loose terminal spikes. For *C. nana* and *C. mexicana* see *Brittonastrum.*

CÉDRUS. CEDAR. *Pinaceæ.* Large evergreen trees with wide-spreading branches, of 4 species in N. Afr. and Asia, having stiff needle-like 4-angled clustered lvs. and small ovoid erect cones with closely imbricated scales. For cult. see *Conifers.* The species are not reliable north of the latitude of N. Y. on the eastern side of the continent, and then only in favorable locations; they are mostly trees for the middle and warmer parts of the country, but all except perhaps *C. brevifolia* can be grown in favorable sheltered locations in S. New England.

atlántica. ATLAS C. Lvs. less than 1 in. long, bluish-green: cones to 3 in. long. N. Afr. Var. **argéntea,** lvs. silvery-white; var. **aùrea,** lvs. yellowish; var. **glaùca,** lvs. glaucous; var. **fastigiàta,** habit narrow-pyramidal; var. **péndula,** branchlets drooping.

brevifolia. Closely allied to *C. libani* but with shorter glaucous lvs. and shorter cones. Cyprus.

Deodàra. DEODAR C. Branchlets drooping: lvs. to 2 in. long, dark bluish-green: cones to 5 in. long. Himalayas. Var. **argéntea,** lvs. silvery-white; var. **aùrea,** lvs. yellow; var. **crassifòlia,** stiff stunted tree with shorter thicker lvs.; var. **fontinàlis** is listed as producing elongated flexible shoots, it is probably var. **péndula** which has long drooping branches; var. **prostràta,** a low-lying form; var. **robústa,** a stronger form than type with stiffer lvs.; var. **verticillàta,** compact form with bluish-white lvs.; var. **víridis,** lvs. deeper green. Other listed names are *compacta* and *repandens.*

libàni. (*C. libanitica*). CEDAR OF LEBANON. Lvs. 1 in. long, dark or bright green: cones to 4 in. long. Asia Minor. Var. **aùrea,** foliage yellowish-green; var. **compácta** is listed as more dense growing than type; var. **glaùca,** lvs. blue or silvery-white; var. **nàna** (var. "Comte de Dijon"), dwarf and compact; var. **péndula,** branches drooping.

libanítica: *C. libani.*

CEIBA. *Bombacaceæ.* Very large deciduous trees with digitately compound lvs., showy fls. in axillary clusters and fr. a leathery caps., the seeds with long cotton-like fiber which is the kapok of commerce; planted as a shade tree in the tropics.

Caseària: *C. pentandra.*

pentándra (*C. Casearia. Eriodendron anfractuosum*). SILK-COTTON-TREE. To 120 ft., with widely spreading branches, the trunk often 9 ft. thick and the thin buttresses sometimes extending for 30 ft.: lfts. 7, to 6 in. long: fls. white or rose, the woolly petals about 1 in. long, often appearing before the lvs.: fr. to 5 in. long. Tropics of both hemispheres.

CELANDINE: *Chelidonium.* **Tree:** *Macleaya cordata.*

CELASTRÀCEÆ. STAFF-TREE FAMILY. Widely distributed trees and shrubs, often twining, of about 45 genera, with simple mostly deciduous lvs., small regular usually bisexual fls. having 4–5 sepals, petals and stamens, superior 3–5-celled ovary, and seeds usually with a pulpy aril which is disclosed when the pericarp ruptures in autumn. Species in the following genera are cult. for ornament: Catha, Celastrus, Elæodendron, Euonymus, Gymnosporia, Maytenus, Pachistema, Tripterygium.

CELÁSTRUS. *Celastraceæ.* Species here entered are twining shrubs, seldom evergreen, with alternate simple lvs., greenish-white polygamous fls. in racemes or panicles, capsular fr. and seed with a crimson aril showy when ripe.

Suitable for covering walls, trellises and the like. They thrive in common soils. Propagated by seeds sown in fall or stratified, by suckers, cuttings of young or mature wood, and root-cuttings.

angulàtus (*C. latifolius*). Branches angular: lvs. to 7 in. long: fls. in terminal panicles to 6 in. long: frs. orange-red. China; not hardy in northern states.

articulàtus: *C. orbiculatus.*

cassinoìdes: *Gymnosporia cassinoides.*

flagellàris. Branches with spiny stipules: lvs. to 2 in. long: fls. in few-fld. axillary cymes: frs. orange-yellow. N. China, Korea, Japan; hardy in S. New England.

latifòlius: *C. angulatus.*

orbiculàtus (*C. articulatus*). Branches spiny only when young: lvs. to 4 in. long: fls. in few-fld. axillary cymes: frs. orange-yellow. Japan, China. Var. **punctàtus** is a less vigorous form with smaller lvs.

orientàlis: listed name.

Oríxa: *Orixa japonica.*

paniculàtus. Branches with pale lenticular warts: lvs. to 4 in. long: fls. in terminal pendulous panicles to 8 in. long. Himalayas; adaptable S.

punctàtus: *C. orbiculatus* var.

Rosthorniànus. Lvs. to 3 in. long: fls. in nearly sessile cymes. China; not hardy far N.

scándens. WAXWORK. FALSE or SHRUBBY BITTER-SWEET. Lvs. to 4 in. long: fls. in terminal racemes to 4 in. long: frs. orange-yellow. Que. to N. C. and N. Mex.

CELERI: *Apium graveolens* var. *dulce.*

CELERIAC: see *Celery.*

CELERY (*Apium*, which see). Biennial or perennial herb grown for the edible leaf-stalks; it is raised from seeds, coming to horticultural maturity the same year, but flowers are normally produced the second year although the plant sometimes runs to seed the first year. The leaf-stalks are blanched in the field but the process is often completed in the storage cellar for the late kinds.

Ordinary deep fertile mellow garden land will produce good celery. It must be thoroughly prepared, and if not naturally retentive of moisture it should be supplemented with a system of irrigation or watering for dry times. The large-area commercial growing of celery is an important industry on reclaimed lands, particularly on muck and other lowlands that can be drained. Under such conditions a uniform moisture supply can be assured and the ground readily provides the proper tilth. In such areas celery-growing has become a special skilled industry of great importance.

Celery should make a continued rapid growth. It is specially important that the plants get a "quick" start. Stimulation by some form of available nitrogen, as in nitrate of soda, is advisable. This nitrate may be applied to seed-beds, about 1 teaspoonful to a gallon of water. Heavy applications of well-rotted stable-manure are advisable on uplands, and a chemical fertilizer of a 4-8-12 analysis on muck lands liberally applied. Side dressing the plants with nitrate of soda once or twice during their growth is usually advantageous.

For the home-garden celery may be planted in shallow trenches to facilitate blanching, but this method is now less used than formerly. The plants are commonly set 6 inches apart in rows 28–40 inches apart. Blanching may be accomplished by banking with earth late in the season until only the tops are visible, by shading with boards placed on edge on either side, and by tying with paper, or a drain tile put over each plant. The late crop may be packed in boxes, the roots covered with earth, and placed in the cellar to complete the blanching. Self-blanching may also be practiced, which consists of setting the plants very close together; this requires very rich soil and plenty of moisture; the plants may be set 5 or 6 inches apart in rows 10–24 inches apart.

Propagation is entirely by seed which for the early crop should be sown in boxes or hotbeds and transplanted once before being permanently set out. Seed for the late crop should be sown in a well-prepared seed-bed from which the seedlings should be transplanted to the garden or field. It requires eight to ten weeks for the plants to reach the proper size for setting in the field, depending on the temperature.

Celery is harvested by cutting the plants just beneath the crown. This is accomplished with a spade in small areas, and by special horse, garden tractor or hand tools in large plantations. The plants are usually trimmed slightly in the field, They may be packed there in crates for storage or taken to a packing shed, where they are trimmed and washed, then tied in bunches or crated for local market or shipment. Storage of celery may be combined with the blanching of it, as already indicated. Plants are placed closely in crates; the storage house or cellar should not freeze but there should be good ventilation and clean sanitary conditions. For late autumn or early winter use late celery may be stored and bleached in field trenches, the tops being covered with straw or similar material.

The celery crop is subject to devastation by early and late blight, that produce spots and holes on the foliage. These diseases may be prevented by spraying thoroughly every week or ten days with bordeaux mixture, beginning in the seed-bed. Other diseases and pests are frequent, and the grower should avail himself of the latest books and bulletins.

Celeriac is grown the same as celery for the thickened edible crown, except that no blanching is required; the leaves are not eaten after the manner of celery.

CELMÍSIA. *Compositæ.* Per. herbs of New Zeal. and Australia, having basal lvs. or imbricated st.-lvs. and large solitary heads of white ray- and disk-fls.; pappus of bristles; planted somewhat on Pacific Coast.

coriàcea. To 3 ft.: lvs. to 2 ft. long and 3 in. wide, leathery, silvery-tomentose: heads to 3 in. across, on woolly scapes. New Zeal.

gracilénta. To 15 in., sts. tufted: basal lvs. narrowly linear, to 15 in. long, white-tomentose beneath, margins strongly revolute: scapes white-tomentose: heads to ¾ in. across. New Zeal.

longifòlia. To 1½ ft.: lvs. linear or linear-lanceolate, to 10 in. long, white-tomentose beneath. Australia.—The New Zeal. plant known under this name has been separated into other species, of which *C. gracilenta* is cult.

spectábilis. Lvs. to 6 in. long and ¾ in. wide, leathery, woolly beneath: heads 1½ in. across, on woolly scapes. New Zeal.

CELÒSIA. *Amaranthaceæ.* The cult. celosias are herbaceous annuals, with the st. and branches terminated by dense chaffy spikes usually enlarged and highly colored and in various often fantastic shapes; native in warm countries. The fls. are small and not individually showy.

Celosias thrive in fertile soil with plenty of moisture. Propagated by seeds.

argéntea. To 3 ft.: lvs. linear to ovate-lanceolate, to 2 in. long: fl.-spikes 1–4 in. long, erect or drooping, silvery-white. Tropics.—Little cult. Var. **cristàta** (*C. cristata*). Cockscomb. Infl. in many forms, some with heavy-crested heads, others plumy or feathered with a large number of intermediates, the colors ranging from white to yellow, purple, and shades of red; also with variegated lvs. Often the cult. types have Latin-form names as *C. globosa, gloriosa, magnifica, chrysantheflora, pyramidalis, spicata, Thompsonii, Thompsonii magnifica, Childsii, plumosa, floribunda.*

aurantìaca: orange-yellow form.

Chìldsii: *C. argentea.*

chrysantheflòra: *C. argentea.*

cristàta: *C. argentea* var.

floribúnda. Much branched green or glaucous glabrous shrub to 12 ft.: lvs. triangular-ovate to somewhat hastate, to 8 in. long, becoming oblong toward top: fls. very many in close panicles. Lower Calif; sometimes planted in S. Calif. for general interest.—The flower-garden plant known as *C. floribunda* is a form of *C. argentea* var. *cristata.*

globòsa: *C. argentea.*

Húttonii. To 2 ft., bushy, pyramidal: lvs. red or crimson: spikes 1½ in. long, cylindrical, red. Java.

kermesìna is listed as a crimson form; probably belongs under *C. argentea.*

magnífica: *C. argentea.*

plumòsa: *C. argentea.*

pyramidàlis: *C. argentea.*

spicàta: *C. argentea.*

Thómpsonii: *C. argentea.*

CÉLSIA. *Scrophulariaceæ.* Yellow-fld. ann., bien. or per. herbs much like Verbascum but with 4 stamens instead of 5; mostly native in Medit. region and Asia, frequently planted for ornament.

Propagated by seeds sown in the greenhouse, the plants set out in the open after all danger from frosts is past; also by cuttings.

Arctùrus. Cretan Bears-Tail. Bien. or per. to 1½ ft., pubescent: lvs. ovate, toothed, the lower lyrate-pinnatifid: fls. clear yellow, long-stalked, with purple anthers, in loose racemes. Crete, Asia Minor.

crética. Cretan Mullein. Stout hairy bien. or per. to 6 ft.: lvs. ovate, clasping, toothed, the lower lyrate-pinnatifid: fls. yellow marked with purple, almost sessile, in loose racemes, violet anthers. Medit. region.

orientàlis. Ann. to 3 ft., sts. slender, very leafy: lvs. bipinnate, segms. linear to oblong: fls. yellow, in long lax racemes. N. Medit. region.

póntica. Bien. to 5 ft.: lower lvs. oblong, to 9 in. long, obtuse, base somewhat cordate, petioled, upper lvs. ovate, acuminate: fls. yellow, in racemes to 2 ft. long, calyx glandular-hairy. Armenia.

CÉLTIS. Hackberry. *Ulmaceæ.* Northern hemisphere deciduous or seldom evergreen trees or rarely shrubs, with alternate elm-like lvs., unisexual or bisexual small fls., and drupaceous frs.

Most of the species are hardy in the northern and north-central states where they are grown for shade and ornament. They are not particular as to soil. Propagated by seeds, layers and cuttings in the fall, or sometimes grafted on *C. occidentalis.*

Audibertiàna: *C. occidentalis* var. *crassifolia.*

austràlis. To 80 ft.: lvs. to 6 in. long, sharply toothed, grayish-green and pubescent beneath: fr. dark purple. S. Eu., N. Afr., W. Asia.—Grown in Calif.

Bungeàna (*C. Davidiana*). To 50 ft.: lvs. to 3 in. long, slightly toothed only above middle, shining above: fr. purplish-black. China, Manchuria, Korea.

caucásica. Similar to *C. australis* but with lvs. to 3 in. long and reddish-brown frs. Caucasus, W. Asia.

cordàta: *C. occidentalis.*

Davidiàna: *C. Bungeana.*

Doúglasii (*C. rugulosa*). To 20 ft.: lvs. to 3 in. long, coarsely toothed, pubescent on veins beneath: fr. brown. Colo. to Wash.—The Colorado form is separated by some authors as *C. rugulosa,* distinguished by the lvs. being pubescent beneath.

Juliànæ. To 80 ft.: lvs. to 6 in. long, wavy-toothed above the middle, yellowish-green and pubescent beneath: fr. orange. China.—Grown in Calif. and mild climates.

làbilis. To 60 ft.: lvs. to 4 in. long, wavy-toothed above the middle, pale or brownish beneath, pubescent on veins: fr. orange. China.—Grown in Calif. and mild climates.

lævigàta (*C. mississippiensis. C. occidentalis* var. *integrifolia*). Sugarberry. Mississippi H. To 100 ft.: lvs. to 4 in. long, long-acuminate, usually entire, thin: fr. orange-red becoming dark purple. S. Ind. to Fla. and Tex.

mississippiénsis: *C. lævigata.*

occidentàlis (*C. cordata*). To 120 ft.: lvs. to 5 in. long, toothed, shining above, paler below: fr. orange-red to dark purple. Que. to N. C. and Ala. Var. **crassifòlia** (*C. Audibertiana*) has firmer larger lvs. pubescent on nerves beneath.

orientàlis: *C. Tournefortii.*

rugulòsa: *C. Douglasii.*

sinénsis. To 60 ft.: lvs. to 4 in. long, wavy-toothed, pubescent beneath when young: fr. dark orange. China, Korea, Japan.—Grown in Calif. and elsewhere.

Tàla. Shrub, with short spines: lvs. about 1 in. long, coarsely toothed or nearly entire. Uruguay.

Tournefórtii (*C. orientalis*). To 20 ft.: lvs. to 3 in. long, toothed, bluish- or grayish-green: fr. reddish-yellow. S. E. Eu., W. Asia.

CENTAURÈA. *Compositæ.* Herbaceous annuals and perennials with entire, pinnately lobed or divided lvs.: heads solitary or panicled, purple, blue, yellow or white; fls. all tubular, the marginal ones often enlarged; pappus of scales or bristles. The genus yields a wide variety of ornamental subjects from flower-garden annuals to bedding and foliage plants, basket plants, and stout thistle-like species for rear background effects. They are prevailingly Old World plants.

The annuals are grown from seeds sown directly in the garden or started earlier indoors. *C. Cineraria* and other foliage types are increased from cuttings taken in September and carried over winter indoors or sometimes from seeds sown in August. *C. Cyanus,* the bachelors-button, is an easily grown hardy annual.

alpìna. To 3 ft.: lvs. spiny, tomentose beneath: heads yellow. S. E. Eu.

amàra. Per. to 2 ft.: lvs. lobed, briefly pubescent, upper ones linear-lanceolate: heads to 1¼ in. across, pale purple; bracts of involucre scarious, the lvs. beneath not equalling the head. Medit. region.—By some authors considered to be only a variant of *C. Jacea.*

Amberbòi: *C. moschata.*

americàna. Basket-Flower. Ann. to 6 ft.: lvs. mostly entire, oblong-lanceolate, to 5 in. long: heads solitary, rose or flesh-colored, sometimes purplish, to 5 in. across, marginal fls. enlarged; bracts of involucre with fringed appendages. Mo. to La. and Mex. Var. **álba** has white fls.

arenària. Per. to nearly 3 ft.: lvs. 1–2-pinnatisect, green to canescent-tomentose, segms. linear-lanceolate, mucronate, upper lvs. with segms. dentate or entire: heads often solitary, to ½ in. across, rose-pink. Balkans to Caucasia.

argéntea: *C. gymnocarpa.*

atropurpùrea. Per. to 7 ft., sparsely tomentose: lvs. 1–2-pinnate, segms. frequently dentate, acute: heads to ¾ in. across, corolla dark purple or rarely yellow. Carpathinia.

babylónica. Per. 4–12 ft., silvery-white or greenish with white webby tomentum: basal lvs. lyrate, to 2 ft. long, st.-lvs. oblong to lanceolate, entire or wavy: heads yellow, subsessile, 1½ in. long, in stiff panicles; bracts of involucre with short recurved spiny tips. Asia Minor.

béllа. Per. to 15 in,. sts. usually simple, erect: basal lvs. lyrate-pinnatifid, glandular-punctate above and densely white-tomentose beneath, segms. elliptic to obovate, entire, st.-lvs. with narrowly linear segms.: heads about ¾ in. across or less, ray-fls. purple or pinkish-lavender; involucral bracts with orbicular membranous lacerated appendage. Russia.

benedícta: *Cnicus benedictus.*

Bièbersteinii: *C. micrantha.*

candidíssima: see *C. Cineraria.*

carniólica. Very similar to *C. nigrescens,* differing in involucre cylindrical and nearly twice as long as wide. Cent. Eu.—By some authors this and *C. nigrescens* are treated as variants of the older *C. dubia,* a species not known to be in cult.

Cinerària. Dusty Miller. Per. to 1 ft. or more, white-tomentose: lvs. pinnately parted into obtuse linear-lanceolate lobes: heads rather large, golden-yellow or purple; bracts of involucre ciliate. S. Italy, Sicily.—For the plant known in cult. as var. *candidissima* see *Senecio leucostachys.*

Clémentei. Per., white-woolly: lvs. pinnate into ovate lobes: heads terminal, yellow; bracts of involucre ciliate. Spain.

conífera: *Leuzea conifera.*

cristàta. Ann. or bien.: lower lvs. 3-pinnate, upper linear, entire: heads pale pink; bracts of involucre ciliate. S. Eu.

Crocodýlium. Ann. to 4 ft.: lower lvs. ovate or lyrate, upper pinnate into linear segms.: heads solitary, rose, marginal fls. enlarged. Syria.

Crupìna: *Crupina vulgaris.*

Cyànus. Cornflower. Bachelors-Button. Blue-Bottle. Popular hardy ann. to 2½ ft., woolly-white only when young: lvs. linear, to 6 in. long, entire or lower toothed, sometimes pinnately cut: heads blue, purple, pink or white, to 1½ in. across, marginal fls. enlarged; bracts of involucre fringed. S. E. Eu.; frequently self-sows and sometimes escapes. Var. **flòre-plèno** has double fls. Var. **nàna-compácta** is listed as a dwarf form.

cynaroìdes (*Rhaponticum cynaroides*). Per.: lvs. oblong to ovate, pinnatifid: heads solitary or few. purplish; bracts of involucre fringed. Pyrenees.

dealbàta. Per. to 2 ft.: lvs. pinnate into coarsely toothed lobes, lower to 1½ ft. long, white-tomentose beneath: heads solitary, inner fls. red, marginal ones rosy or white; bracts of involucre fringed. Asia Minor, Persia.

depréssa. Per., almost prostrate, white-pubescent: lower lvs. oblong, entire or lyrate, upper linear-lanceolate: heads blue, about 1½ in. across, marginal fls. enlarged· bracts of involucre with black or white margins. Persia, Caucasus.

dichroántha. Per. to 3 ft.: lvs. glabrous, lanceolate-oblong, to 10 in. long, pinnatisect, segms. linear, about 3/16 in. wide: fls. purple-red or yellow, heads to 1½ in. across; involucral bracts with short pectinate fringe, the margin brownish-black. Cent. Eu.

dilùta. Ann. to 3½ ft.: lvs. lanceolate to oblong, to 4 in. long, lyrate-pinnatifid or entire, dentate, the teeth spinescent: heads white to pale rose, to 1½ in. across. Spain.

Éndressii: *C. nigra.*

Frítschii. Per. to 6 ft.: lvs. mostly pinnatifid, segms. linear-lanceolate, toothed or entire, to ½ in. wide, glabrous above: heads long-peduncled, to ⅝ in. across, rose to purple; involucral bracts white-tomentose with blackish cilia. Balkan region.—Similar to *C. Scabiosa,* differing in its taller habit, the appendages of involucral bracts only to 1/12 in. long and lvs. not scabrous above.

fuscàta. Per. to 2 ft., not much branched: lvs. lyrate-pinnatifid to lanceolate and entire: heads yellow; involucral bracts ovate, yellowish tipped brown. N. Afr.

glastifòlia. Much branched per. with winged st.: lvs. entire, oblong, the basal ones sometimes divided: fls. yellow, in solitary heads to 1 in. across, leafy bracts absent. Cent. Eu.

græca. To 1½ ft., rarely branched: lvs. lanceolate to narrowly linear, lower ones bipinnatifid, upper ones entire to pinnatisect, mucronate, all webby-woolly when young:

fls. rose-purple, in heads to 1½ in. across; bracts of involucre with stout terminal spine having minute pectinate lateral cilia along basal fourth. Greece.

Grìsebachii. Per. to 1½ ft. or more, paniculately branched: lvs. scabrous, pinnatisect, segms. oblong-linear: heads solitary in dense panicles; fls. purple, marginal ones radiating and larger than inner; involucral bracts with small pectinate-ciliate triangular appendages. Greece.

gymnocárpa (*C. argentea*). Dusty Miller. Per. to 2 ft., densely white-woolly: lvs. 2-pinnate into linear entire lobes: heads in panicles, small, rose-violet or purple, mostly hidden by the lvs. Capri.

imperiàlis. Supposed hybrid between *C. moschata* and its var. *alba:* to 4 ft.: heads white, rose, lilac or purple, fragrant.

Jàcea. Per. to 2 ft.: lvs. entire, lanceolate: heads solitary, purple or rarely white, to 1½ in. across, marginal fls. enlarged; bracts of involucre brown and fringed. Cent. Eu.; nat. in N. Amer.

Kotschyàna. Per., sts. erect, scabrous: lvs. lyrate-pinnatifid to lanceolate and dentate, segms. toothed, somewhat setaceous above: heads globose, to 1½ in. across, dark purple. Balkan region.

leucólepis. Bien. to 2 ft., sts. angular, scabrous: basal lvs. bipinnatisect, segms. lanceolate, toothed, green on both sides, st.-lvs. pinnatisect: heads about ¾ in. wide, pale rose or white; involucral bracts white-scarious with or without a short single terminal spine. Medit. region.

Líppii. Per. to 1 ft., sts. pubescent, striated: lvs. narrowly oblong-spatulate, to 4 in. long or more, pinnate, white-cinereous, segms. obtuse, dentate: heads small, violet-purple. N. Afr.

lugdunénsis. Per. to nearly 2 ft., sts. usually simple: lvs. linear-lanceolate, acuminate, pubescent: heads to 1 in. across or less, blue, solitary; margins of bracts brownish-ciliate. France.

macrocéphala. Per. to 3 ft.: lvs. ovate-lanceolate, toothed: heads solitary, yellow, to 4 in. across; bracts of involucre fringed and scarious. Armenia.

maculòsa (*C. rhenana*). Bien.: lvs. 1–2-pinnate into linear segms.: heads pale purple or rarely white; bracts of involucre uniformly pectinate. S. Eu. Var. **álba** is listed.

margaritàcea: *C. splendens.*

Margarìtæ: *C. moschata* var. *alba.*

melanocéphala. Hybrid between *C. alpina* and *C. Fritschii:* per. to 3 ft., webby-pubescent: lower lvs. pinnatifid, upper ones pinnatisect with dentate lanceolate segms. to 3 in. long: heads purple to yellow, to ¾ in. across; involucral bracts broadly ovate, black-tipped, pectinate-lacerate and terminated by spine. Serbia.

melanostícta: listed name.

meliténsis. Ann. to 4 ft., gray-pubescent, the sts. winged by decurrent lf.-bases: basal lvs. lyrate, upper entire or lobed: heads solitary or clustered, yellow, small; bracts of involucre spiny-tipped. Medit. region; nat. in N. and S. Amer.

micrántha (*C. Biebersteinii*). Similar to *C. maculosa* from which it differs in having only the terminal end of involucral bracts fringed. Cent. and E. Eu.

montàna. Mountain Bluet. Per. to 1 ft. or more: lvs. broadly lanceolate, silvery-white when young: heads blue, to 3 in. across, marginal fls. enlarged; bracts of involucre with black fringe. Eu. Color forms are **álba, cárnea, citrìna, purpùrea** and **ròsea.**

moschàta (*C. odorata. C. suaveolens. C. Amberboi*). Sweet Sultan. Ann., glabrous, to 2 ft.: lvs. toothed or pinnately cut: heads solitary, fragrant, white, yellow or purple, 2 in. across, marginal fls. enlarged: bracts of involucre entire. Orient. Var. **álba** (*C. Margaritæ*) has white fls. Var. **ròsea** fls. rose-pink to purplish-pink.

muricàta: *Amberboa muricata.*

nemoràlis. Very similar to *C. nigra* from which it differs in its smaller heads with appendages of the involucral bracts lanceolate and smaller. Cent. Eu.

nervòsa: *C. plumosa.*

nìgra (*C. Endressii*). Knapweed. Hardheads. Per., rough-pubescent, to 2 ft.: lvs. oblong or lanceolate, entire or toothed, to 6 in. long: heads solitary, rose-purple, to 1 in. across; bracts of involucre fringed, the appendages broadly ovate. Eu.; nat. in N. Amer. Var. **variegàta** has lvs. margined with white.

nigréscens. Per. to 2½ ft., glabrous or nearly so: lvs. oblong- to ovate-lanceolate, toothed, acute: ray-fls. purple, heads 1–4, to 1 in. across; involucre ovoid, nearly as wide as long, bracts terminated by a broadly dilated appendage having a stiff blackish pectinate fringe. S. and Cent. Eu.

odoràta: *C. moschata.*

orientàlis (*C. rigidifolia*). Per. to 3 ft.: lvs. somewhat leathery, mostly pinnately cut into linear-oblong segms.: heads yellow, to 2½ in. across; bracts of involucre chestnut-brown with pale tan or reddish ciliate margin and fringe. Eu. Var. **ròsea** is listed, but may not be this species.

oxýlepis. Per. to 3 ft.: lvs. ovate-lanceolate, pinnatifid to dentate, green on both sides or sometimes webby-tomentose, margins somewhat spiny-ciliate: heads about ½ in. across, rose-purple; involucral bracts lanceolate, denticulate to pectinate-fringed, recurved. Cent. Eu.

paniculàta. Bien. to 2½ ft., pubescent to white-woolly: lvs. 1–2-pinnate, segms. linear to oblong: ray-fls. purple, heads solitary and often close together in an elongated panicle; distal end of bracts short-laciniate. S. W. and S. Eu.—A confused Linnæan name; some of the material so listed is *C. maculosa.*

phrýgia (*C. pseudophrygia*). Per. to 2 ft. or more, paniculately branched: lvs. oblong, toothed: heads solitary, rose; bracts of involucre fringed, brownish-black, long-tapering. Eu.

plumòsa (*C. nervosa*). Per. to 2½ ft., not or only little branched: lvs. lanceolate to ovate, toothed: heads solitary, deep purple; bracts of involucre fringed. Cent. Eu.—Some of the material so named in the trade is referable to *C. gymnocarpa.*

pseudophrýgia: *C. phrygia.*

pulchérrima (*Æthèopappus pulcherrimus*). Per. to 2½ ft.: lvs. lanceolate or pinnatifid, to 7 in. long, gray-pubescent beneath: heads solitary, purple; bracts of involucre brown and fringed. Caucasus.

purpuràta. Bien. to 3 ft.: lvs. oblong, pinnatifid, to 1 ft. long, glaucous to tomentose beneath, margin somewhat spiny-ciliate: heads solitary, terminal on lateral branches, purple; involucral bracts pungent and strongly reflexed. Japan.

ragusìna. Per. to 3 ft., sts. white-tomentose: lvs. oblong, lyrate-pinnatifid, to 5 in. long, white-canescent, lobes entire to pinnatisect, obtuse: heads to 1¼ in. across, bright yellow. W. Medit. region.—Perhaps not hardy N.

rhenàna: *C. maculosa.*

rigidifòlia: *C. orientalis.*

rupéstris. Per. to 2½ ft., usually branched, webby-hairy: lvs. pinnate, lfts. pinnatisect with segms. narrowly linear, acute to mucronate: heads yellow or rarely orange, to 1 in. long; involucral bracts with long yellowish terminal spine and fringe-like lateral appendages: achenes with pappus in 2 rows. S. E. Eu.

ruthénica. Per. to 3 ft., glabrous: lvs. pinnately cut into linear toothed lobes: heads usually solitary, pale yellow, to 2 in. across, marginal fls. enlarged; bracts of involucre entire. Eu., W. Asia.

rutifòlia. Per. to 3 ft., gray-pubescent: lower lvs. pinnate, upper oblong, entire: heads 5–7, rose, marginal fls. enlarged; bracts of involucre ciliate at tips. Bulgaria.

salmántica. Per., sts. usually glabrous: lvs. lyrate-pinnatifid, denticulate, mucronate: heads long-pedicelled, white to pale violet-purple; involucral bracts spine-tipped. Dalmatia.

salonitàna. Per., sts. scabrous: lvs. lanceolate-elliptic, entire or pinnatifid, mucronate: heads yellow, sometimes white to purplish, to 1½ in. across, without leafy bracts subtending the involucre; involucral bracts with pectinate fringe around obtuse apex. Dalmatia.

Scabiòsa. Per. to 2 ft., pubescent: lvs. pinnately cut, to 6 in. long: heads solitary, purple or yellow, 2 in. across, marginal fls. enlarged; bracts of involucre fringed and black-margined, the terminal appendage about ⅛ in. long. Eu.; nat. in N. Amer.

sórdida. Per. to 2 ft.: lvs. pinnatifid into linear entire lobes: heads purple or yellowish; bracts of involucre ciliate and spiny-tipped. Reported to be a hybrid between *C. rupestris* and *C. Fritschii.*

spléndens (*C. margaritacea*). Bien. to 2 ft.: lvs. 1- or 2-pinnate into narrow entire segms.: fls. rose-red, solitary at tips of branches, the involucre about ½ in. long and wide. S. Eu.

stenólepis. Per. to 3½ ft., webby-pubescent: lvs. simple, entire or dentate, ovate to lanceolate-cuneate to sessile: heads small, marginal fls. radiating, purplish. Cent. and E. Eu.

stenophýlla. Per., sts. much branched, to 2 ft. or more, slender: lvs. narrowly ovate-oblong to lanceolate-linear, pinnatifid to filiform: fls. purple or rarely white; involucral bracts 3-spined, latter short and slender. Spain.—By some authorities considered as a var. of *C. aspera.*

suavèolens: *C. moschata.*

Taùscheri. Per., erect, white-tomentose: lvs. pinnatisect to pinnately lobed, webby-woolly, segms. lanceolate to linear: heads rose-colored, solitary, involucre about ⅓ in. across; bracts with triangular terminal appendages having black pectinate-ciliate margins. Cent. Eu.

verbascifòlia. Per., branching: lvs. oval-lanceolate, toothed, white-tomentose: heads violet; bracts of involucre brown. Arabia.

CENTAURIDIUM DRUMMONDII: *Xanthisma texanum.*

CENTAÙRIUM (*Erythræa*). CENTAURY. *Gentianaceæ.* Small mostly ann. herbs with opposite, simple and entire lvs. and red or rose more or less pink-like bright fls. borne in cymes.

Sometimes cultivated in the rock-garden and in borders. They thrive in light sandy loam and require protection from sun and frost. Propagated by seeds, the perennials by cuttings and division. The following are annuals or perhaps sometimes biennials.

Beỳrichii. To 8 in., sts. ascending: lvs. to 1 in. long: fls. deep pink, 1 in. across. Ark. to Tex.

conférta (*Erythræa conferta* and *E. chloodes*). Ann. or bien. to 4 in., glabrous, the sts. many: lvs. fleshy, oblong, obtuse, lower ones in rosette, upper ones narrower: fls. rose. England, S. W. Eu.

diffùsum: *C. Massonii.*

Mássonii (*C. diffusum*). To 4 in., tufted: lvs. to ½ in. long: fls. bright rose. Azores.

pulchélla (*C. ramosissima*). To 6 in.: lvs. oval: fls. pink. Eu.

ramosíssima: *C. pulchella.*

venústum. To 8 in.: lvs. to 1 in. long: fls. rose, the throat white spotted with red. Calif.

CENTAURY: *Centaurium.*

CENTIPEDE-PLANT: *Homalocladium.*

CENTRADÈNIA. *Melastomaceæ.* Herbs and small shrubs native in Mex. and Cent. Amer., with entire unequal lvs., small pink or white fls. in cymes, and capsular fr.; grown in greenhouses for the attractive fls. and often showily colored lvs. They thrive in soil composed of rich leaf-mold and sharp sand. Propagated by cuttings.

floribúnda. Little shrub with obscurely angled not winged somewhat pubescent sts.: lvs. narrow-lanceolate, 3-nerved, to about 2 in. long, red underneath: fls. pink. Mex.

grandifòlia. To 2 ft., the sts. winged: lvs. oblong-lanceolate, very unequal-sided, about 5-nerved, to 6 in. long, bright red beneath: fls. rose-pink. Mex.

CENTRÁNTHUS (or *Kentranthus*). *Valerianaceæ.* Ann. or per. herbs native in the Medit. region, having small white or red fls. in dense terminal clusters, the calyx pappus-like, corolla tubular and 5-parted, spurred at base, stamen 1. A few species are grown in the flower-garden, *C. ruber* being common. Propagated by seeds and division.

álbus: probably *C. ruber* var.

angustifòlius. Per. to 2 ft., glaucous: lvs. linear-lanceolate or linear, entire, to 3 in. long: fls. rose, fragrant. S. Eu.

atrococcíneus: listed name, perhaps a form of *C. ruber.*

Calcítrapa. Ann. to 1½ ft.: lvs. pinnatifid, the lower lyrate, to 3 in. long: fls. rose. S. Eu., N. Afr.

coccíneus: *C. ruber.*

macrosìphon. Ann. to 2 ft.: lvs. ovate, to 3 in. long, toothed or lobed, glaucous: fls. rose. Spain. Var. **álbus** has white fls.

rùber (*Valeriana coccinea* and *rubra*). RED VALERIAN. JUPITERS-BEARD. Per to 3 ft., glaucous: lvs. ovate to lanceolate, to 4 in. long, nearly entire: fls. crimson or pale red, fragrant. Eu. to S. W. Asia. Var. **álbus** has white fls. Var. **ròseus** is listed.

CENTRIPETAL: developing towards the center from without.

CENTROPÒGON. *Lobeliaceæ.* Trop. American shrubs or herb-like with alternate toothed lvs., red, orange or greenish tubular 2-lipped fls. having the stamens united with the lower part of corolla-tube, and fr. a berry; grown in hanging-baskets in a warm greenhouse. Propagated by cuttings over heat.

Lucyànus. To 2 ft.: lvs. ovate- or oblong-lanceolate: fls. rose-carmine, 1½ in. long, clustered at ends of branches, the stamen-column exserted.

surinaménsis. To 3 ft., with purplish sts.: lvs. ovate, to 6 in. long: fls. red, to 2 in. long, solitary at ends of branches, the stamen-column exserted.

CENTROSÈMA (*Bradburya*). BUTTERFLY-PEA. CONCHITA. *Leguminosæ.* Twining vines with pinnate lvs. mostly of 3 lfts., white or purplish papilionaceous fls. in the axils, and flat linear pods; native of Amer., the first two described species grown as cover-crops in the tropics.

brasiliànum. Lfts. ovate-oblong, to 2½ in. long: fls. white or blue, 1½ in. across: pods to 4 in. long and ⅙ in. wide. Brazil.

grandiflòrum: *C. virginiana.*

Plumièri. Lfts. ovate, to 5 in. long, blackening in drying: fls. 2 or more in. across, white with purple center: pods to 6 in. long and ½ in. wide. Trop. Amer.

pubéscens. Lfts. ovate to oblong, to 3 in. long: fls. white or yellowish: pods to 8 in. long and ¼ in. wide. Trop. Amer.

virginiànum (*C. grandiflorum*). Lfts. ovate to linear-lanceolate, to 2 in. long: fls. purple to whitish: pods to 5 in. long and ⅛ in. wide. E. N. Amer., trop. Amer., Afr.

CENTROSOLENIA BULLATA: *Episcia tessellata.*

CENTURY PLANT: *Agave.*

CEPHAÈLIS (*Evea*). *Rubiaceæ.* Trop. shrubs or small trees with opposite lvs. and rather small fls. in terminal heads subtended by involucral bracts; one intro. in S. Calif.

tomentòsa. Shrub to 15 ft., hairy: lvs. lanceolate to elliptic, to 10 in. long, long-acuminate: fls. yellow, the bright red bracts to 2 in. across: fr. blue. Mex. to Bolivia.

CEPHALANDRA: *Coccinea.*

CEPHALANTHÈRA. *Orchidaceæ.* Terrestrial orchids with generally leafy sts. and fls. in spikes; sepals and petals nearly equal; lip saccate.

falcàta. Lvs. to 8, distichous, lanceolate, strongly nerved: fls. yellow, sessile, in terminal spikes to 5 in. long. China, Japan.

CEPHALÁNTHUS. BUTTON-BUSH. *Rubiaceæ.* A few shrubs or small trees with opposite or whorled entire lvs., ours deciduous, and small tubular 4-lobed fls. in dense globose showy heads, the styles long-exserted; native in Asia, Afr. and N. Amer.

Of easy cultivation in good land if moist. Propagated by seeds and by cuttings of mature wood in autumn or green wood in spring.

occidentàlis. To 20 ft.: lvs. ovate to oval-lanceolate, to 6 in. long, shining above: fls creamy, in long-stalked heads about 1 in. across, July–Sept. N. Amer., in swamps.—It runs into narrow-lvd. and pubescent forms.

CEPHALÀRIA. *Dipsaceæ.* Ann. and per. Old World mostly coarse scabiosa-like herbs with opposite simple or compound lvs., small 4-parted whitish, yellowish or bluish fls. in long-stalked prominent heads, and fr. a ribbed achene; grown in the flower-garden. Easily propagated by seeds.

alpìna. Per. to 6 ft.: lvs. pinnately cut into toothed decurrent lanceolate segms.: fls. sulfur-yellow, in heads to 1½ in. across. S. Eu.

baleárica. Per. to 2½ ft.: lvs. entire or lyrate-pinnatifid, oval or the upper entire, toothed, shining: fls. yellowish-white. Balearic Isls.

centauroìdes: probably *C. corniculata.*

corniculàta. Per. to 3½ ft.: lvs. pinnately-lobed, lobes oblong, entire: fls. pale yellow, usually double, on long peduncles; autumn. S. E. Eu.

flàva: *C. græca.*

græca (*C. flava*). Per. to 2 ft.: lvs. pinnatisect, segms. ovate to oblong, often dentate or incised: fls. yellow, in long peduncled heads to 1½ in. across. Macedonia, Greece.

lævigàta. Erect glabrous per.: lvs. lanceolate, pinnately lobed, incised or entire: heads pale yellow, involucre with 8 small teeth. Cent. Eu.

leucántha. Per. to 4 ft.: lvs. pinnately-lobed, lobes linear-oblong: fls. creamy-white, in nearly spherical heads. S. Eu.

radiàta. Per.: lvs. pinnatisect, segms. elliptic to lanceolate, terminal one largest, all pubescent: heads yellow to white, lower involucral bracts ovate-orbicular, upper ones acute. Hungary.

rígida. Per. to 3 ft.: lvs. stiff, ovate-oblong, to 3 in. long, toothed: fls. white. S. Afr.

syrìaca. Ann. to 1 ft., sts. scabrous-prickly: lvs. oblong-lanceolate, entire or toothed, ciliate: fls. pale blue to lilac, in somewhat elongated heads to ½ in. diam. June–July. Medit. region.

tatárica. Per. to 6 ft.: lvs. pinnately divided into toothed broad-lanceolate lfts.: fls. creamy-white, in heads to 2 in. across. Russia, W. Asia.

Tchihátchewii. Per. to 2 ft., hairy: lvs. lyrate-pinnatifid into oblong-lanceolate 3–5-parted segms.: fls. yellow, in long-stalked heads. Armenia.

transylvánica. Ann. to 3 ft.: lvs. lyrate to pinnately-lobed, lobes linear-lanceolate: fls. creamy-white or bluish, in globular heads on long peduncles. S. E. Eu.

CEPHALOCÈREUS. *Cactaceæ.* About 50 species of tall slender-columnar spiny or bristle-bearing cacti, Fla. and N. Mex. to Ecuador and Brazil, often with long white hair or wool at or near the top: fls. small, mostly nocturnal, fleshy, often in a head-like aggregation. See *Cacti.*

With the exception of *C. senilis* the species of Cephalocereus are little known in our horticulture. They are handled in the same way as the columnar or arboreous kinds of Cereus, mostly in large collections of cacti or succulents. They are propagated by seeds and cuttings.

albispìnus: see *Pilocereus albispinus.*

alénsis. To 20 ft., branching from base, sts. slender, 12–14-ribbed; spines acicular, 10–14, to ⅝ in. long; flowering areoles woolly, hairs to 2 in. long: fls. light purple to purplish-green. Mex.

arrábidæ (*C. exerens. Cereus exerens. Pilocereus arrabidæ*). To 10 ft., often much branched at base, ribs 6–8 with areoles rather close together and having long hairs when young; spines 5–10, to 1½ in. long, brownish: fls. white, 2¼ in. long. Brazil.

brasiliénsis (*Pilocereus brasiliensis*). To 10 ft., branches slender and weak, erect becoming reclining, glaucous- to bright green; ribs 4 or 5, wing-like, obtuse; areoles close with white hairs longer than spines; radial spines 3–8, to ⅛ in. long, brown; central usually solitary, to ¾ in. long, porrect: fls. to 2 in. long. Brazil.

catingícola. To 40 ft., with short trunk and much branched top; ribs 4–5, bluish-green, intercostal spaces wider than ribs; areoles woolly; spines yellow when young, unequal, to 1⅜ in. long: fls. white, about 3 in. long. Brazil.

Celsiànus: *Oreocereus Celsianus.*

chrysacánthus (*Cereus* and *Pilocereus chrysacanthus*). To 15 ft., branching near base, glaucous; ribs 12, areoles ½ in. apart; spines 12–15, to 1½ in. long, golden-yellow becoming darker: fls. rose-red, to 3 in. long, with mass of long white hairs. Mex.

chrysomállus: *Pachycereus chrysomallus.*

chrysostèle. Similar to *C. Gounellei* from which it differs in sts. with 15–20 ribs, areoles ½–¾ in. across, radial spines 12–20, to ¾ in. long, yellow or reddish, central spines reddish with yellow tip and base. Brazil.

Cóllinsii (*Pilocereus Collinsii*). To 10 ft., branches few, to 1¾ in. diam.; ribs usually 6–8, rounded; areoles woolly, to ⅝ in. apart; spines mostly alike, unequal, to 1¾ in. long, numerous, needle-like: fls. about 2 in. long. Mex.

colombiànus (*Cereus* and *Pilocereus colombianus*). To 20 ft., branched; ribs 8, areoles with long white wool; spines 25 or more, slender: fls. pale pink, 3 in. long. Colombia.

Colúmna-Trajàni: *Pachycereus Columna-Trajani.*

comètes (*Cereus cometes*). Cylindric; ribs 12–15; areoles close together, the flowering ones with yellow hair or wool; spines ¾ in. long, pink or brownish. Mex.

Dautwítzii: *Espostoa lanata.*

Deèringii. To 35 ft., st. slender, simple or remotely branched, 9–10-ribbed; areoles short-hairy; spines 25–31, to ½ in. long: fls. white, to 2½ in. long: fr. dark red. Fla.

Dybowskii. To 15 ft., sts. much branched, erect, to 3½ in. diam.; ribs 18–26, areoles about ½ in. apart; central spines 1–2, yellow, to 1½ in. long; radial spines hidden in yellowish-white matted wool: fls. white, opening at night, to 1½ in. long: fr. pinkish, globular. Brazil.

erythrocéphalus: see *Denmoza rhodacantha.*

euphorbioìdes (*Cereus* and *Pilocereus euphorbioides*). Columnar and usually simple, to 15 ft. and more, with 8 sharp ribs and areoles close together and felted with white, the flowering ones not confluent: fls. diurnal, brownish outside, rose-red inside, tube to 2 in. long. Probably S. Amer.

exèrens: *C. arrabidæ.*

fernambucénsis: hort. name, probably *Cereus pernambucensis.*

fluminénsis. Forms clumps, sts. erect, pendent or ascending, to 7 ft. long; ribs 12–17, to ½ in. deep, angle acute; spines many, yellow, longest to 1¼ in. intermixed with bristles to 2¾ in. long: fls. white, to nearly 3 in. long: fr. bright red to purple. Brazil.

glaucéscens. St. to 2 in. thick, usually 7–9-ribbed, angles acute, light glaucous-green; areoles about ⅛ in. apart, with yellow wool and hair; radial spines 14–20, golden-yellow, to nearly ½ in. long; central spines golden-yellow to reddish-brown, usually 3–5, to ¾ in. long: fl. color not known. Brazil.

Gounéllei (*Pilocereus Gounellei* and *setosus. Cereus Gounellei*). To 8 ft., much branched, lower branches spreading or creeping; ribs 10–11, areoles ⅓ in. across, flowering ones with long white hairs; radial spines 15–24, to nearly ½ in. long, brown; central spines 3–5, amber-yellow fading to white: fls. white, to 3½ in. long. Brazil.

hapalacánthus. St. 7–9-ribbed, angles obtuse, dark green, notched; areoles about ⅝ in. apart, tufted with brown hairs to ⅛ in. long; radial spines usually 11–13, to 5/16 in. long, brown; central spines 1–2, to ½ in. long. Brazil.

Hóppenstedtii (*Cereus* and *Pilocereus Hoppenstedtii*). To 30 ft., often clambering; ribs 20 or more, areoles close together; radial spines 14–18, short, white: fls. white tipped with rose, 3 in. long. S. Mex.

keyénsis. To 18 ft., with few erect branches; ribs 9–10, very glaucous, areoles ½ in. apart; spines 15, ½ in. long, yellow, wool short and grayish: fls. brownish-purple, 2½ in. long. Fla. Keys.

lanuginòsus (*Pilocereus lanuginosus*). Tree-like, branched; ribs 9–13, bright blue, areoles woolly; spines light yellow: fls. white, green outside, 2½ in. long. Curacao.

leucocéphalus. To 17 ft. long and 4 in. diam., usually 3–15 branches arising from lower portion, usually 12-ribbed; spines 8–12, to ¾ in. long, hairs of flowering areoles to 4 in. long: fls. white, to 2½ in. long: fr. to 1¾ in. diam., dull purple. Mex.

leucostèle (*Pilocereus* and *Stephanocereus leucostele*). Cylindrical, to 10 ft. high and 4 in. diam., usually unbranched, glaucous-green; ribs 12–18, shallow; areoles to ⅝ in. apart, dense wool covering the st.; radial spines 10–20, to ⅝ in. long, white to brownish, slender; centrals 1–2, to 1¾ in. long, white to yellow: fls. white, to 2½ in. long, stigma 11-lobed and exceeding stamens. Brazil.—Cephalium usually densely white-woolly with yellow bristles to 3 in. long.

Llánosii: listed name of plant thought to be similar to *Cereus peruvianus.*

macrocéphalus (*Cereus* and *Pilocereus macrocephalus*). To 30 ft. and more, with woody trunk, simple or slightly branched; ribs 24, pale green; radial spines 12; flowering areoles with white hairs or bristles: fls. 2 in. long. Mex.

melanostèle: *Haageocereus chosicensis.*

Moritziànus (*Cereus* and *Pilocereus Moritzianus*). To 30 ft., much branched; ribs 7–10, areoles ½ in. apart, white-woolly; radial spines 6–8, to 1¼ in. long: fls. white, 2 in. long. Venezuela.

Níckelsii: *C. polylophus.*

nìger: listed name.

nóbilis (*Pilocereus nobilis*). Erect, cylindrical, to 3 in. diam., branched, dark green; ribs 5–11, rounded; areoles to ¾ in. apart, wool yellow becoming black; radial spines 7–10, to 1½ in. long, reddish-yellow becoming brownish; centrals 1–4, to nearly 2 in. long: fls. light pink within and greenish-red outside, to 2 in. long: fr. red to violet-red. W. Indies.

Pálmeri (*Cereus Palmeri. Pilocereus Houlletii*). To 18 ft., much branched; ribs 7–9, white-hairy at top, areoles ½ in. apart; radial spines 8–12, 1 in. long, brown: fls. purplish or brownish, 2½ in. long. E. Mex.

pasacàna: *Trichocereus pasacana.*

pentædróphorus (*Pilocereus pentædrophorus*). Sts. slender, usually to 15 ft., rarely to 35 ft. high, and about 4 in. diam., bluish-green; ribs 4–8, notched; areoles glabrous; spines alike, yellow, 6–12, to 1¾ in. long: fls. to 2½ in. long, tube bent near middle. Brazil.

phæacánthus (*Cereus phæacanthus. Monvillea phæacantha*). To 12 ft., branching at base; ribs usually 13; areoles ⅕ in. apart, with tufts of white wool; spines numerous, ½ in. long: fls. white, greenish-brown outside, 2½ in. long. Brazil.

piauhyénsis. Tree-like to 40 ft., trunk woody, to 20 in. diam.; branches many, usually 12–13-ribbed, slender, bluish-green; areoles about ½ in. apart, yellow, woolly, the hair to ¾ in. long; spines yellow, radials 10–15, to ½ in. long, centrals 3–5, to ¾ in. long: fls. to 1½ in. long. Brazil.

pòco: listed name; perhaps *Trichocereus poco.*

polýlophus (*Cereus Nickelsii. Pachycereus polylophus*). St. columnar, to 40 ft. tall and 14 in. diam.; ribs usually 15–40, acute, about ⅓ in. high; spines yellow tipped brown, to ¾ in. long, radials 7–9, central 1 and to 3 in. long: fls. dark red, to 2 in. long. W. Mex.

purpùreus. Unbranched, to 12 ft. or more; ribs 12–20. strongly notched, areoles white-woolly; radial spines 15 or more, to ⅝ in. long; central spines 4–6, unequal, to 2 in. long: fls. pale pink outside, white within, to 1½ in. long: fr. obconical, purplish-violet. Brazil.

Púrpusii (*Pilocereus Purpusii*). Sts. erect, to 10 ft. high and 2 in. diam., rarely branched; ribs 12, to ¼ in. high, notched or irregularly depressed; areoles about ⅓ in. apart; spines alike, swollen at base, needle-like, to 1¼ in. long, yellow becoming gray. Mex.

rhodánthus: *Arrojadoa rhodantha.*

Róbinii. To 27 ft. or more, branching profusely above the base, branches bright glaucous-green when young, to 4 in. thick; ribs 10–13; spines 15–20, to 1 in. long, yellow becoming gray: fls. brownish-green, to 2 in. long: fr. reddish-purple. Cuba.

Royènii (*Cereus Royenii*). To 20 ft., branching near base, glaucous; ribs 7–11, areoles close together and with wool when young; spines ½–2½ in. long: fls. greenish-yellow or purplish, 2 in. long. W. Indies.

Russeliànus (*Cereus* and *Pilocereus Russelianus*). To 25 ft., with woody trunk branched at top; ribs 4–6, areoles large, ½ in. apart, with white wool when young; spines 8–14, ½ in. long, dark brown becoming gray: fls. cream or pinkish, to 3½ in. long. Venezuela, Colombia.

salvadorénsis: listed name.

Sartoriànus (*Pilocereus Sartorianus. Cereus Houlletii*). To 15 ft.; ribs 7; areoles ½ in. apart, with cobwebby hairs; radial spines 7–8 or more, ½ in. long: fls. rose, to 3 in. long. Mex.

senìlis (*Cereus* and *Pilocereus senilis*). Old-Man Cactus. To 40 ft. and more, mostly simple; ribs 20–30, the areoles bearing long white bristles or hairs and aggregated into a head: fls. about 2 in. long, rose-colored. Mex.

Smithiànus (*Pilocereus Smithianus*). Erect or clambering simple or branched; ribs 9–11, areoles felted; spines 1½ in. long: fls. white, to 3 in. long. Venezuela, Trinidad.

sublanàtus: listed name.

Swártzii. To 20 ft. or more, not much branched; ribs usually 10, rounded, deeply notched; spines 8–10, or to 20 in young plants, to 1 in. long: fls. yellow tinged pink or green, to 2½ in. long. Jamaica.

Tetétzo: *Pachycereus Tetetzo.*

Trelèasii: *Lemaireocereus Treleasii.*

versícolor: *Haageocereus versicolor.*

CEPHALOPHÝLLUM. *Aizoaceæ.* A large S. African genus separated from Mesembryanthemum, having cylindrical or 3-angled lvs. with pellucid dots, borne in rosettes, and solitary terminal long-stalked fls.; petals numerous, linear; stigmas 10–20.

acùtum: *C. subulatoides.*

Álstonii (*M. Alstonii*). Lvs. to 4½ in. long and ⅓ in. wide, glaucous: fls. ruby-purple with violet anthers, to 3 in. across.

anemoniflòrum (*M. anemoniflorum*). Lvs. 1 in. long and ⅕ in. wide, glaucous-green suffused with purple: fls. salmon-colored, 2½ in. across.

confùsum (*M. confusum*). Lvs. to 1½ in. long and ⅕ in. thick: fls. golden-yellow, 1 in. across.

decípiens (*C. læve. M. decipiens*). Lvs. 2 in. or more long and ¼ in. wide, bright green: fls. yellow.

læve: *C. decipiens.*

spongiòsum (*M. spongiosum*). Lvs. to 4 in. long and ⅓ in. wide, with whitish spongy surface: fls. vermilion with yellow base, 2½ in. across.

subulatoìdes (*C. acutum. M. acutum*). Lvs. spreading, to 3 in. long and ⅓ in. wide, gray-green: fls. purple-red, to 1¾ in. across, on stalks to 3 in. long.

tricolòrum (*M. tricolorum*). Lvs. 2 in. or more long and ¼ in. thick, bright green or often reddish: fls. yellow, purple at base and reddish at tip, about 2 in. across.

CEPHALOSTÀCHYUM. *Gramineæ.* East Indian bamboo-like shrubby grasses with spikelets borne in heads or the heads panicled or clustered, stamens 6. Sometimes planted in warm countries. See *Bamboo.*

pergrácile. To 40 ft., sts. glaucous: lvs. to 1 ft. long and 1½ in. wide, rough on edges, rugose: heads about 2 in. apart in the large panicles.

CEPHALOTAXÀCEÆ. Plum-Yew Family. A small family of the southern hemisphere of which one genus, Cephalotaxus, is cult. It is composed of evergreen resinous coniferous trees or shrubs and was formerly included in Taxaceæ, from which it differs in the fertile pistillate fls. composed of several 2-ovuled carpels from which only 1–2 seeds develop; the branches are opposite and the lvs. have 2 broad glaucous-green lines beneath.

CEPHALOTÁXUS. Plum-Yew. *Cephalotaxaceæ.* Asian evergreen trees and shrubs with linear lvs. having 2 broad glaucous bands beneath, and drupe-like stalked frs. or seeds; they can be grown in N. Y. and New England. Distinguished from Taxus in the glaucous lines on under surface of lvs., the drupe-like fr. and characters of fls. For cult. see *Conifers.*

drupàcea. Japanese P. Tree to 30 ft.: lvs. 1–2 in. long, abruptly pointed: fr. green. Japan. Hort. vars. are: **fastigàta,** Spiral P., of columnar habit; **nàna,** to 6 ft. tall; **pedunculàta** (*C. Harringtonia, C. pedunculata*), Harrington P., with heads of male fls. long-stalked; hardy in sheltered positions Northeast, but grows slowly; **sinénsis,** a shrub to 14 ft., lvs. tapering acutely. China.

Fórtunii. Chinese P. Tree to 30 ft.: lvs. 2–3 in. long, tapering: fr. purple. China; hardy in sheltered positions in the Northeast, but usually remains a bush.

Harringtònia: *C. drupacea* var. *pedunculata.*

Óliveri. Shrub: lvs. closely set, 1 in. long, spiny-pointed. China.

pedunculàta: *C. drupacea* var.

CERÁSTIUM. Mouse-ear Chickweed. *Caryophyllaceæ.* Herbaceous often tufted or mat-forming annuals and perennials, usually more or less hairy and sometimes hoary, with white fls. in terminal cymes and small entire opposite lvs.; of world-wide distribution, especially abundant in temp. zones.

Cerastiums are employed in rock-gardens or for edgings in bedding and borders. They grow well under ordinary garden conditions. Propagated by divisions or by cuttings taken after flowering, also by seeds.

alpìnum. Per. to 6 in., generally silky-hairy: lvs. small: fls. white, solitary or in rather hairy few-fld. panicles, summer. Que., Lab., arctic Amer., and in alpine and arctic Eu. and Asia. Var. **grœnlándicum** is listed. Var. **lanàtum.** Very hairy, the rosettes white-woolly.

argénteum: *C. grandiflorum.*

arvénse (*C. strictum*). Starry Grasswort. Per. to 10 in., densely tufted with erect or ascending sts.: lvs. very narrow, to 1½ in. long: fls. numerous, white. Apr.–May. N. Amer., Eu., Asia. Var. **compáctum** is a low form. Var. **gaspénsis** is said to be a large-fld. form from the Gaspé Peninsula.

Bièbersteinii. Per. to 6 in., creeping and spreading: lvs. grayish-woolly, to 1½ in. long and ⅕ in. wide: fls. white. May–June. Mts. of Asia Minor.

Boissièri (*C. gibraltaricum*). Per. to 1 ft.: lvs. silvery: fls. large, white, in cymes. Spain.

cæspitòsum. Per. to 1 ft., sts. often procumbent: lvs. about ½ in. long and ⅙ in. wide: fls. white. Eu.

Colúmnæ: *C. tomentosum.*

gibraltáricum: *C. Boissieri.*

glaciàle: *C. uniflorum.*

grandiflòrum (*C. argenteum*). Per., creeping, to 8 in.: lvs. linear, grayish: fls. transparent white. E. Eu.

Lerchenfeldiànum. Erect, to 8 in.: lvs. lanceolate, about ½ in. long and ¼ in. wide, ciliate: fls. white, the cymes usually many-fld. Eu.

stríctum: *C. arvense.*

Thómasii. Low per., with sts. 1–2 fld., peduncle very short: lower lvs. obovate, upper ones oblong. Alpine region, Cent. Italy.

tomentòsum (*C. Columnæ*). Snow-in-Summer. Per., creeping, branching, to 6 in., grayish-woolly: lvs. to ¾ in. long and ⅛ in. wide: fls. white, rather large, early summer. Eu.

uniflòrum (*C. glaciale*). Per. to 3 in.: lvs. to ¾ in. long and ⅙ in. wide: fls. white, to ½ in. across, in 1–3-fld. cymes, summer. Eu.

villòsum: the plants cult. under this name are probably *C. alpinum.*

CERASUS: *Cherry;* see *Prunus.*

CERATOCHLOA PENDULA: *Bromus unioloides.*

CERATÒNIA. *Leguminosæ.* One evergreen tree to 50 ft., with pinnate lvs. of 4–6 round or obovate shining lfts. to 4 in. long, small red fls. in short lateral racemes from old branchlets, and flattened leathery pods to 1 ft. long. **C. Síliqua,** Carob, St. Johns-Bread, from the E. Medit. region, has been intro. into S. Calif. and Fla. for the pods which are eaten by livestock and as human food; a special dehydrated product has been developed as a breakfast food and for other uses.

The carob sometimes withstands a few degrees of frost but is generally adapted to the same range as the orange. It will grow on any well-drained soil, and trees in orchards should be planted 35–40 feet apart. Propagated by seeds, preferably under glass, and the seedlings afterwards budded; or by cuttings over bottom heat.

CERATOPÉTALUM. *Cunoniaceæ.* Australian resinous trees or shrubs with opposite lvs. of 1–3 digitate lfts. and small white, rose or yellow fls. in terminal cymes or panicles; grown under glass or out-of-doors in the S. Propagated by cuttings of half-ripened wood.

apétalum. Tree to 60 ft., bark silvery: lfts. usually 1, ovate-lanceolate, to 5 in. and more long, toothed: fls. without petals, calyx to ¼ in. long in fr.

gummíferum. Tree to 40 ft.: lfts. 3, lanceolate, to 1½ in. and more long, toothed: fls. with deeply lobed petals, calyx to ½ in. long in fr.

CERATOPHÝLLUM, the only genus of *Ceratophyllaceæ.* One submerged aquatic herb, widely distributed in ponds and lakes in temp. and trop. regions, sometimes grown in aquaria for its foliage; fls. not showy. **C. demérsum.** Hornwort. Lvs. forked into thread-like divisions, to 1 in. long, in whorls: fls. minute, unisexual, without perianth, solitary and sessile in the axils: fr. oval, with a spine-like beak.—Of easy cult., pieces being transferred from ponds.

CERATÓPTERIS. Water-Fern. Floating-Fern. The only genus of *Ceratopteridaceæ.* The only true aquatic ferns, growing in the mud with the sterile fronds often floating, the fertile fronds erect, 2–4-pinnate.

These ferns are useful in ponds and aquaria, planted in pots and submerged slightly. Propagated by buds which are formed on all parts of the fronds.

cornùta: *C. thalictroides.*

pteridoìdes. Sterile fronds to 10 in. long, short-stalked, irregularly lobed, floating; fertile fronds erect, to 16 in. long, divided into linear segms. Fla. to Brazil.

thalictroìdes (*C. cornuta*). Sterile fronds long-stalked, 1–2-pinnatifid into triangular segms., not floating; fertile fronds similar but segms. linear. Old World tropics.

CERATOSTÍGMA. *Plumbaginaceæ.* Per. herbs or shrubs with alternate simple lvs. and blue or rose salver-shaped fls. in terminal clusters or heads; grown in the border. Propagated by division and cuttings.

Gríffithii. Low shrub, much branched, rusty-hairy: lvs. spatulate, with red margins: fls. blue. India.

Larpéntiæ: *C. plumbaginoides.*

plumbaginoìdes (*Plumbago Larpentiæ*). Per. to 1 ft., diffuse: lvs. obovate, to 3 in. long, the margins ciliate: fls. deep blue, ½ in. across. Aug.–Sept. China; hardy N.

Willmottiànum. Shrub to 5 ft.: lvs. rhombic, to 2 in. long, ciliate: fls. bright blue with rosy tube, to ¾ in. across. July–Nov. China.

CERATOTHÈCA. *Pedaliaceæ.* Small genus of African annuals having membranous toothed lvs. and solitary zygomorphic fls. in lf.-axils. One species is cult., **C. tríloba.** To 6 ft. tall, simply branched, with hairy obtusely 4-sided sts.: lvs. ovate-cordate to triangular and 3-lobed, to 6 in. long, coarsely crenate to entire: fls. lilac, striped purple in throat, to 3 in. long: fr. a caps. to 1 in. long, pubescent. S. Afr.

CERATOZÀMIA. *Cycadaceæ.* Mexican palm-like cycads with stiff pinnate lvs. borne in a whorl at top of short trunk, the fls. in cones and the cone-scales horned; 6 species, one sometimes grown in the greenhouse or out-of-doors in warm regions. For cult. see *Cycas.*

latifòlia. To 3½ ft. or more; lvs. nearly 3 ft. long, with 15–20 pairs of lanceolate lfts. to 5 in. long and 1⅜ in. wide, petiole prickly.

longifòlia: *C. mexicana.*

mexicàna (*C. longifolia*). To 4 or rarely 6 ft., trunk short: lvs. about 3 ft. long, with 15–20 pairs of lfts. to 12¾ in. long and 1 in. wide, petiole prickly.

CERBERA THEVETIA: *Thevetia nereifolia.*

CERCIDIPHYLLÀCEÆ. Cercidiphyllum or Katsura-Tree Family. Only the genus Cercidiphyllum comprises this family which is separated from Trochodendraceæ: lvs. opposite, with stipules: carpel in the fl. 1.

CERCIDIPHÝLLUM. *Cercidiphyllaceæ.* One odd deciduous tree sometimes attaining 100 ft., from Japan. **C. japónicum.** Katsura-Tree. Lvs. orbicular or ovate, to 4 in. long, cordate at base, obtuse, wavy-toothed, palmately veined, becoming yellow or scarlet in autumn: fls. unisexual, before the lvs.: fr. a pod about ¾ in. long. Japan. Var. **sinénse** is a taller form from China.—The katsura-tree grows best in rich moist soil; hardy in N. Y. and Cent. New England. Propagated by seeds, cuttings of green wood in spring, or by layers.

CERCÍDIUM. *Leguminosæ.* A few trees and shrubs in the warmer parts of Amer., with alternate bipinnate deciduous lvs., sharp spines and green-barked branches: fls. not papilionaceous, nearly regular, yellow, in short axillary racemes: pods flattish, linear or oblong.

Torreyànum. Palo Verde. Characteristic small bushy tree in the arid regions of Mex., Ariz., S. Calif. and sometimes planted in its region: to 25 ft., leafless most of the year, the foliage appearing in spring and soon falling, sometimes a second leafage in autumn: fls. to ¾ in. across: pods to 3 in. long.

CÉRCIS. Redbud. Judas-Tree. *Leguminosæ.* Small trees and shrubs native in N. Amer., S. Eu. and Asia, with simple entire broad lvs., pink or red imperfectly papilionaceous fls. in racemes or clusters appearing in spring before or with the lvs., and flattened pods having narrow wings on the ventral suture.

Redbuds thrive in fertile sandy loam; only *C. canadensis* is hardy north of New York. Propagated by seeds sown in spring in heat; by layers, greenwood cuttings in spring, or *C. chinensis* by soft cuttings in summer under glass.

canadénsis. Shrub or tree to 40 ft.: lvs. roundish, abruptly acute: fls. rosy-pink, ½ in. long, in clusters: pods to 3½ in. long. N. J. to Fla. and Tex. Var. **álba** has white fls. and **plèna** double fls.

chinénsis (*C. japonica*). Tree to 50 ft.: lvs. roundish, abruptly acute: fls. purplish-pink, ¾ in. long, in clusters: pods to 5 in. long. China, Japan. Vars. **álba** and **arbòrea** are listed.

japónica: *C. chinensis.*

occidentàlis. Shrub to 15 ft.: lvs. kidney-shaped, notched or obtuse at tip: fls. reddish, ½ in. long, in clusters: pods 2½ in. long. Calif.

racemòsa. Tree to 30 ft.: lvs. roundish, abruptly acute: fls. rosy-pink, ½ in. long, in many-fld. racemes: pods to 4 in. long. Cent. China.

renifórmis. Shrub or tree to 40 ft.: lvs. reniform, blunt-pointed: fls. reddish, ½ in. long, in clusters: pods to 4 in. long. Tex., N. Mex.

Siliquástrum. Shrub or tree to 40 ft.: lvs. roundish, obtuse or notched at tip: fls. purplish-rose, ¾ in. long, in clusters: pods to 4 in. long. S. Eu., W. Asia. Var. **álba** has white fls.

CERCOCÁRPUS. MOUNTAIN MAHOGANY. *Rosaceæ.* Evergreen shrubs or partially deciduous small trees native in W. N. Amer., with simple lvs., small greenish or reddish fls. without petals, solitary or clustered, in spring and summer, and fr. an achene with a long feathery style.

Sometimes planted as shrubbery in regions of which they are native or in similar places; they succeed in dry soils and mostly with sunny exposure. Propagated by seeds or cuttings.

betulæfòlius: *C. betuloides.*

betuloìdes (*C. betulæfolius*). To 30 ft.: lvs. obovate, to 2 in. long, toothed, pale beneath. Calif.

ledifòlius. To 40 ft.: lvs. lanceolate, to 1 in. long, with entire revolute margins, pubescent beneath. Wash. to Calif. and Ariz.

montànus (*C. parvifolius*). To 6 ft.: lvs. obovate, to 2 in. long, toothed, pale beneath, pubescent both sides. S. D. to New Mex.

parvifòlius: *C. montanus.*

Tráskiæ. To 20 ft.: lvs. broadly ovate, to 2 in. long, toothed toward apex, densely white-tomentose beneath. Catalina Isl.

CÈREUS (*Piptanthocereus*). *Cactaceæ.* Some 900 names have been used in Cereus, a genus formerly held to include many inharmonious species; as now defined, it has about two dozen species in S. Amer. and W. Indies: mostly arborescent columnar plants (but sometimes spreading or prostrate), often massive, usually branching, strongly angled or ribbed, areoles spiny and more or less short-woolly but not bearing long hairs: fls. funnelform, mostly white, nocturnal, tube nearly or quite naked on outside: fr. naked. See *Cacti.*

The word Cereus is most popularly known in the name "night-blooming cereus," but the plants so designated are now placed in other genera. The kinds of true cereus are not much known in cultivation with us, and mostly under glass. The flowers are not very attractive or striking. The plants are mostly large and columnar. They propagate readily by seeds and cuttings.

æ̀thiops (*C. cærulescens*). Bush-like, to 6 or 7 ft., sts. bluish-green to purplish; ribs 7 or 8, areoles large and black: fls. 7 in. or more long and about 5 in. across, white. Brazil.

alacriportànus (*C. peruvianus* var. *alacriportanus. C. paraguayensis*). Tall and columnar, to 6 ft.; ribs mostly 5 and strongly compressed, the areoles nearly or quite 1 in. apart; spines 6–9 and spreading: fls. 8 or 9 in. long and 4 in. broad, white with rosy tinge. S. Brazil, Paraguay.

argentinénsis. Erect, to 70 ft. tall, tree-like and much branched, sts. to 6 in. diam.; ribs 4–5, thin, intervals wide, about 2 in. deep; spines brownish, radials 5–8, to 2 in. long, centrals 1–2, to 4 in. long: fls. white inside, to 10 in. long. Argentina.

aùreus: botanically a synonym of *C. nobilis,* a species not known to be in cult., but applied to several hort. forms of various genera.

azùreus (*C. Seidelii*). Slender and flexuose, 3–4 ft. high and 1 in. diam., bluish; ribs 6 or 7, areoles several inches apart; radial spines 8–12: fls. 4–5 in. long, white. Brazil.

cæruléscens: *C. æthiops.*

cæ̀sius. Cylindrical, to about 20 ft. tall and 7 in. diam.; ribs 5–6, acute, narrow and wing-like, notched; spines yellowish-brown, radials 7–9, spreading, centrals 4–7, to 4 in. long: fls. white. S. Amer.

chalybæ̀us. To 10 ft.; ribs 6 and very high, areoles distant; radial spines 7 or more, dark brown: fls. white, pinkish outside, 8 in. long. Argentina.

Chìldsii: *C. hexagonus.*

Dayámii. Erect or tipped, much branched and tree-like, to 80 ft. tall, sts. to 8 in. diam.; ribs 5–6, thin, about 1½ in. high, notched; spines 3–4, to ½ in. long, orange to reddish-brown: fls. white, to 10 in. long. Argentina.

Fórbesii: *C. validus.*

formòsus: *C. pernambucensis.*

glaùcus: *C. Jamacaru.*

Hankeànus: *C. validus.*

hexagònus (*C. lepidotus. C. Childsii*). To 45 ft. with trunk 1 ft. diam., branches erect; ribs usually 6 with wavy margins, areoles ¾ in. apart and felted; spines on old branches 8–10 or more and to 2 in. long: fls. white tinged purple outside, to 10 in. long. W. Indies, N. S. Amer.

Hildmanniànus. Tall and columnar, to 15 ft., often much branched; ribs 5 or 6, young joints dark blue, areoles distant and developing a few spines: fls. to 9 in. long, white, inner segms. obtuse. Brazil.

hórridus: *C. Jamacaru.*

Huntingtoniànus. To 12 ft. high, much branched at base; ribs 6–8, acutish, to 1¼ in. high; radial spines 1–4, to ½ in. long, grayish; central 1, to 4 in. long, often absent: fls. pink inside, to 1½ in. diam., inner segms. somewhat fringed. Probably S. Amer. but known only in cult.

Jamácaru (*C. glaucus. C. horridus*). To 30 ft., very much branched, with short woody trunk, the top compact of upright branches, joints blue when young; ribs 4–6, areoles large and about 1 in. apart; spines usually many: fls. 1 ft. long, white, green outside, ovary purplish. Brazil. Var. **monstròsus** is listed.

jugatiflòrus. To 10 ft. high and 1 ft. diam.; ribs 6–8, narrow, subcrenate; radial spines 5–7, acicular, to ¼ in. long; centrals 1–3, gray-black: fls. whitish within, 6–9 in. long: fr. yellowish, about 3 in. long. Described from cult.

lepidòtus: *C. hexagonus.*

microspérmus. Trunk to 1 ft. thick, with slender branches; ribs 20, areoles close together and tomentose; spines 12–16 or more, ½ in. long, golden-brown. Peru.

milésimus: *C. pernambucensis.*

monstròsus: *C. variabilis.*

Monvilleànus. A species of uncertain botanical affinity: columnar, branching; ribs 19; radial spines about 20. S. Amer.

paraguayénsis: *C. alacriportanus.*

perlùcens. Erect and branched to 10 ft. or more, sts. blue-green to green; ribs 5–6, thick, straight, somewhat notched; spines 5–10, about ⅝ in. long, reddish-brown: fls. white, to 6 in. long. Brazil.

pernambucénsis (*C. formosus. C. milesimus*). To 1 ft. or more, often prostrate, making clumps to 15 ft. across; ribs 3–5, very thick and prominent, areoles ½ in. apart with white wool; spines 4–10, to 2 in. long, yellowish: fls. white. Coast, Brazil, Uruguay. Var. **monstròsus** is a cristate form.

peruviànus. Tall, to 40 ft. or more, much branched and tree-like, branches usually green but sometimes glaucous; ribs 4–9; spines needle-like: fls. about 6 in. long, outer segms. red or brownish, inner white. S. E. S. Amer. Var. **monstròsus** has ribs broken into irregular tubercles.

Pitahàya: *C. variabilis.*

Roézlii. Said to be columnar, with sts. 9-ribbed, radial spines 9–12 and a longer solitary central spine. Peru or Ecuador. Probably a Lemaireocereus or Trichocereus.

Seìdelii: *C. azureus.*

stenogònus. To 25 ft., tree-like; ribs 4–5; spines 2–3 and 1¾ in. long: fls. rose, to 9 in. long. Paraguay, Argentina.

tetragònus. To 6 ft., much branched; ribs usually 4, areoles close together and white-woolly; radial spines 5–6, ⅓ in. long: fls. reddish, 5 in. long. Brazil.

válidus (*C. Hankeanus. C Forbesii*). Shrubby, 6 ft. or more, somewhat branched, glaucous when young; ribs 4–8 and obtuse; radial spines 5 and short and stout: fls. funnelform, reddish outside, white or reddish inside. Argentina.

variábilis (*C. Pitahaya. C. monstrosus* of hort.). Much branched and shrub-like, to 14 ft. high; ribs 3–5, acute, to 1½ in. high, dull green; spines yellowish-brown, radials 5–7, to ⅝ in. long, stout, centrals 1–2, to ¾ in. long, straight: fls. white, to 8 in. long. Brazil, Uruguay.

xanthocárpus. To 20 ft., tree-like, very spiny at top; ribs 4–6, high and narrow, areoles to 1½ in. apart and white-woolly; spines 3–4: fls. white, greenish outside, 5 in. long: fr. yellow. Paraguay.

Other names in Cereus may now be discovered in the following places:

acanthùrus: *Borzicactus acanthurus.*

ácifer: *Echinocereus acifer.*

adscéndens: *Harrisia adscendens.*

aggregàtus: *Echinocereus coccineus.*

alamosénsis: *Rathbunia alamosensis.*

albispìnus: *Pilocereus albispinus.*

amecaménsis: *Heliocereus amecamensis.*

aureispìnus: listed, perhaps *Parodia aureispina.*

aûreus: *Erdisia Meyenii.*

Báckebergii: *Pilocereus Backebergii.*

Bankiànus: listed name.

Baùmannii: *Cleistocactus Baumannii.*

bavòsus: *Lemaireocereus Hollianus.*

baxaniénsis: *Acanthocereus pentagonus.*

Benéckei: *Lemaireocereus Beneckei.*

Berlandièri: *Echinocereus Blanckii.*

bifórmis: *Disocactus biformis.*

Biólleyi: *Weberocereus Biolleyi.*

Blánckii: *Echinocereus Blanckii.*

Boéckmannii: *Selenicereus Boeckmannii.*

boliviànus: perhaps referable to *Trichocereus macrogonus.*

Bonplándii: *Harrisia Bonplandii.*

brachypétalus: *Corryocactus brachypetalus.*

brevístylus: *Corryocactus brevistylus.*

Brídgesii: *Trichocereus Bridgesii.*

Broòkei: *Harrisia Brookei.*

cæspitòsus: *Echinocereus Reichenbachii.*

calcaràtus: *Hylocereus calcaratus.*

candelàbrum: *Lemaireocereus Weberi.*

candelàris: *Browningia candelaris.*

cándicans: *Trichocereus candicans.*

Cartwrightiànus: *Lemaireocereus Cartwrightianus.*

Cávendishii: *Monvillea Cavendishii.*

Celsiànus: *Oreocereus Celsianus.*

cephalomacróstibas: *Trichocereus cephalomacrostibas.*

Chénde: *Lemaireocereus Chende.*

Chíchipe: *Lemaireocereus Chichipe.*

chiloénsis: *Trichocereus chiloensis.*

Chiotílla: *Escontria Chiotilla.*

chloránthus: *Echinocereus chloranthus.*

chosicénsis: *Haageocereus chosicensis.*

chrysacánthus: *Cephalocereus chrysacanthus.*

chrysomállus: *Pachycereus chrysomallus.*

cinеráscens: *Echinocereus cinerascens.*

coccíneus: *Echinocereus coccineus; Heliocereus elegantissimus, Mediocactus coccineus.*

Còchal: *Myrtillocactus Cochal.*

colombiànus: *Cephalocereus colombianus.*

colubrìnus: *Cleistocactus Baumannii.*

Colúmna-Trajàni: *Pachycereus Columna-Trajani.*

comètes: *Cephalocereus cometes.*

compispìnus: listed name.

conglomeràtus: *Echinocereus conglomeratus.*

coniflòrus: *Selenicereus coniflorus.*

conoídeus: *Echinocereus conoideus.*

coquímbanus: *Trichocereus coquimbanus.*

Corỳne: *Stetsonia Coryne.*

costaricénsis: *Hylocereus costaricensis.*

crímsonii: *Aporocactus Mallisonii.*

ctenoìdes: *Echinocereus ctenoides.*

cuzcoénsis: *Trichocereus cuzcoensis.*

Damaziòi: *Arthrocereus microsphæricus.*

dasyacánthus: *Echinocereus dasyacanthus.*

Daútwitzii: *Espostoa lanata.*

decúmbens: *Haageocereus decumbens.*

defíciens: *Lemaireocereus deficiens.*

dél Moràlii: *Lemaireocereus Chende.*

Donkelaàri: *Selenicereus Donkelaari.*

dùbius: *Echinocereus dubius.*

Dumortièri: *Lemaireocereus Dumortieri.*

ebúrneus: *Lemaireocereus griseus.*

Émoryi: *Bergerocactus Emoryi.*

Éngelmannii: *Echinocereus Engelmannii.*

enneacánthus: *Echinocereus enneacanthus.*

erióphorus: *Harrisia eriophora.*

Erùca: *Machærocereus Eruca.*

erythrocéphalus: *Denmoza rhodocantha.*

euphorbioìdes: *Cephalocereus euphorbioides.*

exèrens: *Cephalocereus arrabidæ.*

Faischeròa: listed name.

fasciculàris: *Trichocereus fascicularis.*

Faustiànus: probably *Borzicactus Faustianus.*

Féndleri: *Echinocereus Fendleri.*

fernambucénsis: catalogue name for *Cereus pernambucensis.*

flagellifórmis: *Aporacactus flagelliformis.*

fossulàtus: *Oreocereus Celsianus* var. *foveolatus.*

Frìcii: *Pilocereus Fricii.*

fulgidus: *C. Maynardii.*

Fúnkii: *Trichocereus chiloensis.*

gemmàtus: *Lemaireocereus marginatus.*

geométrizans: *Myrtillocactus geometrizans.*

gigantèus: *Carnegiea gigantea.*

gladiàtus: *Trichocereus candicans.*

glycimórphus: *Echinocereus glycimorphus.*

gonacánthus: *Echinocereus triglochidiatus.*

Gounéllei: *Cephalocereus Gounellei.*

grácilis: *Harrisia gracilis.*

grandiflòrus: *Selenicereus grandiflorus.*

Gréggii: *Peniocereus Greggii.*

gríseus: *Lemaireocereus griseus.*

guatemalénsis: *Nyctocereus guatemalensis.*

gummòsus: *Machærocereus gummosus.*

hamàtus: *Selenicereus hamatus.*

Hássleri: *Mediocactus coccineus.*

Herreraànus: listed name.

Hertzogiànus: listed name.

Hirschtiànus: *Nyctocereus Hirschtianus.*

Holliànus: *Lemaireocereus Hollianus.*

hondurénsis: *Selenicereus hondurensis.*

Hóppenstedtii: *Cephalocereus Hoppenstedtii.*

horríbilis: *Acanthocereus horribilis.*

hórridus: *Cereus Jamacaru.*

Hoúlletii: *Cephalocereus Sartorianus.*

huáscha: *Trichocereus huascha.*

hýstrix: *Lemaireocereus hystrix.*

Irigoyènii: *Oreocereus Trollii.*

Júsbertii: *Harrisia Jusbertii.*

lætus: *Lemaireocereus lætus.*

lamprochlòrus: *Trichocereus lamprochlorus.*

Lauterbáchii: allied to *Monvillea Cavendishii* but not understood botanically.

Lemàirei: *Hylocereus Lemairei.*

Leònii: *Leptocereus Leonii.*

léptophis: *Aporocactus leptophis.*

litoràlis: *Trichocereus litoralis.*

longisètus: *Echinocereus longisetus.*

longispìna: hort. name, possibly referable to *Trichocereus strigosus* var.

Macdónaldiæ: *Selenicereus Macdonaldiæ.*

macrocéphalus: *Cephalocereus macrocephalus.*

macrogònus: *Trichocereus macrogonus.*

Mállisonii: *Aporocactus Mallisonii.*

mamillàtus: *Echinocereus mamillatus.*

marginàtus: *Lemaireocereus marginatus.*

Martiànus: *Aporocactus Martianus.*

Mártinii: *Harrisia Martinii.*

Máynardii (*C. fulgidus*). Hybrid between *Selenicereus grandiflorus* and *Heliocereus speciosus;* fls. scarlet, to 7 in. across.

melanostèle: *Haageocereus chosicensis.*

melanótrichus: *Corryocactus melanotrichus.*

microcárpus: listed name.

microsphǽricus: *Arthrocereus microsphæricus.*

mojavénsis: *Echinocereus mojavensis.*

monacánthus: *Hylocereus monacanthus.*

Moritziànus: *Cephalocereus Moritzianus.*

Múnzii: *Echinocereus Munzii.*

Náshii: *Harrisia Nashii.*

Níckelsii: *Cephalocereus polylophus.*

nycticállus: *Selenicereus pteranthus.*

obtusángulus: *Epiphyllanthus microsphæricus.*

ocampònis: *Hylocereus ocamponis.*

octacánthus: *Echinocereus octacanthus.*

Óstenii: listed name.

pacalaénsis: perhaps *Haageocereus pacalaensis.*
Pálmeri: *Cephalocereus Palmeri.*
pasacàna: *Trichocereus pasacana.*
paucispìnus: *Echinocereus triglochidiatus.*
pécten-aboríginum: *Pachycereus pecten-arboriginum.*
pectinàtus: *Echinocereus pectinatus.*
pellùcidus: *Harrisia Fernowii.*
pénsilis: *Echinocereus pensilis.*
pentagònus: *Acanthocereus pentagonus.*
pentálophus: *Echinocereus pentalophus.*
phæacánthus: *Cephalocereus phæacanthus.*
phatnospérmus: *Monvillea phatnosperma.*
phœníceus: *Echinocereus coccineus.*
platinospìnus: *Borzicactus platinospinus.*
pòco: see *Trichocereus poco.*
polyacánthus: *Echinocereus polyacanthus.*
polýlophus: *Cephalocereus polylophus.*
polyrhìzus: *Hylocereus polyrhizus.*
pomanénsis: *Harrisia pomanensis.*
portoricénsis: *Harrisia portoricensis.*
Posélgeri: *Wilcoxia Poselgeri.*
Prínglei: *Pachycereus Pringlei.*
procúmbens: *Echinocereus pentalophus.*
pruinòsus: *Lemaireocereus pruinosus.*
pteránthus: *Selenicereus pteranthus.*
pseudomelanostèle: *Haageocereus pseudomelanostele.*
quadricostàtus: *Leptocereus quadricostatus.*
queretaroénsis: *Lemaireocereus queretaroensis.*
Reichenbachiànus: *Echinocereus Reichenbachii.*
remolinénsis: *Pilocereus remolinensis.*
repándus: *Harrisia gracilis.*
rhodacánthus: *Denmoza rhodacantha.*
rhodánthus: *Arrojadoa rhodantha.*
Roèmeri: *Echinocereus coccineus* and *E. octacanthus.*
Roètteri: *Echinocereus Roetteri.*
rostràtus: *Selenicereus hamatus.*
Royènii: *Cephalocereus Royenii.*
Russeliànus: *Cephalocereus Russelianus.*
Schóttii: *Lophocereus Schottii.*
Schránkii: *Heliocereus Schrankii.*
sciùrus: *Echinocereus sciurus.*
senìlis: *Cephalocereus senilis.*
serpentìnus: *Nyctocereus serpentinus.*
setàceus: *Mediocactus coccineus.*
Shàferi: may be *Lobivia Shaferi* or *Trichocereus Shaferi.*
Silvéstrii: *Chamæcereus Silvestrii.*
Smíthii: *Aporocactus Mallisonii.*
sonorénsis: *Rathbunia alamosensis.*
Spachiànus: *Trichocereus Spachianus.*
speciosíssimus; speciòsus: *Heliocereus speciosus.*
Spegazzínii: *Monvillea Spegazzinii.*
spinibárbis: *Eulychnia spinibarbis.*
spinulòsus: *Selenicereus spinulosus.*
spléndens: *Monvillea Cavendishii.*
squarròsus: *Erdisia squarrosa.*
stellàtus: *Lemaireocereus stellatus.*
stenópterus: *Hylocereus stenopterus.*
stramíneus: *Echinocereus stramineus.*
Straùssii: *Cleistocactus Straussii.*
striàtus: *Wilcoxia striata.*
strigòsus: *Trichocereus strigosus.*
supérbus: *Heliocereus superbus.*
tephracánthus: *Trichocereus tephracanthus.*
Terschéckii: *Trichocereus Terscheckii.*
testùdo: *Deamia testudo.*
Tetétzo: *Pachycereus Tetetzo.*
texénsis: *Echinocereus Reichenbachii* and *E. papillosus.*
thelegonoìdes: *Trichocereus thelegonoides.*
thelegònus: *Trichocereus thelegonus.*
Thúrberi: *Lemaireocereus Thurberi.*
tortuòsus: *Harrisia tortuosa.*
Trelèasei: *Lemaireocereus Treleasei.*
triangulàris: *Hylocereus triangularis.*
tricostàtus: *Hylocereus undatus.*
triglochidiàtus: *Echinocereus triglochidiatus.*
Tróllii: *Oreocereus Trollii.*
tuberòsus: *Wilcoxia Poselgeri.*
undàtus: *Hylocereus undatus.*
usitàtus: listed name.
vàgans: *Selenicereus vagans.*
versícolor: *Haagaocereus versicolor.*
viridiflòrus: *Echinocereus viridiflorus.*
Weberbaùeri: *Trichocereus fascicularis.*
Wéberi: *Lemaireocereus Weberi.*
Weingartiànus: *Leptocereus Weingartianus.*
Werdermanniànus: probably *Trichocereus Werdermannianus.*

CERIMAN: *Monstera deliciosa.*

CERÍNTHE. HONEYWORT. *Boraginaceæ.* Old World herbs, often glabrous and glaucous, with alternate simple lvs. and yellow fls. among leafy bracts in terminal racemes or cymes; ovary in 2 parts but style undivided. Of easy cult. Propagated by seeds.

màjor. Ann. to 1 ft.: lvs. rough and ciliate: fls. purplish at top, the bracts showy. Medit. region.

retórta. Ann. to 2 ft.: lvs. glaucous, often spotted with white or red: fls. tipped with purple, the bracts purple. Greece.

CERNUOUS: drooping; declining somewhat from the perpendicular.

CEROCHLÁMYS. *Aizoaceæ.* One of the Mesembryanthemum group allied to Punctillaria but differing in the caps. having only 5 valves and other technical characters; one species in S. Afr. **C. trigòna.** To 2 in., stemless or nearly so: lvs. to ¾ in. broad and thick, obtusely 3-angled, covered with waxy secretion: fls. pink, 1¼ in. across.

CEROPÈGIA. *Asclepiadaceæ.* Herbs or subshrubs, sometimes twining, with opposite lvs. (sometimes lacking) and tubular fls. mostly in axillary clusters; corolla tubular and often inflated at base, crown joined to the staminal tube; follicles slender; native in trop. Asia, Afr. and Malaya; grown in the greenhouse.

They grow in soil composed of loam, leaf-mold or peat, and sand. Propagated by cuttings in spring over bottom heat.

Bárklyi. Sts. erect and sometimes twining, to 1½ ft. long: lvs. linear to lanceolate, to 1¼ in. long, fleshy, dark green with whitish veins: fls. greenish veined with purple-brown, corolla-tube to ⅔ in. long, 2–3 together. S. Afr.

bulbòsa. Sts. twining: roots tuberous: lvs. very variable, from narrowly linear to orbicular, to 8 in. long: fls. greenish outside, purple within, to 1 in. long; infl. 3–5-fld. W. India.

caffròrum. Sts. twining: lvs. linear to ovate-lanceolate, to 1 in. long, fleshy, glabrous: fls. green outside with purple lines, purplish-black within, to ½ in. long, lobes ciliate. S. Afr.

débilis. Sts. twining, to 4 ft. long: lvs. partially cylindrical, to 1¼ in. long: fls. greenish marked with purple, corolla-tube to ¾ in. long, 1–3 together. Trop. Afr.

dichótoma. Succulent subshrub to 3½ ft., sts. to ½ in. diam., internodes to 4 in. long: lvs. linear, to 1¾ in. long and ⅙ in. wide, early deciduous: fls. pale yellow, inconspicuous, in clusters of 3–6 in axils of fallen lvs. Canary Isls.

fúsca. Shrub to 1½ ft. or more: lvs. soon falling, linear, to 2 in. long: fls. dull reddish-brown with light yellow crown. Canary Isls.

hastàta. Sts. twining: lvs. linear- to ovate-hastate, to 1¼ in. long: fls. purple with darker veins, to ½ in. long; corona may be whitish. S. Afr.

Meỳeri. Sts. twining, to 4 ft. tall: roots somewhat tuberous: lvs. ovate to lanceolate, to 3 in. long, base often cordate, somewhat hairy, margin toothed or lobed: fls. greenish-violet, to 2 in. long. S. Afr.

radìcans. Sts. prostrate and creeping: lvs. ovate or orbicular, to 1¾ in. long, fleshy: fls. greenish or whitish spotted with purple, lobes purple-brown, corolla-tube to 2 in. long, 1–2 together. S. Afr.

stapeliæfórmis. Sts. decumbent or trailing: lvs. rudimentary, about $\frac{1}{12}$ in. long: fls. white marked with purple, corolla-tube to 1¾ in. long, 1–several together. S. Afr.

Thórncroftii. Twining per.: lvs. ovate to elliptic-ovate, to 2½ in. long, somewhat fleshy, glabrous, margin wavy: fls. white with small purplish-red blotches, corolla-tube 1 in. long, inflated at base, lobes linear to ½ in. long, arched with tips almost fused together, margins strongly reflexed producing an inflated balloon-like structure. Transvaal.

Woòdii. Sts. trailing or prostrate: lvs. heart-shaped, to ⅔ in. long: fls. light purple or pink, to ¾ in. long, usually 2 together. Natal.

CEROPTERIS: *Pityrogramma.*

CEROTHAMNUS: *Myrica.*

CERÓXYLON. *Palmaceæ.* Tall unarmed feather-palms of the Andes from Venezuela and Colombia to Peru, at high altitudes; monœcious or polygamous, with long paniculate spadices among the lvs.; species perhaps 5: lvs. terminal, making a heavy crown: fls. large; stamens 9–15: fr. a red or purplish berry, 1 in. or less diam. For cult. see *Palm.*

andícola. Wax Palm. Very tall, the trunk ringed and incrusted with wax, swollen at or above the middle: lvs. to 20 ft. long; pinnæ many, linear, acuminate, bifid at apex, deep green above, densely silvery-tomentose underneath: fr. purplish.—This tree has been intro. into S. Calif., but with only indifferent success; not regularly cult. in U. S.

CESPITOSE, CÆSPITOSE: matted; growing in tufts or dense clumps; said of low plants that make mats or turf of their basal growths.

CÉSTRUM. *Solanaceæ.* Shrubs and small trees grown in warm countries and under glass in northern latitudes for the axillary or terminal cymes of bright small tubular mostly fragrant fls., red, yellow, greenish or white, blooming from Jan. to Apr.: lvs. simple, entire and usually narrow, deciduous or persistent: fr. a small berry: native in American tropics.

Propagated by cuttings in February or early March and kept in a warm temperature; also by seed when obtainable.

aurantìacum. Half-climbing shrub: lvs. oval, to 4 in. long: fls. in a terminal panicle, orange-yellow, 1 in. long, the lobes strongly reflexed. Guatemala.

coccíneum: color form of *C. fasciculatum.*

diúrnum. Day-Jessamine. Shrub to 15 ft.: lvs. oblong or oval, to 3½ in. long, thick and evergreen, glossy above: fls. white, ½ in. long, the lobes reflexed, fragrant by day, in short clusters on long axillary sts. W. Indies.—Frequently planted far S. even along the coast.

élegans: *C. purpureum.*

fasciculàtum. Differs from *C. purpureum* in the broader lvs. to 2½ in. wide, larger purplish-red fls. in compact clusters usually subtended by lvs. Mex. Var. **Néwellii** (*C. Newellii*), fls. crimson, large, free-blooming; foliage more glandular.

Néwellii: *C. fasciculatum* var.

noctúrnum. Night-Jessamine. Shrub to 12 ft.: lvs. oblong-ovate or oval, to 8 in. long, more or less shining on both sides: fls. greenish-white to cream-colored, ¾ in. long, the pointed lobes erect or spreading, very fragrant at night, in axillary clusters, blooming at intervals throughout the year. W. Indies.

Párqui. Willow-leaved Jessamine. Shrub to 6 ft.: lvs. lanceolate, to 6 in. long: fls. greenish-white to greenish-yellow, 1 in. long, and pointed lobes spreading, fragrant at night, in profuse axillary and terminal clusters. Chile; probably the hardiest.

purpùreum (*C. elegans. Habrothamnus elegans*). Shrub to 10 ft. or more, somewhat climbing, branches soft-hairy: lvs. ovate to ovate-lanceolate, to 4 in. long and 1½ in. wide: fls. in loose terminal more or less nodding clusters, to 1 in. long, red-purple, constricted at throat, of continuous bloom: berries red. Mex. Var. **Smíthii** (*C. Smithii*), fls. blush-rose. There is also a variegated form.

Smíthii: *C. purpureum* var.

CHÆNÁCTIS. *Compositæ.* Ann. or per. herbs of W. N. Amer. with alternate usually dissected lvs. and heads of yellow disk-fls. solitary or in cymes; pappus of scales. Propagated by seeds or division.

glabriúscula. To 1 ft., branching: lvs. to 1½ in. long, 1–2-pinnate into linear segms.: heads solitary, ½ in. across, marginal corollas longer than others. Calif.

CHÆNOMÈLES. Flowering Quince. *Rosaceæ.* Deciduous or semi-evergreen shrubs native in E. Asia, with alternate toothed lvs., solitary or clustered showy waxy fls. in early spring before the lvs., and fr. a hard quince-like pome. Often listed as Cydonia.

These are attractive ornamental subjects and hardy North except *C. sinensis*, and this fruits on Long Island and in similar climates. The fruits of some kinds are also used sparingly for making preserves. Propagated by seeds stratified and sown in spring, by root-cuttings or cuttings of half-ripe wood under glass, by layers, and rare kinds by grafting on *C. lagenaria* or *Cydonia oblonga.*

cathayénsis: *C. lagenaria* var.

japónica (*C. vedrariensis. C., Pyrus,* and *Cydonia Maulei. Pyrus japonica*). Dwarf Japanese Quince. To 3 ft., with spiny branches: lvs. broad-ovate, to 2 in. long, coarsely toothed: fls. orange-scarlet, to 1½ in. across, clustered, Mar.–Apr.: fr. yellow, 1½ in. long. Japan. Var. **alpìna** (*Cydonia Sargentii*) has procumbent sts. and lvs. to 1 in. long.

lagenària (*Cydonia `japonica* of horticulturists). Japanese Quince. To 10 ft., with spiny branches: lvs. oblong, to 3 in. long, finely toothed, shining above: fls. scarlet-red, to 2 in. across, clustered, Mar.–Apr.: fr. greenish-yellow, to 2 in. long. China. Var. **álba**, fls. nearly white; var. **Báltzii**, fls. rosy-pink; var. **cándida,** fls. white or nearly so; var. **cardinàlis,** fls. cardinal-red; var. **cathayénsis,** lvs. lanceolate; var. **contórta** has twisted and contorted branches, fls. white; var. **corállina,** fls. salmon-pink; var. **fòliis rùbris,** lvs. bronzy; var. **frùtico-álba,** frs. whitish; var. **grandiflòra,** fls. large, nearly white; var. **kermesiàna,** fls. pink to red, semi-double; var. **macrocárpa,** sts. thornless, fls. red; var. **marmoràta,** fls. pink variegated white; var. **Moerloòsei,** fls. white, striped with pink; var. **nivàlis,** fls. nearly white; vars. **nàna** and **pygmæa** are listed as dwarf forms; var. **ròseo-plèno,** fls. rose, partially double; var. **rùbra grandiflòra,** fls. deep crimson, large; var. **sanguínea plèna,** fls. scarlet, double; var. **umbilicàta,** fls. rose-red; var. **Wílsonii,** lvs. tomentose beneath, fls. salmon-pink; other listed vars. are *semperflorens, Simonsii cnd versicolor.*—This, in its many forms, is the commonly cult. Japanese quince, and formerly supposed to be the plant originally intended to bear the name *japonica.*

Maùlei: *C. japonica.*

sinénsis (*Cydonia,* and *Pseudocydonia sinensis*). Chinese Quince. To 20 ft., spineless: lvs. elliptic, to 3 in. long, sharp-toothed, often persistent or turning scarlet in autumn: fls. light pink, solitary, to 1½ in. across, May: fr. yellow, to 7 in. long, woody, aromatic. China.

supérba. Hybrid between *C. japonica* and *C. lagenaria*: lvs. narrowly ovate to obovate, to 3 in. long, twigs hairy: fls. typically blood-red, to 2 in. across. Forms having white, rose or scarlet fls. are known.

vedrariénsis: *C. japonica.*

CHÆNORRHÌNUM. *Scrophulariaceæ.* Ann. or per. herbs native in Medit. region and Asia: lvs. entire: fls. 2-lipped, solitary in the axils of upper lvs. and often forming racemes. Once combined with Linaria from which it is separated by the caps. dehiscing by narrow distal openings and the plants glandular-pubescent.

glareòsum: *C. origanifolium.*

mìnus (*Linaria minor*). Ann. to 1 ft., much branched, glandular-pubescent: lvs. linear-lanceolate, sessile: fls. lilac, to ¼ in. long, long-stalked, in loose leafy racemes. Eu

origanifòlium (*Linaria origanifolia. Anarrhinum* and *Antirrhinum crassifolium,* in part. *Antirrhinum* and *C. glareosum*). Per. to 10 in.: lvs. oblong to obovate, glandular-hairy: fls. pale purple to white with yellow palate, ½ in. long, spur shorter than corolla. S. Eu.

CHÆNÓSTOMA. *Scrophulariaceæ.* S. African herbs and subshrubs with usually opposite lvs., white, yellow or reddish tubular fls. with 4 exserted stamens, and capsular frs.

Certain low kinds are grown out-of-doors in southern United States and in the greenhouse for the profuse small bloom and compact habit; useful for edgings. Propagated by seeds or cuttings.

fastigiàtum (*Sutera cephalotes*). Per. to 1 ft.: lvs. oblong, about ½ in. long, with few teeth toward apex: fls. ½ in. long, in head-like racemes.

grandiflòrum (*Sutera grandiflora*). Erect subshrub to 4 ft., sticky-pubescent: lvs. usually alternate, ovate-oblong, to 1½ in. long, base wedge-shaped, hispid, margin crenate-serrate: fls. deep purple, to 1¼ in. long and as wide, tube very slender, in racemes to 1 ft. long.

híspidum (*Sutera brachiata*). Per. or subshrub to 2 ft., hairy: lvs. oval to oblong, to 1¼ in. long, entire: fls. pink or whitish, to ½ in. long, in leafy racemes.

phlogiflòrum (*Sutera phlogiflora*). Decumbent or suberect subshrub to 2 ft.: lvs. somewhat fasciculate, ovate to obovate or oblong, to ½ in. long, incise-dentate or pinnatifid.: fls. bright purple to white, to ½ in. long, in lax racemes.

polyánthum (*Sutera polyantha*). Ann. to 1 ft.: lvs. ovate to lanceolate, to 1¼ in. long, toothed: fls. bluish-lilac, ¼ in. long, in racemes.

ròseum: listed as a shrubby plant with pink fls.

CHÆROPHÝLLUM. *Umbelliferæ.* Herbs with pinnately or ternately compound lvs., small white fls. in compound umbels, and flattened frs.; one species is grown for the edible root. See *Chervil.*

bulbòsum. Turnip-rooted Chervil. Bien. to 3 ft., with gray or blackish tuberous root having yellowish-white flesh: lvs. decompound into linear segms. Eu.

CHÆTOCHLOA: *Setaria.*

CHÆTOSPERMUM: *Swinglea.*

CHAFF: a small, thin, dry and membranous scale or bract; in particular, the bracts in the flower-heads of composites.

CHALCAS: *Murræa.*

CHALICE-VINE: *Solandra.*

CHAMÆBÀTIA. *Rosaceæ.* Two shrubs native in Calif. and Lower Calif., with alternate thrice-pinnatifid lvs. and white fls. in terminal corymbs; related to Purshia.

Adapted to rock-gardens in warm parts of the country, doing best in sunny positions in sandy well-drained soil. Propagated in spring by seeds, or by cuttings of green wood under glass.

foliolòsa. To 3 ft., partially evergreen: lvs. to 3 in. long, finely divided: fls. to ¾ in. across. July. Calif.

CHAMÆBATIÀRIA. *Rosaceæ.* One aromatic deciduous shrub native Ida. to Nev. and Calif., sometimes included in Spiræa. **C. Millefòlium.** To 4 ft., glandular-pubescent: lvs. alternate, bipinnate, to 3 in. long, with linear deeply cut segms.: fls. white, ½ in. across, in terminal leafy panicles to 6 in. long.—It does best in a sunny well-drained position. Propagated by cuttings of half-ripened wood in Aug. and by seeds sown in spring.

CHAMÆCÈREUS. *Cactaceæ.* One species, Argentina, forming little clumps of cylindric plant-bodies or joints that are 2 in. or so long with 6–9 ribs and soft white spines. **C. Silvéstri** (*Cereus Silvestri*) resembles some of the creeping kinds of Echinocereus, with orange-scarlet diurnal solitary fls. nearly 3 in. long, the tube narrow and stamens included: fr. small, globular, woolly. Var. **crassicaûle** (*C. crassicaule*) is listed as having more spherical sts.

CHAMÆCRISTA: *Cassia.*

CHAMÆCÝPARIS. False-Cypress. *Cupressaceæ.* Large evergreen trees of pyramidal habit, mostly attaining 100 ft. or more in native habitats, with scale-like lvs. densely clothing the branchlets, appressed on old branches, spreading and needle-like on young growth, yellow (or red in *C. Lawsoniana*) staminate fls., and small globose cones of peltate scales bearing a point or prominence in middle; species few, in northern hemisphere. For cult. see *Conifers.* Excellent in cult. as small trees, ornamental and most of them hardy in the northern parts of the country, and widely variable. Retinisporas (or retinosporas) are juvenile forms of Chamæcyparis and Thuja.

andelyénsis: *C. thyoides* var.

decussàta: *Thuja orientalis* var.

filicoìdes: *C. obtusa* var.

filífera: *C. pisifera* var.

formosénsis. Branches drooping at tips: cones to ⅛ in. across. Formosa.—Not to be confused with *C. obutsa* var. *formosana.*

Lawsoniàna (*Cupressus Lawsoniana*). Branches usually drooping, the branchlets frond-like: lvs. obtuse, with indistinct white markings below: cones ⅓ in. across. Ore., Calif.; hardy in latitude of central states and some of the forms stand in sheltered positions in S. New England; much grown in warm regions and much prized in its many very ornamental forms. Some of the hort. vars. are: **álbo-spìca,** Cream C., branchlets creamy-white at tips; **Állumii,** Scarab C., columnar form with very glaucous foliage; **argéntea,** foliage silvery; **aùrea,** foliage golden-yellow when young; **Boẁleri,** compact form with branchlets drooping at tips; **darleyénsis,** low form with lvs. slightly golden-yellow; **Éllwoodii** is listed as a compact slow-growing dwarf form with gray-green foliage; **erécta** (var. *erecta viridis*), columnar form with bright green lvs. or glaucous in its form **glaùca**; **filifórmis,** branchlets drooping; **Flétcheri,** dense columnar form with glaucous lvs.; **Forsteckiàna,** branchlets twisted into cockscomb-like heads; **Fràseri,** columnar form with dark blue lvs.; **glaùca, lvs.** steel-blue; **grácilis,** branchlets drooping, lvs. light green; **intertéxta,** pyramidal form with bluish-green lvs.; **Kràmeri** of thin habit with slender whip-like branches; **lùtea,** young growth bright yellow; **lycopodioìdes,** with irregular branches and twisted branchlets; **mínima glaùca,** dwarf form with steel-blue lvs.; **nàna,** of dwarf globose habit, and its form **glaùca** with lvs. bluish-green; **nidifórmis,** horizontal branches radiating from dense center; **pátula,** compact, branches spreading, lvs. glossy dark green; **péndula,** branchlets drooping and its form **vèra** with branches also drooping; **Póttensii** has dense and compact ultimate branch systems; **pyramidàlis,** columnar and its form **álba** with young growth white; **Steẁartii,** young shoots with deep yellow foliage; **Wéstermannii,** of stiff pyramidal habit, lvs. light yellow; **Wissèlii,** of columnar habit, with glaucous lvs.; **Yoúngii,** vigorous upright form. Other listed names under this species are: *cærulea, Drummondii, elegans, elegantissima, globosa, grandis, lutescens, monumentalis, nestoides, Rosenthalii, semper-horizontalis, stricta, sulphurea, tortuosa, Veitchiiglauca* and *versicolor.*

leptoclàda: *C. thyoides* var. *andelyensis.*

nootkaténsis (*Cupressus nootkatensis. Thujopsis borealis*). Nootka C. Branchlets drooping: lvs. acute, dark green, without white markings: cones ½ in. across. Alaska to Ore.; hardy N., but should have protection from winter winds. Var. **compácta,** dwarf and compact; **glaùca,** lvs. very glaucous; **lùtea,** young growth light yellow; **péndula,** branches drooping. A form *viridis* is also listed.

obtùsa (*Retinospora* and *Cupressus obtusa*). Hinoki C. Branchlets flattened and frond-like, drooping: lvs. obtuse, glossy above and with whitish lines beneath: cones ½ in. across. Japan. Some of the hort. vars. are: **álbo-spìca,** shoots creamy-white when young; **aùrea,** lvs. golden-yellow when young and its form **Yoúngii** with more drooping branchlets: **breviràmea,** pyramidal form with short branches: **compácta,** dwarf broad form; **Críppsii,** lvs. pale yellow; **erécta,** branches ascending; **ericoìdes** (*C. pisifera* var. *Sanderi*), low form with linear bluish-gray lvs.; **filicoìdes,** branchlets short and frond-like; **filifórmis,** branches thick and thread-like, drooping; **formosàna,** with slenderer branchlets and smaller cones, Formosa; **grácilis,** pyramidal form with dark green lvs. or in **aùrea** bright yellow when young; **lycopodioìdes,** of dwarf shrubby habit; **magnífica,** vigorous form with glossy bright green lvs.; **mínima** and **nàna,** of low growth and in **aùrea** golden-yellow when young; **péndula,** drooping habit; **pygmæ̀a,** very dwarf form with almost creeping branches; **tetragòna,** dwarf form with 4-angled branchlets, partly golden-yellow. Other listed names under this species are: *acuta, decussata, letinea aurea, lutea, pyramidalis glauca* and *viridis.*

pisífera (*Retinispora* and *Cupressus pisifera*). Sawara C, Branchlets flattened and slightly drooping: lvs. acuminate. glossy above and with whitish lines beneath: cones to ⅓ in. across. Japan; likely to suffer in exposed places N. There are many hort. vars. as: **aùrea,** lvs. golden-yellow; **ericoìdes** with smaller lvs.; **filífera,** branches thread-like, drooping, and its forms **aùrea** with young growth golden-yellow, and **aùreo-variegàta** with branchlets variegated yellow; **plumòsa,** dense conical habit with feathery branchlets, and its forms **argéntea** with tips of branchlets whitish, **aùrea** with young growth golden-yellow, and **flavéscens** with tips of branchlets yellowish, **lutéscens,** low form with branchlets tipped yellow; **squarròsa,** Moss R., bushy habit with feathery branchlets, and its form **dumòsa** of more compact and slower-growing habit, and **sulphùrea** with yellow lvs., *Veitchii* and *Sieboldii* are listed under this var.; **sulphùrea,**

lvs. light yellow. Other vars. listed are: *globosa*, *nana* and *pygmæa*.

Sánderi: *C. obtusa* var. *ericoides*.

sphæroídea: *C. thyoides*.

texàna glaùca: a listed name.

thyoìdes (*C. sphæroidea. Cupressus thyoides*). WHITE-CEDAR. Branchlets flattened, not drooping: lvs. acute, light green or glaucous: cones ¼ in. across. Me. to Fla. and Miss., hardy near coast. Hort. vars. are: **andelyénsis** (*C. leptoclada*), of upright habit with loosely appressed lvs.; **ericoìdes,** CEDAR R., dense shrub with spreading lvs. having 2 glaucous lines beneath; **glaùca,** lvs. nearly silvery-white; **Hóveyi,** of slender habit, the branchlets with dense terminal tufts; **variegàta,** branchlets variegated yellow.

Wéstermanii: *C. Lawsoniana* var.

CHAMÆDÁPHNE. *Ericaceæ.* One evergreen shrub to 5 ft., native in bogs in N. Eu., N. Asia and N. Amer. **C. calyculàta** (*Andromeda* and *Cassandra calyculata*). LEATHER-LEAF. Lvs. alternate, oblong, to 2 in. long, rusty-scaly beneath: fls. white, urn-shaped, nodding, ¼ in. long, in racemes to 5 in. long, Apr.–June. Var. **nàna,** to 1 ft.—A good shrub for the rock-garden where it does best in a moist soil of sand and peat. Propagated by seeds only slightly covered, by cuttings of ripe wood under glass, by layers and suckers.

CHAMÆDÒREA. *Palmaceæ.* Small thin-lvd. shade-loving unarmed diœcious or seldom monœcious palms, Mex. to S. Amer., with solitary or clustered reed-like ringed or jointed or sheathed sts., sometimes climbing, and pinnate, pinnatisect or pinnate-veined lvs., probably more than 60 species: spadices among the lvs. or below them, simple and cord-like or paniculately branched and with slender parts, the spathes usually prominent; stamens 6; pistillate fls. very small and often sunken in pits: fr. small, of 1–3 globose or oblong carpels, purplish or red or orange. The Chamædoreas are imperfectly known botanically; the identity of the cult. kinds is perplexing inasmuch as the two sexes may not be grown together and as fr. is little known. They are attractive neat green-stemmed palms for porch and patio use where protection may be provided from winds and burning sun, in S. Calif. and S. Fla.; well adapted to lath houses. For cult. see *Palm.*

Arenbergiàna. St. erect, 5–6 ft., remotely ringed: lvs. pinnate, recurved at apex; pinnæ 16–30, long-oblong and falcate, very long-acuminate, the apex pendulous, primary nerves 9: spadices below the lvs.: fr. subglobose, in a dense cluster. Cent. Amer.

corállina. St. solitary, sheathed and not ringed, to 4 ft. or more: spadices among the lvs., the pistillate divaricately branched: lvs. pinnate, green both sides but lighter underneath, 2 ft. or more long; pinnæ 8–12 in. long, broad-oblong and abruptly long-pointed, 3 in. broad at middle, the terminal one confluent and bifid and many-ribbed, lateral ones with 1 prominent rib off-center and many secondary ones. Venezuela.

desmoncoìdes. Climbing with age, with long slender sts.: lvs. pinnate, 2–3 ft. long; pinnæ 12 in. long, narrow, drooping; petiole glaucous. Mex.

elàtior. Slender and more or less climbing, the st. covered with petiole-sheaths: st.-lvs. pinnate, 6–8 ft. long, sheath 18 in. long; pinnæ 2 ft. long, 1 in. broad, long-acuminate, strongly several-nerved. Mex.

élegans: *Collinia elegans.*

Érnesti-Augústii. St. solitary, slender, ringed, with brace-roots at base: lvs. simple; blade obovate or ovate-oblong, 1½ ft. long and half as broad, bifid at apex to half or more the depth, strongly many-ribbed, the margins bluntly dentate; sometimes the lf. is pinnate, with a broad bifid terminal lobe and many-ribbed lateral pinnæ 1–2 in. broad: fertile spadix simple; staminate erect, branched: fls. reddish. Mex.

fràgans. St. 4–6 ft., scarcely 1 in. thick, ringed: lvs. mostly 5 or 6, 1 ft. long, 2-lobed below the middle, each lobe long-acuminate and many-nerved: fls. fragrant: fr. elliptic, black-purple. Peru.

geonomæfórmis. St. solitary, sheathed, about 4 ft.: lvs. simple, oblong, 8–12 in. long, 5 or 6 in. broad, deeply bifid, deep green, about 12 nerves on either lobe: staminate spadix from st. just below the lvs., with several long drooping branches 8–10 in. long. Guatemala.

glaucifòlia. St. tall, to 20 ft., solitary, ringed remotely: lvs. pinnate, 4–6 ft. long, glaucous on both sides; pinnæ 70–80, long and slender, very long acuminate: spadix tall, erect or ascending, among the lvs., on slender elongated peduncle. Guatemala.

graminifòlia. St. remotely ringed: lvs. pinnate, erect, dark green; pinnæ about 40, rather close together, linear-lanceolate, very long-acuminate, spreading horizontally, strongly several-nerved: staminate spadix erect, with long pendulous branches. Guatemala.

Martiàna. St. short, creeping, dwarf and spreading, with many forking sts.: lvs. pinnate; pinnæ many, linear, pendent, 6–8 in. long. Mex.

oblongàta. St. ringed: lvs. pinnate, at apex pinnæ confluent and commonly truncate and erose but otherwise oblong or falcate-acuminate: pistillate spadix erect, much branched: fr. oblong, black. Mex.

Pacàya. St. slender and erect, 8–10 ft., remotely ringed: lvs. erect-spreading, 2–3 ft. long; pinnæ about 7, dull green, plicate, middle ones 7–8 in. long and 1½ in. broad, long-acuminate, the terminal ones very broad and serrate on outer margins: fertile spadix about 20 in. long, with flattened peduncle compressed below to caudex, the branches 5 or 6 and 3–4 in. long: fr. oblique-obovoid, about ⅓ in. long. Costa Rica.

Prínglei. Nearly or quite stemless: lvs. pinnate, erect, firm in texture, 3 ft. long; pinnæ 25–30, widely spaced, linear-lanceolate and very long-acuminate, 6–8 in. long and ⅓ in. or less broad, strongly nerved: spadix simple. San Louis Potosi, Mex.

Sártori. St. 8–14 ft., solitary, ringed and above covered with lf.-sheaths: lvs. pinnate, 3 ft. long, rather soft; pinnæ about 15, broad-lanceolate, 10–12 in. long and to 2½ in. broad, abruptly acuminate, with 1 mostly off-center rib and several secondary ones, the upper ones more or less confluent at base: spadices with and below the lvs., simply branched, the staminate with long pendulous branches. Mex.

Tepejilòte (*Edanthe Tepejilote*). St. to 10 ft., solitary, strongly and rather closely ringed, with swollen joints: lvs. pinnate, to 4 ft. long; pinnæ 20–30, about 1–1½ ft. long, 1½–2 in. broad, long-acute: spadices below the lvs. with a sheathed peduncle, simply branched, the staminate branches long-drooping. Mex.

Wendlandiàna. St. stout, solitary, a few ft., ringed: lvs. pinnate, large, strongly ascending, to 4 ft.; pinnæ 36–40, narrow-lanceolate, 1½ ft. long and to 2 in. broad, long-acuminate, with several or many very strong light-colored ribs: spadix on the trunk, the staminate with many and the pistillate with few branches. Mex. to Panama.

CHAMÆLAÙCIUM. *Myrtaceæ.* Australian heath-like shrubs with mostly small opposite lvs., 5-parted fls. borne in axils or short terminal racemes, the stamens 10; planted in Calif.

ciliàtum. To 2 ft.: lvs. terete or 3-angled, to ¼ in. long: fls. about 1/12 in. long, axillary, the calyx-lobes fringed.

uncinàtum. Lvs. opposite, linear, 3-sided, to ¾ in. long, apex usually hooked, tapering below middle: fls. 2–4 in axillary corymbs, petals orbicular. Australia.

CHAMÆLÍRIUM. *Liliaceæ.* One per. herb with tuberous roots, native from Mass. to Fla. and Ark., sometimes planted in shady situations in the garden. **C. lùteum.** BLAZING STAR. FAIRYWAND. To 4 ft.: lvs. to 8 in. long and 1½ in. wide: fls. yellowish-white, small, diœcious, in spike-like racemes.

CHAMÆMELUM CAUCASICUM: *Chrysanthemum caucasicum.* **Tchihatchewii:** *Matricaria Tchihatchewii.*

CHAMÆNERION: *Epilobium angustifolium.*

CHAMÆPERICLYMENUM: *Cornus canadensis.*

CHAMÆPEUCE: *Cirsium Diacantha.*

CHAMÆ̀ROPS. *Palmaceæ.* One low bushy diœcious (or polygamous) fan-palm in the Medit. region, the only palm native in Eu., and much planted where a hardy small species is required and under glass: very variable, and several specific names have been applied to the forms. Plant usually suckering and making a clump but growing to a single trunk in some forms and when sprouts are removed: spadices among the lvs. and shorter than they, short-branched, not pendent; stamens 6–9: fr. ovoid, oblong or globose (depending on the var.), drupe-like, ½–1½ in. long, with somewhat succulent exterior, brown or yellow; one group of vars. has ovoid or oblong frs., and another group has nearly or quite spherical frs. Trachycarpus was formerly included in this genus. See *Palm*.

antillàrum: *Zombia antillarum.*

argéntea. Glaucous-blue form of *C. humilis.*

excélsa: see *Trachycarpus.*

Fórtunei: see *Trachycarpus.*

hùmilis. Usually with trunks only 3–5 ft. tall, but sometimes to 20 ft. or more in arborescent forms: lvs. relatively small, mostly 2–3 ft. across, stiff, green or glaucous-blue, with many narrow bifid segms. extending nearly to the base; petiole long and slender, strongly long-spined.—Easily grown; hardy along the Gulf Coast and somewhat northward; propagated by seeds and suckers. There are a number of named vars., differing in stature, lvs. and fr., but hardly distinguishable as species.

macrocárpa. A large-fruited var. of *C. humilis:* fr. spherical, ¾ in. diam.

Mocínii: *Cryosophila nana.*

Ritchieàna: *Nannorrhops Ritchieana.*

CHAMÆSENNA: *Cassia didymobotrya.*

CHAMBEÝRÒNIA. *Palmaceæ.* Two recognized monœcious unarmed tall handsome feather-palms of New Caledonia, more or less confused in cult. and usually known as Kentia or Kentiopsis; the name *Kentia Lindenii* appears to have been applied to both species. From Kentiopsis the genus differs in technical characters of the larger fr., and the indefinite (rather than definite, say 20 or less) number of stamens.

macrocárpa (*Kentia* and *Kentiopsis macrocarpa*). Tall tree, attaining 60 ft. and more: lvs. large, reddish underneath when young but becoming nearly equally green both sides; pinnæ many, 3–4 in. broad, equidistant on rachis, with strong rib on margin as well as midrib and prominent intermediate nerves: spadix below the crown, branched, glabrous; fls. normally in 3's, center one pistillate or all staminate toward end of branches; staminate fls. about ⅜ in. long, stamens numerous: fr. ovoid-elliptic, about 1½ in. long, in a shallow cup-like enlarged perianth.—C. **Hoòkeri** has lvs. paler underneath: staminate fls. larger: fr. long-ellipsoid, about 2 in. long, the perianth deeply cup-like. Both grown sparingly under glass, probably adapted to S. Fla.

CHAMISO: *Adenostoma.*

CHAMOMILE: *Matricaria, Anthemis nobilis.*

CHAMOMILLA: *Matricaria.*

CHAPTÀLIA. *Compositæ.* Small woolly per. American herbs with lvs. in basal rosette and solitary nodding heads on simple naked scapes, the white or purple ray-fls. sterile and disk-fls. 2-lipped with anthers caudate at base.

tomentòsa. To 1 ft.: lvs. elliptic to oblanceolate, to 4 in. long, apiculate, glabrous above and densely white-tomentose beneath: ray-fls. purple on reverse, whitish above, in heads to ¾ in. across. N. C. to Fla. west to Tex.

CHARD, SWISS: see *Beta.*

CHÁRIEIS. *Compositæ.* One ann. herb in S. Afr., sometimes grown in flower-gardens and of easy cult. C. **heterophýlla** (*C. Neesii. Kaulfussia amelloides*). To 1 ft., hairy: lvs. oblong, entire, to 2½ in. long: heads solitary and long-stalked, ¾ in. across, rays blue, disk yellow or blue; pappus plumose.

CHARITY: *Polemonium cæruleum.*

CHARLOCK: *Brassica kaber.*

CHASMÁNTHE. *Iridaceæ.* A small genus of S. Afr., formerly united with Antholyza and differing from it in sts. ending in a spike of 5–25 fls. with the upper lobe of corolla much longer than other 5, being spatulate and hooded; it is distinguished from Gladiolus by the fl.-tube abruptly contracted below the middle into a slender basal part. Cult. as for *Gladiolus.*

æthiòpica (*Antholyza æthiopica*). To 4 ft.: basal lvs. to 1½ ft. long and 1 in. broad: fls. red-yellow, to 2½ in. long, curved.

floribúnda (*Antholyza floribunda* and *præalta*). Differs from *C. æthiopica* in its much broader lvs. and perianth-tube tapering or rounding into constricted portion and not abruptly truncated.

CHASMATOPHÝLLUM. *Aizoaceæ.* Succulents of the Mesembryanthemum group, with creeping branches, short thick lvs. having whitish warts beneath, and solitary terminal short-stalked fls.; stigmas 5, filiform.

musculìnum (*M. musculinum*). Creeping, making thick clumps: lvs. to 1 in. long and ¼ in. wide, convex above, often with 1 or 2 small teeth near apex: fls. yellow, ½ in. across. S. Afr.

CHASTE-TREE: *Vitex Agnus-castus.*

CHAULMOOGRA: see *Taraktogenos.*

CHAYOTE (*Sechium edule,* which see for botanical description). A cucurbit grown for the edible fruits and root tubers, native in tropical America, widespread in the western tropics as a cultivated plant and adaptable also to the coastal parts of the United States from South Carolina southward and in southern California; in regions in which the ground does not freeze more than an inch or so deep the roots survive the winter if given protection. If grown only as an annual each year from seed, the plant may be raised to fruiting stage farther north, although a long season is required. Two or more plants should be grown to insure pollination.

The chayote is propagated from seed, the entire ripe fruit being planted in spring, or perhaps in autumn in southern Florida; the fruit is placed with the broad end sloping downward and the stem end slightly exposed. There is one seed in a fruit. The plants are started where they are to stand, and they should be 8–12 feet apart and trellis or other support provided. Special or named varieties are propagated by cuttings of shoots taken at the crown of the plant, and struck under glass or other protection. If the soil is fertile, a plant should produce 50 to 100 or more fruits in a season. The fruits are boiled, and prepared in various ways for eating. In tropical countries the large root tubers are eaten after the manner of potatoes; the tubers are usually harvested after the second years growth. If tubers are left in the ground in regions where they do not freeze, the plant is of course perennial. The chayote fruit is much prized in tropical America, where it may be known also as christophine and chuchu, and in some places as mirliton and vegetable-pear. The herbage supplies good forage, and the young parts are sometimes used after the manner of asparagus and spinach.

CHECKERBERRY: *Gaultheria procumbens.*

CHECKERBLOOM: *Sidalcea malvæflora.*

CHEILÁNTHES. LIP-FERN. *Polypodiaceæ.* Small rock-loving greenhouse or semi-hardy ferns, often hairy or woolly: fronds 1–3-pinnate; sori terminal on veins: widely distributed in temp. and trop. regions, where they do best in dry rocky situations. Under glass the foliage should be kept dry. See *Ferns*.

alabaménsis. Fronds to 10 in. long, 2-pinnate, nearly glabrous, on black stipes to 7 in. long. Va. to Ala. and Ariz.

califórnica. Fronds to 1 ft. long, 3–4-pinnate, glabrous, on brownish stipes to 1 ft. long. Calif.

Còvillei. Fronds tufted, to 4 in. long, 3-pinnate, densely covered beneath with white or brown scales, on brown or purplish stipes to 7 in. long. S. Calif., Nev., Ariz., Utah.

dénsa: *Pellæa densa.*

Fèei. Fronds to 5 in. long, 2–3-pinnate, densely woolly beneath, on slender stipes to 5 in. long. Wis. to B. C., Tex., and Calif.

Féndleri. Fronds to 10 in. long, 3-pinnate, brown-scaly beneath not tomentose, on brown stipes. Tex., Colo., Ariz., Calif., Mex.

gracíllima. LACE-FERN. Fronds to 10 in. long, 2-pinnate, woolly beneath, margins of segms. strongly reflexed, on dark brown stipes to 6 in. long. B. C. to Calif.

lanòsa. Fronds to 9 in. long, 2-pinnate, densely rusty-hairy, on brown stipes to 4 in. long. Conn. to Ga. and Tex.

myriophýlla. Fronds densely tufted, to 9 in. long, 3–4-pinnate, densely scaly and woolly beneath, on brown stipes. Mex. to S. Amer.

siliquòsa: *Pellæa densa.*

tomentòsa. Fronds to 1½ ft. long, 3-pinnate, covered all over with brownish-white hairs, on stout brown tomentose stipes to 8 in. long. W.Va. to Ariz. and Mex.

CHEIRÁNTHUS. *Cruciferæ.* A few perennials, sometimes woody at base, native from the Canary and Madeira Isls. to the Himalayas, one of them an old garden plant, and others sometimes planted for ornament. Plants more or less grayish-pubescent: lvs. narrow, nearly or quite entire: fls. for the most part yellow or orange, sometimes brownish: pod or silique long, angled.

The usual species in cultivation is the wallflower, *C. Cheiri*. It is a spring-blooming low erect perennial, much like stock but the colors in yellow, yellow-brown, red to red-black, much prized in Europe (where it is native) but less popular in this country. It requires a cool season for best bloom, and in the northern United States the maiden plants must usually be carried over in a frame. In England they are frequent inhabitants of fence-walls and quarries. The free flowering, rich deep colors, and pleasant fragrance make wallflowers good subjects for very early spring bloom, or for winter bloom in mild climates. Special colors are propagated by means of cuttings. Usually they are grown from seeds; plants should be strong and bushy to go through the winter well. Seeds may be sown early in the year, the plants transplanted once or twice, and be ready for bloom the following spring. If wanted for bedding-out, they may be carried over winter dormant in pots, and turned out as soon as the ground is open. Plants started in late spring or early summer may make satisfactory spring-blooming subjects if the season and all other conditions turn out favorable to them, but it is better to sow seeds earlier. Good plants may be purchased of dealers. Some of the strains give bloom the first year from seeds, started early, the plants being practically annual.

Alliònii of gardens: see *Erysimum asperum.*

alpìnus. To 1 ft.: lvs. lanceolate, pubescent: fls. lemon-yellow. Norway, Lapland.

Cheìri (*C. fruticulosus*). WALLFLOWER, discussed above. To 2½ ft., strongly erect: lvs. lanceolate or narrower, acute, to 3 in. long: fls. to 1 in. long, fragrant, yellow to yellow-brown. S. Eu.

fruticulòsus: *C. Cheiri.*

kewénsis. Bushy per. with upright racemes: fls. about 1 in. across, brownish-orange inside and reddish-brown outside, becoming pale purple. Hybrid.

linifòlius: *Erysimum linifolium.*

marítimus: *Malcomia maritima.*

Senòneri. Per., woody, much branched, with curved parts: lvs. ovate-oblong and entire or short-toothed: fls. orange, fragrant. Greece.

CHEIRIDÓPSIS. *Aizoaceæ.* A large genus of segregates from Mesembryanthemum, with tufted habit, usually spotted lvs. and solitary terminal stalked fls. with numerous petals; stigmas 8–19. S. Afr.

acuminàta. Lvs. ¾ in. long and about ¼ in. wide and thick, pale green, spotted: fls. pale yellow, on pedicels 1 in. long; stigmas 11.

áspera. Short-stemmed, slightly branched: lvs. 2 in. long and ¼ in. wide and thick, bright green with many whitish cartilaginous dots: fls. yellow, 2 in. across, on pedicels 1½ in. long; stigmas 10.

bélla: probably *Lithops bella.*

Braûnsii: *Argyroderma Braunsii.*

candidíssima (*M. candidissimum*). Lvs. to 4 in. long, ½ in. wide and ¾ in. thick at top, white or whitish, not spotted: fls. white or pale pink, 2 in. across, on pedicels to 3 in. long: stigmas 17–19.

carinàta. Lvs. 2 in. long and ½ in. wide and thick, glaucous, spotted: fls. ivory-white, sepals conspicuously keeled; stigmas 10.

Càroli-Schmídtii (*M. Caroli-Schmidtii*). To 2 in.: lvs. to 1½ in. long and ½ in. wide and thick, whitish-green dotted with dark green: fls. yellow, 1½ in. across, on pedicels ½ in. long.

chérri-bélla: listed name.

cigarettífera (*M. cigarettiferum*). Plant in resting state a tuft of cup-like sheaths ⅓ in. long inclosing a pair of erect lvs. ½ in. long: free lvs. to 1½ in. long, ⅓ in. wide and ⅙ in. thick, glaucous, dotted, second pair united into an oblong-ovoid body: fls. bright yellow, 1½ in. across, on pedicels to 1½ in. long; stigmas 10.

Cómptonii: a name without description.

Derenbergiàna. Stemless, much branched: lvs. in 2 pairs, the second to 1 in. long and ¼ in. thick and wide, keeled on back: fls. undescribed.

Hérrei. Stemless, branched, sterile growths with 4 flowering growths bearing 2 lvs. ½–¾ in. long, ⅓–½ in. broad, keeled on back, velvety to the touch, glaucous or brownish-gray: fls. to 2 in. across, on pedicels ½ in. long; stigmas 10.

inæquàlis. Stemless, branched, sterile growths with 4–6 lvs., flowering growths each with 2 lvs. to 1¾ in. long, ⅓ in. broad and ¼ in. thick, velvety to the touch, glaucous-green with inconspicuous dots: fls. 2 in. across, yellow, reddish outside, on pedicels to 1¾ in. long.

insígnis. Sts. short and thick: lvs. 1½ in. long, ¾ in. wide and thick, bluish-green, with many dark dots: fls. unknown.

inspérsa (*M. inspersum*). Similar to *C. tuberculata* but with longer branches, shorter smoother lvs. with a dark purple tumor at base of upper surface.

Johánnis-Wínkleri: *C. Schlechteri.*

lóngipes. Lvs. about 2 in. long and ⅓ in. wide and thick, spotted: fls. bright yellow, reddish outside, to 2 in. across, on pedicels 3 in. long; stigmas 11.

Márlothii. Lvs. to 1½ in. long, ⅕ in. wide and thick, one pair free, the other united, sheaths white, glaucous dotted with dark green, tinged red at apex: fls. citron-yellow, ½ in. across.

Meỳeri. To 1 in., growths an orbicular body ½ in. long: lvs. an opposite pair united at base, to 1 in. long, ⅙ in. wide and ¼ in. thick, keeled on back, dotted, the second pairs of lvs. a solid body keeled on top: fls. bright yellow, on pedicels ½ in. long; stigmas 10.

multiseriàta. Sterile growths with 4 lvs. 1½–2 in. long, ⅓ in. broad and ½ in. thick, keeled, bluish glaucous-green: fls. 2½ in. across, golden-yellow, reddish outside, on pedicels 1 in. long; stigmas 10.

peculiàris. Plant in resting stage a laterally flattened whitish ellipsoid body: lvs. a broad spreading pair with second pair between united nearly to their apex, glaucous tinged purple and dotted dark green: fls. yellow, 2 in. across, on pedicels 3 in. long; stigmas 14–15.

Peèrsii (*Nananthus Peersii. Deilanthe Peersii*). Stemless: lvs. flattened, spreading, to 1½ in. long, ½ in. wide and ¼ in. thick, velvety-pubescent, whitish-green: fls. yellow, 1–1½ in. across, slightly fragrant; stigmas 10–13.—There is confusion as to the exact application of this name.

Píllansii. Lvs. laterally compressed, to 3 in. long and 1 in. wide, velvety: fls. cream-colored, white toward base, 3 in. across; stigmas 11.

purpuráscens (*M. purpurascens*). Nearly stemless, branched: lvs. to 3 in. long, ½ in. wide and ¼ in. thick, united at base, bluish-green, purplish at base, dotted with dark green: fls. deep yellow, 2 in. across, on pedicels to 3 in. long.

Richardiàna. Sterile growths with 4 lvs. ¾–1 in. long and ¼ in. broad and thick, pale glaucous-green, dotted: fls. 1½ in. across, golden-yellow, on pedicels ¾ in. long.

Schléchteri (*C. Johannis-Winkleri*). Lvs. of one kind, united at base, free part to ¾ in. long and ¼ in. wide, light green indistinctly dotted: fls. unknown.

serrulàta. Sterile growths with 4 lvs. to 1¾ in. long,

⅓ in. broad and ¼ in. thick, keeled and the keel serrulate, green: fls. 1½ in. across, lemon-yellow, on pedicels to 1½ in. long.

tuberculàta (*M. tuberculatum*). Stemless: lvs. to 4 in. long, ½ in. wide and ⅕ in. thick, united at base into a cylindrical body, blue-green with transparent dots: fls. yellow, 1⅓ in. across, on pedicels to 4 in. long.

Vanzíjlii. Lvs. to 1 in. long and about ½ in. wide and thick, velutinous, spotted: fls. yellow, paler outside, 2 in. and more across, on pedicels ½ in. long; stigmas 10.

velùtina. Lvs. 1½ in. long, glaucous-green, velutinous, inconspicuously spotted; fls. yellow, 2½ in. across, on pedicels 2½ in. long.

verrucòsa. Tufted: lvs. united to form a conical body about ¾ in. long and wide and ½ in. thick, gray-green with dark dots: fls. yellow, 1 in. across, on pedicels ¾ in. long.

CHEIRINIA: *Erysimum.*

CHEIROSTYLIS: *Dossinia.*

CHELIDÒNIUM. Celandine. *Papaveraceæ.* One weedy bien. or per. herb with orange-colored juice, sometimes grown in wild-gardens. Propagated by seeds or division of roots. **C. màjus.** To 4 ft.: lvs. deeply pinnatifid, glaucous beneath: fls. yellow, to ⅔ in. across, in small umbels, sometimes double: fr. linear, to 2 in. long. Eu.; nat. in E. N. Amer. Var. **laciniàtum** has more finely divided lvs. See *Dicranostigma* for *C. Franchetianum.*

CHELÒNE. Turtle-Head. *Scrophulariaceæ.* Hardy herbaceous perennials, closely allied to Penstemon, with showy 2-lipped or gaping fls. in dense axillary or terminal spikes, in summer: lvs. opposite and toothed: native in N. Amer.

These plants thrive in partial shade and in soil not too dry as they are native mostly in swampy places and damp woods. Propagated by seed or by division.

barbàta: *Penstemon barbatus.*

chlorántha. To 5 ft.: lvs. elliptic-lanceolate, to 7 in. long, sharply toothed, long-acuminate: fls. white to yellowish-green, not tinged purple or pink, to 1 in. long. N. C.—Close to *C. glabra,* differing in wider lvs., longer petiole and fl. color.

glàbra (*C. obliqua* var. *alba*). White T. Snake-Head. To 3 ft.: lvs. lanceolate, to 6 in. long, short-petioled: fls. white or pinkish, 1 in. long. Newf. to Ga. and Minn.

Lỳonii. To 3 ft.: lvs. ovate, to 7 in. long, long-petioled: fls. rose-purple, 1 in. long. Mts. N. C., S. C. and Tenn., but hardy N. There is a lower or dwarf form.

nemoròsa: *Penstemon nemorosus.*

oblìqua. To 2 ft.: lvs. oblong, to 8 in. long, very veiny, petioled: fls. deep rose, 1 in. long. Md. to Ill., Fla. and Miss. Var. **álba** is *C. glabra.*

Pentstèmon: *Penstemon lævigatus.*

CHENILLE PLANT: *Acalypha hispida.*

CHENOPODIÀCEÆ. Goosefoot Family. Herbs or shrubs of about 75 widespread genera, many of them weedy but a few grown as vegetables and for ornament. Family characterized by mostly alternate simple lvs. and small inconspicuous bisexual or unisexual fls. having no petals, 2–5-lobed calyx or sometimes lacking, 2–5 stamens, usually superior 1-celled ovary, and fr. a utricle or achene. Those herein treated are Anabasis, Atriplex, Beta, Camphorosma, Chenopodium, Enchylæna, Eurotia, Kochia, Rhagodia, Salicornia, Salsola, Sarcobatus, Spinacia.

CHENOPÒDIUM. Goosefoot. Pigweed. *Chenopodiaceæ.* Mealy or glandular herbs or subshrubs with alternate lvs. and small greenish bisexual fls. in spikes or panicles; mostly weedy, but a few grown as pot-herbs and for ornament, and one is medicinal. Of easy cult. Propagated by seed.

álbum. Lambs-Quarters. Ann. to 10 ft.: lvs. rhombic-ovate to lanceolate, to 4 in. long, entire, toothed or lobed, often white-mealy beneath. Eu., Asia, N. Amer.—Sometimes collected for greens.

amaranticolor. Ann. to 8 ft.: lvs. triangular-ovate, to 4 in. long, irregularly toothed and notched, violet-red toward top of plant. Original habitat unknown.

ambrosioìdes. American Wormseed. Mexican Tea. Ann. or per. to 3½ ft., strong-smelling: lvs. ovate to lanceolate, to 5 in. long, coarsely toothed or cut. Trop. Amer.; nat. in N. Amer., Eu., Asia.—Has medicinal properties.

Atríplicis: *C. purpurascens.*

Bònus-Henrìcus. Good King Henry. Mercury. Per. to 2½ ft.: lvs. arrow-shaped, to 3 in. and more long, entire. Eu., nat. in E. N. Amer.—Grown as pot-herb.

Bòtrys. Feather-Geranium. Jerusalem-Oak. Ann. to 2 ft., glandular-pubescent and strong-smelling: lvs. oval to oblong, to 2 in. long, lobed or pinnatifid. Eu., Asia, Afr.; nat. in N. Amer.—The plant is sometimes cult. under the name *Ambrosia mexicana.*

capitàtum (*Blitum capitatum*). Ann. to 1½ ft.: lvs. triangular-ovate, toothed: fls. in dense heads becoming berry-like in fr. Eu.—Sometimes grown for pot-herb.

purpuráscens (*C. Atriplicis*). Ann. to 3 ft., covered with violet-purple crystalline pubescence: lower lvs. spatulate to oval and toothed, upper lanceolate and entire. China.

Quinòa. Quinoa. Ann. to 5 ft.: lvs. triangular-ovate, angular-toothed or pinnatifid. Andes.—The seeds are extensively eaten in S. Amer.

CHERIMOYA (*Annona Cherimola*). A South American small tree, cultivated in warm and subtropical regions for the delicious edible fruit, which is heart-shaped or conical, averaging about a pound or less in weight. The flesh is white, soft and melting, containing black bean-like seeds. It is a dessert fruit, with a subacid flavor somewhat suggestive of the pineapple. There are many varieties, superior to the average run of seedlings. It is not strictly a tropical fruit, being native in more or less elevated regions, and requires a relatively dry climate. It should thrive in parts of southern California where it has been planted in a small way. It does not endure temperatures much below freezing without injury.

The cultivation of the cherimoya is similar to that of the citrus fruits. It is planted 20 to 30 feet apart. Choice varieties are multiplied by shield-budding or grafting on seedlings of cherimoya although other species of Annona may be employed as stocks. Trees begin to bear in three or four years after planting in the orchard. Probably the scant yield of some trees of cherimoya is the result of insufficient pollination.

CHERRY. Fruits of the Rose family, genus Prunus. The usual fruit-bearing cherries are of two species, the sweet cherry, *Prunus avium,* and the sour cherry, *Prunus Cerasus;* the duke cherries, with the habit of *P. avium* but bearing acid fruit, are *P. avium* var. *regalis,* by some investigators accounted hybrids between the two species. The dwarf cherries of the Plains region are *Prunus Besseyi,* a native species; this is sometimes employed as a stock for sour cherries in cold regions. *Prunus tomentosa* and other species also yield edible fruits.

The sweet and sour cherries differ markedly in their ability to succeed under a wide range of climatic and soil conditions. The sweet cherry is the much more restricted of the two and can be grown to advantage only in the more favored fruit regions which have an equable climate, as, for example, the Hudson Valley of New York, the shores of the Great Lakes and on the Pacific Coast. It is about as tender to injury from winter cold and late frosts as is the peach and does not endure heat as well. The sour cherry, on the other hand, can be grown over a much wider territory extending north of the sweet cherry belt and south into the Mississippi Valley and along the Atlantic Coast. The largest sour cherry plantings are in New York, Michigan and Wisconsin.

Soils are of less importance than climate in cherry growing. Sour cherries thrive on most well-drained soils, either light or heavy, and withstand rather dry conditions. Sweet cherries are more exacting, and reach their best development in deep well-drained sandy or gravelly loams.

Propagation of both sweet and sour cherries is by budding on seedling stocks. The sweet cherry grows best on Mazzard stock although Mahaleb stocks are used in many cases with fair results. Sour cherries are commonly budded on the Mahaleb stock which is preferred by the nurserymen because it makes a better nursery tree. Mazzard stocks make better orchard trees under most conditions.

Orchard treatment is not unusual. One- or two-year nursery trees are set in very early spring or, in the milder climates, in the late autumn. Sour cherries are placed about 18 x 18 feet, although 24 x 24 feet is better for the more vigorous sorts on good soil. Sweet cherries may be set 25 x 25 feet, or 30 x 30 feet in favorable situations. Sour cherries succeed best commercially under cultivation and cover-crops, as described for the apple, although in the home fruit-garden considerable fruit will be produced under sod or almost total neglect. Sweet cherries withstand sod culture even better than the sour kinds. Fairly vigorous terminal growth is necessary for crop production with both sweet and sour cherries. This can be stimulated by nitrate of soda or other nitrogenous fertilizer applied early in the spring at the rate of 3–5 pounds to the mature tree.

Pruning is begun when the two-year tree is set out; all but the leader and two well-spaced laterals should be removed. The remaining branches should not be headed back. For the mature sweet cherry the spreading type of tree with several large scaffold branches is the most desirable. The main branches may be headed back when they become too high for convenient harvesting. Sour cherries are pruned rather lightly at first, but as soon as growth begins to get short and spurry, the branches must be thinned out and renewal pruning practiced to keep up the vigor of growth.

Harvesting and marketing require special attention. For the cannery and freezer, which absorb a large part of the crop in the fruit districts, cherries are allowed to become dead ripe and then picked without the stems, into lugs or buckets. If they are to be sold fresh on the market they are picked with the stems, taking great care not to bruise the fruit. In the East they are packed either in quart berry baskets and shipped in berry crates or in climax baskets holding 4–12 pounds. In the West sweet cherries are usually marketed in 15-pound boxes which are faced. Quantities of sour cherries are pitted and frozen at about 0° F., either with or without sugar, and thus held indefinitely.

Yields are likely to be very variable, due to local conditions. Sour cherries may yield from 15–40 quarts a tree or 3 or 4 tons to the acre. Sweet cherries may yield much more than this under good conditions. Storing fresh cherries for more than a few weeks is not practicable.

Most varieties of sweet cherries need a pollinizer, so at least two varieties should be planted near together. In commercial planting this matter should receive careful attention for some varieties, as for example Napoleon (Royal Anne), Lambert and Bing, will not pollinate each other, but may be pollinated by such varieties as Black Tartarian, Black Republican, and Windsor. Sour cherries do not need a pollinizer but yields are increased by placing honeybees in the orchard to self-pollinate the blossoms. The following lists are given in approximate order of ripening, commercial varieties being starred: *Sweet cherries*—Seneca, Lyons, Ida, Governor Wood, Coe, *Black Tartarian, *Black Republican, *Napoleon, *Lambert, *Bing, *Yellow Spanish, *Schmidt, *Windsor. *Sour cherries*—Early Richmond, *Montmorency, *English Morello, Chase. *Duke* or *hybrid cherries*—May Duke, Arch Duke, Olivet, Louis Phillippe, Reine Hortense, Late Duke.

Serious diseases of cherries are brown-rot and leaf-spot; the most important pests cherry fruit-flies and on sweet cherries the black aphis. In the commercial orchard an adequate spray program should be worked out with local spray service agencies with reference to the spray residue tolerances. Control is based on the application of a spray mixture made up of 2 gallons liquid lime-sulfur, 2½ pounds lead arsenate, 100 gallons water, applied just as the early varieties of cherries show color and again two weeks later. For aphid and tent caterpillar control this spray may be employed with the addition of 1 pint of nicotine sulfate as the tips of the buds show green.

CHERRY, BARBADOS-: *Malpighia glabra.* **Cornelian-:** *Cornus mas.* **Ground-:** *Physalis.* **Indian-:** *Rhamnus caroliniana.* **Jerusalem-:** *Solanum Pseudo-Capsicum* and *Capsicastrum.* **Madden-:** *Maddenia hypoleuca.* **Spanish-:** *Mimusops Elengi.* **Surinam-:** *Eugenia uniflora.* **Winter-:** *Physalis Alkekengi.*

CHERVIL. Two vegetable-garden plants are known as chervil, both native in Europe and members of the Parsley family.

Salad chervil is a hardy annual, *Anthriscus Cerefolium*, of simple culture, the leaves employed in salad and garnishing. It is grown as a spring or autumn crop, not thriving in the heat of summer. Usable leaves are obtained in six or eight weeks after seeds are sown; the autumn sowing is sometimes carried over winter in frames or in mild climates with a protection of mulch. Plants may stand at distances of 8–12 inches; they grow 1½ feet or more tall.

Tuberous chervil is a hardy biennial, *Chærophyllum bulbosum*, producing a carrot-like small gray or blackish edible root. Seed may be sown in August or September (that is, as soon as ripe), but usually it does not germinate till spring and the roots mature in four to six months thereafter; culture otherwise as for carrot. It is the better practice to stratify the seeds in autumn, and they are then regularly sown in spring. If kept in the usual way and allowed to remain dry, they may probably not germinate till the second spring if at all.

CHESTNUT. Attractive trees grown for edible nuts and to some extent for shade and ornament. The native chestnut, *Castanea dentata* (*americana*), formerly covered large areas of the eastern United States but this species has been nearly destroyed by the chestnut bark disease or blight. It persists mostly as sprouts, coming up from the old stumps in the native forests. The European chestnut, *C. sativa*, has been introduced and rather widely distributed but plantings of this species also have succumbed to the bark disease.

More recently the Japanese chestnut, *C. crenata* (*japonica*), and *C. mollissima*, the Chinese chestnut, have been introduced. Both of these species are more resistant to the blight than the American or European sorts and promise by hybridization to give rise to acceptable varieties that can be grown in the blight-infested area. Hybrid sorts being propagated for their nuts and tried in the East are the Carr, Hobson, and Stoke. Although not immune to the blight, they are sufficiently resistant to persist in spite of blight infection.

The American species excels the others in hardiness to cold and quality of nuts which are much smaller in size. The larger fruited species mostly produce nuts lacking sweetness and used for their food value. A few of the hybrid selections have nuts of good quality. Varieties of Chinese and Japanese origin are subject to winter injury in parts of the North having winter temperatures of 20° to 30° F. The European kinds are somewhat hardier.

Commercially, chestnuts are raised to some extent on the Pacific Coast of the United States which is outside the blight-infested region. Here the American and European species and their hybrids may be grown. In the eastern part of the country the varieties of Japanese and Chinese origin are being tried out in a small way with some promise of success.

Chestnuts are naturally tolerant of acid soils and present no special cultural difficulties on well-drained land. Blight is the limiting factor, though weevils may become troublesome. The trees are precocious, often bearing nuts two or three years after planting.

Propagation by budding or grafting on chestnut stocks is practiced. Seedlings of the Chinese species are suitable stocks for varieties of oriental origin. Expert workmanship is essential for a high percentage of "take." The breeding of chestnuts for blight resistance, both as forest trees and nuts, is receiving much attention from federal and other agencies and enough progress has been made to indicate that in the future chestnuts again may be grown in the United States in spite of the blight.

CHESTNUT: *Castanea.* **Cape-:** *Calodendrum capensis.* **Guiana-:** *Pachira aquatica.* **Horse-:** *Æsculus.* **Moreton-Bay-:** *Castanospermum australe.* **Water-:** *Trapa.* **Water-, Chinese:** *Eleocharis dulcis.*

CHICKWEED: *Stellaria media.* **Mouse-ear:** *Cerastium.*

CHICORY (*Cichorium Intybus*). This perennial, native in Europe, is grown for the roots and also as salad. The same plant is also extensively run wild in North America along roadsides and in neglected fields.

The thick roots are employed as substitute for coffee. In this capacity it is a field crop, grown in deep well-prepared soil. Seeds are sown in spring in drills about 18 inches apart, good tillage is provided, and the hard parsnip-like roots are garnered in autumn.

Chicory is grown for the foliage, used as greens or salad. The best-known product is witloof, which is the crown of uncolored leaves forced in winter or spring from stored roots. Seeds of the strain of chicory mostly employed for the production of witloof are sown in drills in spring and thinned to about 6 inches in the row. At the close of the season the roots are lifted, the tops cut off above the crown, and stored in a cellar, the same as other root-crops. For the production of the crown of leaves known as witloof, the roots are trimmed on the lower end to 8 or 9 inches long, then placed upright in soil or sand in a box and the crowns covered with about 8 inches of sand; temperature is kept at about 60°, and in a fortnight the white salad witloof should be ready, a good "head" being 6 inches long.

Sometimes the leaves of chicory are blanched in the field late in the season by banking as for celery; or the same treatment may be applied in spring to the new leaves arising from roots remaining in the ground over winter. Some persons force the stored roots in darkness to obtain the blanched tops. The unblanched leaves are sometimes used as greens.

CHILDSIA: *Hidalgoa Wercklei.*

CHILEAN NUT: *Gevuina Avellana.*

CHILE-BELLS: *Lapageria rosea.*

CHILÈNIA. *Cactaceæ.* A Chilean genus segregated from Neoporteria and said to differ in producing 2 flower-buds simultaneously of which one may not mature.

acutíssima (*Neoporteria acutissima. Echinocactus acutissimus*). Plant subcylindrical, erect becoming prostrate, gray-green; ribs 18–21; radial spines about 24, to ½ in. long; centrals 4, to 1¼ in. long, yellowish: fls. carmine-red, to 1¾ in. long.

castaneoìdes. Plant globose, gray-green; ribs 15–18, acute to somewhat thickened and rounded, areoles about ⅓ in. apart and white-woolly; radial spines 16–20, to ¾ in. long, grayish; centrals 6, erect, brownish, usually longer: fls. carmine-red with whitish throat: fr. reddish-green to rose.

chilénsis (*Neoporteria* and *Echinocactus chilensis*). Plant globose to short-cylindrical, to 10 in. tall, top woolly; ribs 20–21, tubercled; spines curved, yellow becoming brown or whitish; radials 20–30, to ½ in. long; centrals about 6, to ¾ in. long: fls. pink to carmine-red, to 2 in. across, segms. narrow, acute, toothed, style and stigma white.

heteracántha. Depressed-globose, to 4 in. diam.; ribs about 19, notched, areoles about ¼ in. apart; radial spines about 20, stiff and closely clustered, to ⅞ in. long, slightly curved; centrals 6, to 1⅞ in. long, dull white to brownish-gray: fls. carmine with white throat: fr. red.

nigrihórrida. Depressed-globose, to 4 in. diam. and 2½ in. high; ribs usually 16–18, to ⅓ in. wide, acutely compressed between areoles; spines gray but appearing black when wet; radials 16–18, to ⅝ in. long; centrals 6–8, to 1½ in. long, stout: fls. carmine, white in throat, to 1¾ in. across: fr. reddish-green.

senìlis: listed name, perhaps *Neoporteria Nidus.*

subgibbòsa (*Echinocactus guyannensis. E. exculptus. Neoporteria subgibbosa*). Globose becoming cylindrical, to about 4 in. diam., erect becoming prostrate or pendent from rocks, pale green, densely spiny; ribs usually 15–20, compressed, to ½ in. high, warty; spines yellow to brown; radials about 24, slender, sharp; centrals 4–5, stouter: fls. carmine-red, to 1¾ in. long.—Said to differ from *C. acutissima* in its more warty ribs and sharper stiffer spines, but by some authors the two are treated as conspecific.

CHILICOTHE: *Echinocystis macrocarpa.*

CHILÓPSIS. *Bignoniaceæ.* One deciduous shrub or tree to 20 ft., native Tex., Calif. and Mex. in dry regions, mostly near springs or stream beds, and planted in the S. **C. lineàris** (*C. saligna*). DESERT- OR FLOWERING-WILLOW. Lvs. linear, to 1 ft. long, entire: fls. trumpet-shaped with 5-lobed crimped limb, lilac with 2 yellow stripes inside, to 2 in. long, in terminal racemes: fr. linear, to 1 ft. long. Var. **álba** has white fls.

CHIMÁPHILA. Pipsissewa. *Pyrolaceæ.* Evergreen woods herbs or little subshrubs with creeping sts., toothed lvs. in irregular whorls, white or pinkish fls. in few-fld. terminal long-stalked umbels, and capsular frs.; grown in the wild-garden where it prefers partial shade. Propagated by divisions of the creeping sts.

maculàta. To 10 in.: lvs. broadest below the middle, variegated white along the veins. Me. to Ga. and Ala.

Ménziesii. To 10 in.: lvs. broadest below the middle, sometimes variegated. B. C. to Calif.

umbellàta. To 10 in.: lvs. broadest above the middle, not variegated. Eu., Asia. Var. **cisatlántica** is the form native in E. N. Amer.

CHIMONÁNTHUS. *Calycanthaceæ.* Two Chinese shrubs with opposite entire lvs., yellow fls. long before the lvs., and fr. contracted at the mouth. Requires winter protection in the N. Propagated by seeds sown in spring and by layering in autumn.—Chimonanthus has been conserved over the older Meratia by ruling of the International Botanical Congress.

fràgrans: *C. præcox.*

prǽcox (*C. fragrans. Calycanthus* and *Meratia præcox*). To 10 ft., deciduous: lvs. elliptic-ovate to oblong-lanceolate, 6 in. long: fls. fragrant, about 1 in. across, the inner sepals striped with purplish-brown. Var. **grandiflòra** has larger lvs. and fls.

CHIMONOBAMBÙSA. *Gramineæ.* Bamboo-like shrubs with creeping rootstocks and nearly solid round sts. whose sheaths are deciduous and with several branches arising from each node: differs from Arundinaria in fls. having 2 styles, not solitary. About a dozen species, from E. or S. Asia.

marmòrea (*Arundinaria* and *Bambusa marmorea*). To 3 ft. or more, sheaths marbled with purple: lvs. to 5 in. long and ¾ in. wide, toothed, bright green. Japan.

CHINA-BERRY: *Melia Azedarach.* **-Brier, False:** *Smilax laurifolia.* **-Tree:** *Melia Azedarach.*

CHINESE EVERGREEN: *Aglaonema simplex.* **-Hat Plant:** *Holmskioldia sanguinea.*

CHINKAPIN, WATER: *Nelumbium pentapetalum.*

CHINQUAPIN: *Castanea pumila.* **Giant:** *Castanopsis chrysophylla.*

CHIOCÓCCA. Snowberry. *Rubiaceæ.* Shrubs or vines with opposite leathery lvs., small yellow or white fls. in axillary racemes, and fr. a globular white drupe; native Fla. to trop. Amer.

álba (*C. racemosa*). Shrub to 10 ft., or vine: lvs. elliptic or ovate, to 3 in. long: fls. yellow, to ⅓ in. long.

racemòsa: *C. alba.*

CHIÓGENES. *Ericaceæ.* Two evergreen creeping little plants with small alternate lvs., bell-shaped solitary fls. and fr. a white berry; adapted to the rock-garden, forming mats. A moist peaty soil and partial shade are desirable. Propagated by seeds, division or cuttings.

hispídula (*C. serpyllifolia. Gaultheria hispidula*). Creeping Snowberry. Lvs. ovate, to ⅓ in. long: fls. white, ⅙ in. long. May–June. N. Amer.

serpyllifòlia: *C. hispidula.*

CHIONÁNTHUS. Fringe-Tree. *Oleaceæ.* Two deciduous practically diœcious trees or shrubs with opposite entire lvs., many small white fls. in showy panicles, the 4 petals linear and united only at base, and fr. a dark blue drupe.

The fringe-trees are hardy North with some protection. They succeed in sunny positions in moist sandy loam. Propagated by seeds in autumn or stratified, by layers and cuttings of forced plants, and by grafting or budding on the ash.

retùsa. To 20 ft.: lvs. ovate or elliptic, to 4 in. long: panicles to 4 in. long. June–July. China.

virgínica. To 30 ft.: lvs. mostly oblong or obovate-oblong, to 8 in. long: panicles to 8 in. long. May–June. Pa. to Fla. and Tex.

CHIONODÓXA. Glory-of-the-Snow. *Liliaceæ.* Early spring-blooming bulbous herbs with narrow basal lvs. and blue or white short-tubed open fls. in loose racemes terminating the scape.

Chionodoxas thrive in any soil but need plenty of moisture and light. Bulbs should be planted approximately 3 inches deep and replanted about the third year. Propagated by offsets or seeds.

Állenii. Said to be a natural hybrid between *C. Luciliæ* and *Scilla bifolia*, having the general habit of the former but with perianth segms. cut to the base and an indistinct white eye.

crética. Differs from *C. Luciliæ* in having smaller fls. with only 1–2 on a scape, white or very pale blue. Crete. Var. **álba** is offered.

gigantèa: a large form of *C. Luciliæ.*

grandiflòra: a large-fld. form of *C. Luciliæ.*

Lucíliæ. To 8 in.: fls. bright blue with white center, 1 in. across. Asia Minor. Var. **álba** has white fls. Var. **ròsea,** fls. pink.

sardénsis. Perhaps only a form of *C. Luciliæ* with fewer dark blue fls. without white center.

tmolùsii: a late-blooming form of *C. Luciliæ.*

CHIONÓGRAPHIS. *Liliaceæ.* A monotypic genus from Japan allied to Chamælirium and differing in having only 3–4 perianth-segms., the stamen filaments very short or absent, and fls. perfect and in a spike rather than unisexual and in a raceme. **C. japónica.** Per. to 12 in.: basal lvs. in rosette, broadly elliptic to linear-oblong, to 3 in. long, irregularly toothed to entire, reticulately veined, st.-lvs. linear, to 1½ in. long, sessile: fls. white, to ¾ in. across, segms. narrowly linear and spreading.

CHIONÓPHILA. *Scrophulariaceæ.* One per. herb to 6 in. high native in the Rocky Mts. of Colo. and Wyo. and sometimes transferred to the rock-garden. **C. Jàmesii.** Lvs. mostly basal, spatulate or lanceolate, entire: fls. cream-colored, ½ in. long, tubular and 2-lipped, in one-sided spikes.

CHIRÌTA. *Gesneriaceæ.* Soft per. herbs, more or less succulent, much like Gesnerias, E. Indian and Malayan: lvs. opposite: fls. irregular, showy in terminal small clusters or on short axillary branchlets; fertile stamens 2: fr. a long narrow caps. **C. lavandulàcea** is an attractive warmhouse plant to 3 ft. high, branched: lvs. soft-pubescent, broad-ovate, with many parallel side-ribs departing from the midrib: fls. about 2 in. long; corolla finely pubescent, tube white and upper part lavender-blue.

CHIRÒNIA. *Gentianaceæ.* African herbs with simple opposite lvs. and pink or rarely purple 5-lobed fls. borne in cymes; intro. in Calif.

baccífera. Much branched per. to 2 ft.: lvs. linear to linear-oblong, to 1½ in. long, entire: fls. rose-pink, to ⅝ in. across: fr. a reddish-orange berry-like caps. Trop. Afr.

ixífera: *C. linoides.*

linoìdes (*C. ixifera*). Sts. to 3 ft.: lvs. linear or lanceolate, to 1½ in. long: fls. about ½ in. long, solitary or 2–5 together. S. Afr.

CHITTAMWOOD: *Bumelia lanuginosa.*

CHIVE; under *Onion.*

CHLIDÁNTHUS. *Amaryllidaceæ.* Trop. American bulbs with basal strap-shaped lvs. and fragrant yellow fls. borne in few-fld. umbels at tips of solid scapes, blooming in summer; one species intro. in Calif. and hardy when well mulched. Propagated by offsets or seeds. See *Bulbs.*

fràgrans. To 10 in.: lvs. with the fls., glaucous: fls. to 3 in. long. Andes.

CHLORANTHÀCEÆ. Chloranthus Family. Three genera growing in warm regions, trees or shrubs with opposite lvs., small unisexual fls. without perianth borne in spikes or panicles, having 1 or 3 stamens, 1-celled ovary, and drupaceous fr. The family is allied to Piperaceæ. Ascarina and Chloranthus may be planted out-of-doors in the S.

CHLORÁNTHUS. *Chloranthaceæ.* Trop. herbs or shrubs with opposite simple lvs. and inconspicuous fls. in slender terminal spikes; one species intro. in S. Calif.

brachýstachys: *C. glaber.*

glàber (*C. brachystachys*). Shrub to 2 ft.: lvs. elliptic-lanceolate, to 5 in. long, coarsely toothed: fr. a bright red globose drupe. India, China, Malaya.

CHLÒRIS. Finger-Grass. *Gramineæ.* Ann. and per. grasses grown for ornament or forage, native in warm regions of the world: spikelets awned, in 2 rows on one side of the rachis, in spikes which are solitary or in terminal umbels. See *Grasses.*

barbàta: may be either *C. paraguayensis* or *C. polydactyla;* see also *C. truncata.*

élegans: *C. virgata.*

Gayàna. Rhodes-Grass. Per. to 4 ft., stoloniferous: lvs. to 1 ft. long and ⅓ in. wide, flat or folded: spikes to 4 in. long, in umbels of 6–15. Afr., but nat. elsewhere.—Grown in the S. for forage.

paraguayénsis. Ann. to 2 ft.: lvs. to 4 in. long, flat or folded: spikes to 2 in. long, purplish, few or several in the umbels. Tropics.

polydáctyla. Per. to 4 ft.: lvs. to 2 ft. long and ⅓ in. wide: spikes to 6 in. long, in umbels of 6–25. Trop. Amer.

truncàta (*C. barbata vera*). Per. to 1 ft.: lvs. short, to 1/12 in. wide, flat or folded: spikes to 6 in. long, several in one or two whorls. Australia, but nat. in N. Amer.

virgàta (*C. elegans*). Per. or ann. to 3 ft.: lvs. to 4 in. long and 1/12 in. wide, flat or folded: spikes to 2½ in. long, pale or purplish, in umbels of 6–15 or more. Tropics.

CHLOROCÒDON (*Mondia*). *Asclepiadaceæ.* Vines with opposite large lvs., toothed or frilled stipules, and wheel-shaped fls. in axillary panicles; 2 species in Afr., the roots used in medicine and one grown under glass or out-of-doors in the S. Propagated by cuttings over bottom heat.

Whitei. Mundi-Root. Tall-twining: lvs. ovate, heart-shaped at base, to 7 in. long: fls. purplish, to 1 in. across, having a white 5-lobed crown, Aug. Natal, trop. Afr.

CHLORÓGALUM (*Laothoe*). *Liliaceæ.* Tall bulbous herbs with mostly basal tufted lvs. and white or purplish fls. in panicles, the perianth-segms. distinct; native in Calif. Cult. as for *Camassia.*

angustifòlium. To 1½ ft.: lvs. narrow and grass-like: fls. white lined with green, to ½ in. long, perianth funnelform, segms. narrow-oblong, pedicels very short.

pomeridiànum. Soap-Plant. Amole. To 5 ft.: lvs. to 1½ ft. long and ¾ in. wide, wavy-margined: fls. white veined purple, ¾ in. long, opening in afternoon.

CHLORÓPHORA. *Moraceæ.* Milky-juiced trees from trop. Amer. and trop. Afr., with alternate lvs., staminate fls. in dense catkin-like spikes, pistillate in dense heads, and fr. an achene; grown in trop. countries for the yellow dye and the valuable yellow wood.

tinctòria. Fustic. To 60 ft., with spreading broad head: lvs. lanceolate to elliptic, to 5 in. long, entire or toothed. W. Indies, S. Amer.

CHLORÓPHYTUM. *Liliaceæ.* Trop. herbs closely related to Anthericum and differing chiefly in the somewhat broader lvs. and sharply 3-angled caps.; fls. in long open erect racemes or spikes. Grown in greenhouses and out-of-doors in warm regions; they are more or less proliferous, and are easily multiplied.

comòsum (*Anthericum comosum. C. Sternbergianum*). To 3 ft.: lvs. 1 ft. long: fls. white, to ⅝ in. across, in leafy-tipped racemes. S. and Cent. Afr.—A white-striped form is known as *Anthericum Mandaianum; A. picturatum* has lvs. striped yellow.

elàtum (*Anthericum elatum*). To 3 ft.: lvs. 1 ft. long: fls. ivory-white, to ⅝ in. across, in non-leafy racemes. S. Afr.—Forms known as *Anthericum variegatum* and *vittatum* have lvs. striped white.

Sternbergiànum: *C. comosum.*

CHOÍSYA. *Rutaceæ.* Mexican evergreen shrubs with digitately compound lvs., showy white fls. in axillary cymes, and fr. of 3 or 5 carpels.

One species is grown under glass, and out-of-doors in the South and California where it stands a few degrees of frost. Propagated by cuttings of young wood over heat or of older wood in a coldframe.

ternàta. Mexican-Orange. To 10 ft.: lvs. of 3 oblong to ovate or obovate lfts. to 3 in. long: fls. fragrant, 1 in. or more across, conspicuous over the foliage.

CHOKEBERRY: *Aronia.*

CHOKE-CHERRY: *Prunus virginiana.*

CHOLLA: *Opuntia.*

CHONDROSEA: *Saxifraga Aizoon.*

CHORÍSIA. *Bombacaceæ.* S. American spiny trees with alternate digitately compound lvs., large fls. and pear-shaped capsular frs., the silky floss on the seeds used for stuffing pillows. Sometimes planted in S. U. S.

speciòsa. Floss-Silk Tree. Lfts. lanceolate, toothed: fls. yellowish striped with brown at base, 3 in. across, solitary in axils. Brazil.

CHORIZÁNTHE. *Polygonaceæ.* Ann. and per. herbs native in Calif. and Chile: lvs. usually in basal rosettes, the st.-lvs. reduced to bracts: fls. included in the involucre, usually solitary. Adapted to dry locations in warm regions.

Pálmeri. To 12 in., erect or prostrate: lvs. linear to oblong-spatulate, to 1¼ in. long, lanate becoming glabrate above, sessile or nearly so: fls. rose-pink, calyx-lobes rounded, the inner ones fringed. S. Calif.

staticoìdes. To 10 in., with spreading branches, reddish or purplish: lvs. oblong, to ¾ in. long, on long petioles, white-tomentose beneath: fls. very small, rose or white calyx exserted from involucre, lobes not fringed. S. Calif.

CHORÍZEMA. *Leguminosæ.* Shrubs or subshrubs with simple alternate lvs., papilionaceous showy fls. in racemes, and short pods; Australia.

They may be planted out-of-doors in the South or grown in greenhouses; they require plenty of sun. Propagated by cuttings in spring under glass.

cordàtum. Shrub to 10 ft. with weak branches: lvs. with small prickly teeth, ovate-lanceolate: fls. orange-red, or scarlet with purplish keel, in long loose or open racemes, abundantly produced.

grandiflòrum: a form of *C. varium.*

ilicifòlium: the plant known to the trade under this name is *C. cordatum.*

vàrium. Shrub to 6 ft.: lvs. cordate-ovate, with prickly teeth: fls. with light orange standard and purple-red wings and keel, borne in short close racemes.—Apparently not in general cult. with us.

CHOROGI: *Stachys Sieboldii.*

CHRISTMAS-BERRY: *Heteromeles arbutifolia.* -Tree: *Schinus terebinthifolius.*

CHRISTMAS-ROSE: *Helleborus niger.*

CHRISTOPHINE: *Chayote, Sechium.*

CHROSPERMA: *Amianthium muscætoxicum.*

CHRYSALIDOCÁRPUS. *Palmaceæ.* About 10 often gregarious unarmed feather-palms of mostly small stature in Madagascar, one of them popular in cult.: sts. slender, ringed: lvs. plume-like, gracefully arching; pinnæ very many, bifid, narrow: spadix among the lvs., branching; stamens 6, pistillode more or less 3 lobed: fr. ovoid or ellipsoid, about 1 in. or less long. See *Palm.*

lucubénsis. St. single, ringed, to 30 ft. or more: pinnæ in clusters along the midrib and 1½ ft. long and ¾ in. broad, glossy on upper surface: spadices much branched, about ½ as long as blade of lf.: fr. oblong, about ¾ in. long, the exterior thin and hard. Forest of Lucuba, island of Nossi-Be off northwest coast of Madagascar.—Planted in S. Fla., and farther S.

lutéscens (*Areca lutescens*). Sts. many, forming an attractive clump to 25 or 30 ft., foliaged nearly or quite to the base: pinnæ 40–60 pairs, mostly less than 1 in. broad, midrib strong, the ends not much arching or drooping; petiole 2 ft. long, yellow, convex below and deeply furrowed above, suddenly much expanded at base: fr. oblong-ellipsoid, about ¾ in. long, violet-black.—Much grown as a florists plant for pots and tubs, and attractive in the open in S. Fla. and tropics.

madagascariénsis (*Dypsis madagascariensis*). Clumps with a denser head than *C. lutescens* and less likely to be foliaged to base, the lvs. more numerous and the pinnæ about twice as many with the tips arching or hanging: fr. ovoid-elliptic, about ½ in. long.

CHRYSAMPHORA: *Darlingtonia.*

CHRYSÁNTHEMUM. *Compositæ.* Large genus of ann. and per. herbs, some of them woody at the base, a number of which are grown for the showy bloom; native in temp. and boreal regions, mostly in the Old World. Matricaria, Myconella and Tanacetum are closely allied.

Cultivated chrysanthemums are hardy and half hardy mostly strong-scented and rather coarse plants, with colors in various series except blue and true purple; they usually bloom late in the season in the open. A half dozen cultural classes may be distinguished: 1. The flower-garden annuals; 2. feverfews; 3. pyrethrums; 4. marguerites; 5. perennial border kinds, yielding some of the flowers known as daisies; 6. the florists chrysanthemum. In these various ranges are excellent decorative materials and possibilities. The interest in these plants is represented by the Chrysanthemum Society of America.

1. The annual chrysanthemums are big flower-garden subjects, suitable for late summer and autumn mass colors, raised readily from seeds which commonly are sown as soon as the ground is fit directly where the plants are to stand; they may be grown thickly in back rows, but for best blooms should be thinned to 12–24 inches apart; provide an open sunny position. Three species are involved. *C. coronarium* is the tallest, and single large plants sometimes need staking. *C. carinatum* is the usual flower-garden kind, in many colors. *C. segetum* yields good clear yellows.

2. Feverfews are forms of *C. Parthenium,* sometimes known as a pyrethrum. All are perennial, hardy, of the simplest culture, and persistent. They are grown for the abundant little white-rayed heads with yellow center, and dwarf compact forms for the foliage which is sometimes crisped and yellow-tinged; the latter kinds are known as Golden-Feather. They grow readily from seeds, blooming the second year, and frequently they seed themselves; offsets may be taken from the clumps.

3. Pyrethrums, product of *C. coccineum,* useful for cutting and employed as a florists flower. The stems are long and simple from a crown of attractive foliage; the daisy-like heads are bright white, rose, carmine, lilac and other shades; bloom in late spring and summer; an autumn cutting may be had if the flowers are all cut regularly. Propagated by seeds, blooming the second year; named horticultural varieties by offsets or division.

4. Marguerite chrysanthemums belong to *C. frutescens,* although the related *C. anethifolium* is sometimes seen; it is frequently known as Paris daisy. It is tender in the North, and is grown in pots and tubs for late winter, spring and summer bloom. Propagated by cuttings, like the florists chrysanthemum; taken in spring they should give blooming plants for the following winter and spring. Shift into larger pots as needed. Old plants may be cut down and bloom renewed for another year if grown in tubs or big pots.

5. The perennial border chrysanthemums are hardy strong plants propagated by division, and by seeds which give blooming plants the second year; if necessary, they may be multiplied by short cuttings of young firm shoots. They require sunny positions. Some of the recent introductions belong to *C. rubellum.*

6. The common chrysanthemum of florists (*C. morifolium*) is known in two races or types: the kinds developed into very large flowers for pot culture, and the border bushy kinds that remain always in the perennial garden. These two types are not essentially different, however, as the large flowers of the florists kinds are developed not alone by selection but by extra care in propagation, culture, pruning and disbudding; they express the skill of the grower; if left to themselves to produce bushy plants, the florists kinds bear many small or medium-sized flowers. All these plants are essentially hardy perennials, propagated by seeds, cuttings and division.

The usual propagation of the house chrysanthemum is by cuttings taken in spring from shoots that arise from crowns of plants that have been carried through the winter; when the plants begin to stool or to send up new growth, the shoots are cut 2 or 3 inches long and inserted in sand in boxes or on a bench; the cuttings are trimmed of their lower leaves and the remaining (upper) leaves are usually cut in two to reduce evaporating surface; as soon as rooted they are placed in small pots, say 2½-inch.

The young plants may be carried through the summer in pots, after repotting two or three times, or planted in the ground and lifted in October or November. Every pains should be taken to keep the plants growing without check or insect or fungus injury. If one does not care to propagate them, plants may be purchased in late spring or early summer, that have been potted and are well rooted and stocky. By the time the plants are to bloom they should be in 6-inch pots or larger; if very large bushy plants are desired, the pots should be 10- or 12-inch.

For cut-flowers, the plants are usually grown by florists in benches under glass from first till last, after the cuttings are turned out of their first small pots; if to be grown to single stems for very large bloom, the plants may be set 8–12 inches apart each way on the benches, and they are tied, trained and disbudded as they grow, only the terminal bud being retained.

The amateur usually prefers to allow bushy plants with a good number of smaller flowers. The plants are allowed to branch. All weak growths should be removed as they appear, and when buds begin to show they should all be removed except the terminal one on the branch; in this way there will be as many flowers as branches, say one to two dozen depending on the size and vigor of the plant and the wish of the grower. The heads or flowers will be of approximately one size. The plants may be bloomed in pots 6 inches or larger or in soap boxes for the window. The plants are discarded after blooming unless one wants to propagate a new lot for the following year, and in this case the tops are cut down and the pot or box placed in a cellar and kept dry enough to maintain life and strength but not to start into growth or induce decay; in February or March the plant may be brought to warmth and light, given water, and shoots for cuttings will soon start. It is to be remembered that the plant is a hardy perennial and that it should be grown cool when in the house.

The types or groups of *C. morifolium* are many, and there are named varieties under each group. This range allows of a choice to satisfy any taste.

achilleæfòlium. Yarrow C. Per. border species, 2 ft. little branched, rooting at bottom: lvs. soft-hairy: fls. yellow. Siberia, Caucasus.

alpìnum (*Leucanthemum alpinum*). Per., 2–6 in. high, with 1 terminal head on each st.: lvs. to 2 in. long at base of st., cut into narrow segms., those on st. few and very small: fl.-heads white. High Alps.—Rock-garden.

Amàliæ: listed as a dwarf summer-blooming plant with pink fls.

anethifòlium. Glaucous Marguerite or Dill C. Per. with fine glaucous foliage: fls. white, sometimes lemon-yellow. Canaries.—Greenhouse plant in the N. much like marguerite but less coarse.

árcticum. Arctic C. Per. to 6 in., more or less decumbent at base: fls. aster-like, to 2 in. across, white to lilac. Arctic regions.—Border plant; the material usually cult. under this name is referable to *C. yezoense.*

atràtum (*C. coronopifolium*). Per. 6–12 in., mostly 1-headed: lower lvs. 1-divided, the segms. 5–7-toothed, those on st. lanceolate or linear: rays white. Alps.

atrococcíneum: *C. carinatum.*

aùreum: *C. Parthenium* var.

Balsámita (*Balsamita vulgaris. Tanacetum Balsamita*). Costmary. Per. 2–3 ft.: lvs. serrate: heads many, ¼–⅜ in. across, with very short white rays; commonly rayless and then known as var. **tanacetoìdes.** W. Asia.—Persistent plant sometimes grown for its sweet-smelling herbage, and erroneously called "lavender"; also known as "mint-geranium."

bícolor: *C. carinatum.*

Broussonètii (*Ismelia Broussonetii*). Per. 2–3 ft.: lvs. ovate or obovate, pinnatifid, the narrow segms. pinnatifid or toothed: heads long-peduncled, to 3 in. across, rays lilac, yellowish at base. Canaries.

Burridgeànum: *C. carinatum.*

carinàtum. Tricolor C. Glabrous ann., 2–3 ft., nearly simple or somewhat forking: lvs. pinnatifid into linear lobes: heads large, 2½ in. or less, rays white, red, purple, yellow, disk purple, colored ring at base of rays. Morocco. —Flower-garden; cult. also as *C. atrococcineum*, *C. bicolor*, *C. Burridgeanum*, *C. Dunettii*, *C. tricolor*.

caucásicum (*Pyrethrum caucasicum. Chamæmelum caucasicum*). Per., st. erect from the rhizome, 1-headed: lvs. parted into linear-awl-like lobes: head long-peduncled, 1½ in. across, rays white. Caucasus.

cinerariæfòlium. Dalmatian C. or Pyrethrum. Per., 12–24 in., producing many slender sts., herbage silvery: heads white, 1 in. or more across, on very long sts. Dalmatia.—A source of insect powder.

coccíneum (*Pyrethrum roseum. P. carneum. P. atrosanguineum*). Pyrethrum. Painted Daisy. Per., nearly or quite simple, 1–2 ft.: lvs. bipinnatifid, fern-like: heads large and showy, terminating the sts., red in various shades, pink, lilac, white, sometimes double. Caucasus, Persia.—Used by florists. Var. **Kélwayi** has dark red fls. Var. **ròseum** has rose-pink fls. Var. **Wílsonii** (*C. Wilsonii*) has pure pink double fls.

coreànum: hort. name for a form with single white fls.; it may be *C. rubellum* or *C. Zawadskii* var. *sibiricum.*

coronàrium. Garland C. Crown Daisy. Stout branchy ann., 3–4 ft., with lvs. divided nearly to the midrib, the segms. less than ¼ in. broad and again cut or toothed: heads many, 1–1½ in. across, yellow or whitish, often double; achenes with prominent straight parallel ridges on back. Medit. region.—Flower-garden; young shoots eaten in Japan. Var. **spatiòsum.** To 2 ft. or more, stout and very leafy, glaucous: lvs. broad-spatulate, mostly 1 in. or more across, lobed or cut half way or less to midrib or with deeper lobes on narrow lower part: fls. light yellow: grooves on achenes not prominently parallel or deep. China.—Grown for the young shoots which are eaten, and not unknown in this country; known as "boong-hau-ts'ai," "shungiku" and "chop suey greens."

coronopifòlium: *C. atratum;* sometimes *C. coccineum* is meant.

corymbòsum (*Pyrethrum corymbosum*). Per., 2–4 ft.: lvs. bipinnatifid: heads many on terminal branches, 1 in. or less across, white. Caucasus.—Border.

Dunéttii: *C. carinatum.*

erubéscens: the plant in cult. in N. Amer. under this name is apparently *C. rubellum. C. erubescens* itself is a smaller more slender plant than *C. rubellum* with ovate to reniform lvs. cut only about to the middle and sinuses very narrow.

Fontanèsii (*Hymenostemma Fontanesii*). Ann., slender, much branched, 12–18 in.: lvs. spatulate, toothed or almost lobed: heads small, about ½ in. across, rays white. W. Medit. region.—Flower-garden.

frutéscens. Marguerite. Paris Daisy. Per., to 3 ft., much branched, becoming woody: lvs. not glaucous, coarsely divided, rather fleshy: heads many, on straight sts., 1½–2½ in. across, white or lemon-yellow. Canaries.—Florists subject.

glaùcum: see *C. multifidum.*

hispánicum (*Pyrethrum hispanicum*). Per.: lower lvs. pinnatifid, lobes linear and cuspidate: heads with white, yellow or reddish rays that are 4-nerved and 3-toothed. Spain.—Varies in cut of lvs.

hortòrum: *C. morifolium.*

hýbridum: hort. name, perhaps for a garden race of *C. coccineum.*

índicum. Per., 2–3 ft., much branched, soft-foliaged: lvs. divided, felty gray beneath: heads numerous, short-stemmed in clusters, ½–1 in. across, yellow, showy only in mass. China.—Border; very little known in cult.

inodòrum: *Matricaria inodora.*

japonícola (*C. Makinoi* var. *japonicum*). Small per., 8–32 in. high: lvs somewhat glaucous, cuneate, 3-lobed: heads to 1½ in. across, on slender peduncles, white. Japan. —Once described as *C. japonicum* (*C. sinense* var. *japonicum*), but name invalidated by the earlier *japonicum* of Thunberg which is a confused unit. *C. japonense* is another but similar Japanese plant. The plant listed in North America as *C. japonicum* awaits identification.

jesoénse: *C. yezoense.*

laciniàtum: botanically the name is a synonym of *C. segetum*, but material so listed in the trade may be *C. maximum* var.

lacùstre. Portuguese C. or Daisy. Tall per., 3–6 ft., branched at top: lvs. narrow, serrate-dentate: heads long-stemmed, 2–3 in. across, white. Portugal.—Border.

lavendulæfòlium. Per. to 4½ ft., sts. erect, short-pubescent: lvs. broadly ovate, to 4 in. long, acuminate, often pinnate: heads to ⅝ in. across, in paniculate cymes, ray-fls. yellow. Japan.

Leucánthemum (*Leucanthemum vulgare. L. grandiflorum*). Whiteweed. Ox-eye Daisy. Per., slender, 1–2 ft., simple or little branched: lvs. simple, notched or cut: heads terminal and long-stemmed, 1–2 in. across, white. Eurasia, and an abundant weed in E. U. S.—Sometimes planted in borders. Var. **califórnicum** has cream-colored fls. Var. **grandiflòrum** is said to have larger fls. Var. **prǽcox** is listed as an early bloomer.

macrophýllum (*Tanacetum macrophyllum*). Tansy C. Per., 2½ to 3½ ft., erect, branching: lvs. coarsely pinnatisect: heads numerous in terminal corymbs, ¼ in. or less across, with small white or yellowish rays. S. E. Eu. to Caucasus.—Border.

Máwii. Half-shrubby per. to 18 in. high: lvs. 1 in. long, main ones pinnatifid: heads 1½ in. across, with rays white on face and rose on back. Greater Atlas Mts., N. Afr.

máximum. Max C. or Daisy. Short-lived per., often treated as bien., erect, simple or only sparingly branched, 1–2 ft.: lvs. long and narrow, serrate-dentate: heads terminal and large, 2–4 in. across, with many white rays. Pyrenees.—Border plant, known in many forms, as King Edward VII, Chrysanthemum daisy, Shasta daisy, Glory of the Wayside, *C. Robinsonii* and erroneously as *C. Leucanthemum.* Var. **laciniàtum** has fringed or laciniate ray-fls.

millefoliàtum. Per. to 2½ ft., pubescent: lvs. pinnatisect, lobes linear, entire, acutish: heads yellow, in lax corymbs, ray-fls. 10–20. S. W. Russia.—Similar to *C. achilleæfolium*, differing in its larger lvs. and longer lf.-segms.

morifòlium (*C. sinense* in part. *C. hortorum*). Florists C. Per., 2–4 ft., branched: lvs. broad, lobed, gray-pubescent, strong-scented: heads many terminating branches, of various sizes and greatly modified in shape, fashion and color. Cultigen, probably of Chinese origin.—Under glass, and some of the kinds in the permanent border.

multífidum (*Pyrethrum glaucum*). Differs from *C. Balsamita* in lvs. lyrate-pinnatifid and achenes more nearly ovoid. E. Eu. to W. Asia.

Mycònis: *Myconella Myconis.*

nippónicum. Nippon C. or Daisy. Per., shrubby at base, 1½–2 ft., leafy above, sts. simple or little branched: lvs. thick, spatulate and obtuse, serrate at end: heads terminating sts., 1½–3½ in. across, white. Japan.—Border.

Nìvellei. Ann., sts. erect, about 1 ft. or less, leafy: lvs. thickish obovate, pinnately parted: heads solitary on branches, 1 in. or more diam., tomentose, rays white. Mts., Morocco.

pállens. Per., st. erect, hispid, simple or nearly so, 10–16 in.: lower lvs. obovate, obtuse, crenate, petiolate, upper ones ligulate and somewhat clasping and becoming entire toward top of st.: heads solitary, rays white. Mts., France.

Parthènium (*Pyrethrum Parthenium* and *P. parthenifolium. Matricaria parthenoides, M. capensis, M. eximia* and *M. alba*). Feverfew. Bushy per., 1–2 or 3 ft., very leafy: lvs. variable, pinnatisect, often yellowish (var. **aùreum**), sometimes crisped (var. **críspum**): heads many in open terminal clusters, ¾ in. and less across, white-rayed, sometimes rays absent. Eurasia.—Border; there are dwarf very compact forms.

ptarmicæflòrum. Shrubby, white-tomentose, 1 ft. and more high: lvs. bipinnately parted much as in certain achilleas: heads corymbose, small, with white rays. Canaries.

radiàtum: hort. name of unknown botanical standing.

Róbinsonii: *C. maximum.*

rotundifòlium. Per., st. glabrous, simple, erect, to 18 in.: lower lvs. ovate to broad-cordate, petiolate, mucronate-dentate, upper ones becoming narrower: head solitary, 1 in. and more across, white. Hungary.

rubéllum (*C. erubescens* of hort. *Chrysoboltonia pulcherrima*). Per. to 3 ft., slightly to much branched: lvs. to 6 in. long, pinnately 5-partite, segms. far apart and coarsely toothed or lobed, bright green above, thinly white-pubescent beneath: heads numerous, to 3¼ in. across, ray-fls. pink. Known only in cult., and recently recognized as a separate species. Var. Clara Curtis belongs here.—Similar to *C. Zawadskii*, differing in larger size, more coarsely cut lvs. and larger fls.

ségetum. Corn-Marigold. Ann., 1–2 ft., much branched: lvs. notched or shallowly pinnatifid: heads terminating branches, to 2½ in. across, yellow to whitish. Old World.—Flower-garden cult. forms with more divided lvs. are supposed to belong here, as Morning Star, Evening Star, Gold Star, Northern Star, White Glory, although different things may be grown under one or another of these varietal names.

selaginoìdes (*Pyrethrum selaginoides*) has golden-yellow foliage and is presumably a race of *C. coccineum.*

serótinum: uncertain name in lists.

sibíricum: *C. Zawadskii* var.

sinénse: *C. morifolium.*

Tchihátchewii: *Matricaria Tchihatchewii.*

trícolor: *C. carinatum.*

uliginòsum. High or Giant Daisy. Tall and much-branched per., 4–7 ft.: lvs. narrow, long-pointed and cut-toothed: heads terminating branches, 1½–3 in. across, white. Eu.—Border.

víscidi-hírtum (*C. viscosum*). Ann., somewhat viscid, st. fleshy, mostly branched above: lower lvs. oblong, narrowed at base, pinnatifid with short obtuse denticulate lobes, upper ones oblong-lanceolate and clasping: rays long-oblong, yellow. S. Spain, N. Afr.

viscòsum: *C. viscidi-hirtum.*

vulgàre: *Tanacetum vulgare.*

Wílsonii: *C. coccineum* var.

yezoénse (*C. jesoense*). Similar to *C. arcticum* from which it differs in its larger more robust habit, growing to 10 in. tall, and fls. to 2½ in. across becoming pink with age. Japan.—More floriferous than *C. arcticum* and blossoms about a month later.

Zawádskii. To 1½ ft., simple or only closely branched: lvs. 2-pinnate, segms. linear-oblong and sometimes toothed: ray-fls. white to pale pink, heads to 1¾ in. across, solitary. Galicia. Var. **sibíricum** (*C.* and *Leucanthemum sibiricum*) differs in its more broadly dissected lvs. Siberia.

CHRYSOBACTRON: *Bulbinella Hookeri.*

CHRYSOBÁLANUS. *Rosaceæ.* Shrubs or small trees with alternate simple leathery lvs., small white or greenish fls. in cymes or panicles, and fr. a pulpy drupe; native in Amer. and Afr. and planted somewhat in S. U. S.

Icàco. Coco-Plum. To 30 ft., evergreen: lvs. broad-obovate or nearly orbicular, to 3 in. long, obtuse or emarginate, shining above: fls. white, in short cymes: fr. to 1½ in. long. S. Fla. to N. S. Amer.

CHRYSOBOLTONIA PULCHERRIMA: *Chrysanthemum rubellum.*

CHRYSOBOTRYA: *Ribes aureum* and *odoratum.*

CHRYSÓCOMA. *Compositæ.* Low S. African subshrubs with small alternate linear lvs., the branches terminating in short-peduncled yellow globose heads composed only of perfect disk-fls.

còma-aùrea. To 1½ ft., sts. erect, fastigiately branching: lvs. usually ⅓ in. long, flat, glabrous, entire, about 1/16 in. wide: heads about ½ in. across, on slender peduncles to 1½ in. long.

CHRYSOCOPTIS: *Coptis occidentalis.*

CHRYSÓGONUM. *Compositæ.* One per. herb native from S. Pa. to Fla. and Ala. and sometimes transferred to gardens. **C. virginiànum.** Golden-Star. To 1 ft., hairy: lvs. basal and opposite, ovate or oblong, to 3 in. long, toothed: heads yellow, to 1½ in. across, long-stalked, of ray- and disk-fls., Apr.–July; pappus a short crown. Var. **canéscens** is listed.

CHRYSOPHÝLLUM. *Sapotaceæ.* Trop. evergreen trees, one in S. Fla., with alternate entire lvs., small 5-lobed fls. in clusters, and fr. a berry; one species grown for ornament and the edible fr.

The star-apple requires tropical temperatures and a humid atmosphere. It has been grown successfully in southern Florida. It is not particular as to soil. Propagated by seed, by cuttings of ripe wood over heat, and probably by budding.

Cainìto. Star-Apple. Ornamental, to 50 ft.: lvs. oval or oblong, to 6 in. long, shining above, golden-brown and silky beneath: fls. purplish-white: fr. globular, to 4 in. across, smooth, purple or light green, with 3–8 shining seeds embedded in white translucent pulp. Trop. Amer.

olivifórme. Satin-Leaf. Tree to 30 ft.: lvs. mostly smaller than in *C. Cainito*, densely brown- or reddish-tomentose underneath: fr. about ¾ in. long, purple, usually 1-seeded. Fla., trop. Amer.

CHRÝSÓPSIS. Golden Aster. *Compositæ.* N. American per. herbs with alternate entire sessile lvs. and yellow heads of ray- and disk-fls.; pappus of bristles or scales. Sometimes transferred to the border. Propagated by seeds and division.

amplifòlia. To 20 in., branched, pubescent: basal lvs. spatulate, to 2 in. long, obtuse, upper ones cordate: heads sessile, subtended by lvs., in corymbiform infl. Colo., Wyo.

falcàta. To 1 ft., woolly-pubescent: lvs. linear, to 4 in. long, stiff: heads ⅓ in. across, in corymbs. Mass. to N. J.

foliòsa. To 2 ft., pubescent: basal lvs. oblanceolate, to 2 in. long, acute, white-silky-strigose: heads subsessile, subtended by lvs., bracts strigose, linear. Minn., Kans., Utah, Wash.

gossýpina. Bien., densely woolly: lvs. oblanceolate to oblong, white-lanate, obtuse: heads long-peduncled, few. Pine barrens, Va. to Fla.

graminifòlia. To 3 ft., silvery-pubescent: lvs. linear, grass-like, to 1 ft. long: heads ½ in. across, in few-fld. corymbs. Del. to Fla. and Mex.

marіàna. To 2½ ft., pubescent: lvs. oblong or spatulate, to 4 in. long: heads to 1 in. across, numerous, in panicled corymbs. S. N. Y. to Fla. and La.

villòsa. To 2 ft., pubescent: lvs. oblong to lanceolate, to 2 in. long: heads 1 in. or more across, in few-fld. corymbs. Minn. to B. C. and New Mex. Var. **prostràta** is a low prostrate form.

CHRYSOSPLÈNIUM. Golden Saxifrage. *Saxifragaceæ.* Semi-aquatic little creeping or prostrate paludose herbs with very small greenish fls., sometimes employed as a cover on moist ground or in bog-gardens or at pools.

alternifòlium. To 6 in.: lvs. alternate, orbicular-reniform, coarsely toothed: fls. in early spring. Eu., N. Asia.

americànum. Sts. creeping, to 8 in. long: lvs. opposite or the upper alternate, ovate or orbicular, to ¾ in. long: fls. solitary in the axils, in spring. N. S. to Minn. and Ga.

oppositifòlium. To 4 in.: lvs. opposite, orbicular: fls. May–June. Eu., N. Asia.

CHRÝSOTHÁMNUS. *Compositæ.* Low shrubs of W. N. Amer. with linear entire mostly alternate lvs. and heads of yellow disk-fls.; pappus of bristles. Sometimes transferred to grounds in dry regions.

gravèolens. To 5 ft.: lvs. to 2¾ in. long: heads in compound corymbs. Mont. to New Mex.

linifòlius. To 3 ft., tufted, branches white: lvs. to 1½ in. long: heads numerous, in cymes. Wyo., Colo.

nauseòsus. To 3½ ft., white-tomentose: lvs. to 2½ in. long: heads in cymes. B. C. to Mont. and Calif.

pùmilus. To 1 ft., branches whitish: lvs. to 1½ in. long. Mont. to Colo. Var. **vàrus** is much branched with strongly twisted lvs.

CHRYSURUS: *Lamarckia.*

CHUCHU: see *Chayote.*

CHUFA: *Cyperus esculentus.*

CHUPEROSA: *Beloperone californica.*

CHUSQUÈA. *Gramineæ.* Bamboo-like shrubby or climbing grasses with rather small lvs. and spikelets borne in terminal panicles, stamens 3; native in the Andean region from Mex. to Chile. See *Bamboo.*

tessellàta. Shrub: lvs. to 3 in. long and ¼ in. wide, toothed, tessellated: panicle spike-like, to 6 in. long. Colombia.

CHỲSIS. *Orchidaceæ.* Cent. American epiphytes with pseudobulbs or spindle-shaped sts. and often fleshy fls. in lateral racemes, the petals and dorsal sepal similar, the side sepals forming a chin or extension with the foot of the column, the lip with 3 lobes. Grown in the trop. greenhouse; see *Orchids.*

aùrea. Lvs. elliptic-lanceolate, sometimes to 17 in. long: fls. about 2 in. across, in 4–13-fld. racemes to 6 in. long; sepals and petals golden-yellow, whitish near base; lip yellow marked with red, maroon or purple, keeled at base, the limb wavy. Mar.–Aug., Dec. Cent. Amer., Colombia, Venezuela.

bractéscens. Fls. to 3¼ in. across, in 3–8-fld. partially drooping racemes, ivory-white with yellow lip marked with red or purple. Feb.–May. Mex., Guatemala.

Chélsonii. Hybrid between *C. lævis* and *C. Limminghei:* sepals and petals yellow with a large red-brown spot; lip white finely spotted with purple.

CIBÒTIUM. *Dicksoniaceæ.* A small group of stout tree-ferns, often grown under glass in juvenile form, with mostly 3-pinnate fronds, sori at tips of veinlets; native in Cent. Amer., Mex. and Polynesia. See *Ferns.*

Bárometz. Scythian Lamb. Trunkless: fronds fragrant, segms. linear-oblong, to 6 in. long, glaucous beneath. China, Malaya.—Sometimes grown for its historic interest. A Dryopteris has been grown erroneously under this name.

prínceps: probably a mistake for *Cyathea princeps* which is a synonym of *Cyathea insignis.*

regàle. Trunk to 30 ft. high: fronds to 12 ft. long, with falcate deeply cut segms., glaucous beneath. Mex.

Schièdei. Trunk to 15 ft.: fronds to 5 ft. long, gracefully drooping, segms. to 8 in. long, deeply cut, glaucous beneath, on stout brown-hairy stipes. Mex., Guatemala.

CICCA DISTICHA: *Phyllanthus acidus.*

CICELY, SWEET: *Myrrhis odorata.*

CÌCER. *Leguminosæ.* Herbs with pinnate toothed lvs., small inconspicuous papilionaceous fls., and short inflated pods; native in W. Asia, one species grown for the edible seeds which may be planted 8–12 in. apart in drills 2 ft. apart.

arietìnum. Chick-Pea. Garbanzo. Ann. to 2 ft.: fls. white or reddish, solitary in the axils: pods to 1 in. long and ½ in. wide, containing 1 or 2 seeds.—Long cult. in S. Eu. and Asia for human food, and in the American tropics.

CICHÒRIUM. *Compositæ.* Herbs of the Old World, mostly with deep hard roots, alternate lvs. usually near base of plant, and blue, purple or white heads of ligulate or ray-fls. See *Chicory* and *Endive.*

Endívia. Endive. Ann. or bien. to 3 ft.: lvs. many at base, brittle, oblong, lobed or much cut and curled: heads purple, subtended by leafy bracts usually longer than heads. Probably India.

Íntybus. Chicory. Succory. Per. to 6 ft.: lvs. broad-oblong or lanceolate: heads bright azure-blue, 1½ in. across, opening in forenoon, in some races pink or white, subtended by bracts shorter than heads. Eu.; extensively nat. in N. Amer.

CICÙTA. Water-Hemlock. *Umbelliferæ.* Per. heavy-scented herbs with poisonous roots and decompound lvs., very small white fls. in terminal compound umbels, and slightly flattened frs.; sometimes transplanted to the wild- or bog-garden.

maculàta. Musquash-Root. To 6 ft.: lvs. 2- or 3-pinnate into lanceolate segms. to 5 in. long. N. B. to Fla. and New Mex., in swamps.

CIENFUEGÒSIA (*Alyogyne. Fugosia*). *Malvaceæ.* Shrubs or subshrubs from the tropics of Afr., Amer. and Australia, resembling Hibiscus in habit and to which it is allied, differing in style thickened toward the top and grooved or divided into short erect lobes with decurrent stigmas.

hakeæfòlia. Erect glabrous shrub to 5 ft., branches few, twiggy, dark green: lvs. bipinnatifid to ternate or uppermost ones entire, segms. linear and somewhat fleshy: fls. pale purplish-lilac with a deep red-purple eye surrounding the long staminal column, to 3 in. across. W. Australia.

CIGAR-FLOWER: *Cuphea platycentra.*

CILIATE: bearing hairs on the margin; fringed with hairs.

CIMICÍFUGA. Bugbane. *Ranunculaceæ.* Erect and mostly tall herbaceous perennials, usually of rich woods, sometimes planted in the back of the border or in partially shaded places in the wild-garden: lvs. 2-compound, rather large: fls. small, white, in racemes: native in north temp. zone. Closely allied to Actæa but fr. a follicle instead of a berry.

Bugbanes thrive best in rich soil. Propagated by seed or division of roots in early spring or fall.

acerìna: *C. japonica.*

americàna. To 5 ft.: lfts. ovate to oblong, to 3 in. long: fl.-pedicels with minute bracts; pistils 3–8, stalked. Aug.–Sept. N. Y. to Ga.

cordifòlia (*C. racemosa* var. *cordifolia*). To 6 ft.: lvs. broad-ovate, to 7 in. wide, cordate at base: fl.-pedicels bracted; pistil 1, sessile. Aug. Va. to N. C. and Tenn.

davùrica. To 4 ft.: lvs. cordate: fls. creamy-white, pedicels bracted; pistils 5. Autumn. Asia.

elàta. To 8 ft.: lfts. cordate, to 4 in. across, lobed: petals none; pistils 1–3, sessile. Wash., Ore.

fœtida (*Actæa Cimicifuga*). To 6 ft.: lfts. ovate or lanceolate, to 3 in. long: fl.-pedicels with minute bracts; pistils 4–8. Summer. E. Eu., Siberia.

japónica (*C. acerina. Pityrosperma acerinum. Actæa japonica*). To 3 ft. but true st. almost none, the scapes and lvs. arising from near the ground: lvs. ternate, lfts. thin, to 6 in. long and nearly or quite as broad, lobed and dentate, with the look of foliage of *Anemone japonica:* fls. sessile, without bracts, in slender spikes, dull-colored; stamens about 6. Japan.—Variable, in several forms.

laciniàta. To 5 ft.: lfts. oblong or ovate, laciniately toothed: petals usually present; pistils 3–5, stalked. Ore.

racemòsa. Black Cohosh. Black Snakeroot. To 8 ft.: lfts. ovate or oblong: fl.-pedicels bracted; pistils 1–2, sessile: fr. ¼ in. long. July–Aug. Me. to Ga. and Mo.

rubifòlia. Similar to *C. racemosa,* differing in shorter stamens and fr. to ½ in. long. Tenn.

símplex (*C. racemosa* var. *simplex*). To 3 ft.: fls. in slender dense racemes, pedicels with minute bract or none; pistils 2–3, stalked. Autumn. Kamtschatka.

CINCHÒNA. *Rubiaceæ.* Trees and shrubs native in the Andes, the bark yielding quinine for which they are cult. in trop. regions and known as Peruvian bark trees: lvs. opposite: fls. small, rose or yellowish-white, tubular, 5-lobed, in terminal panicles: fr. a caps. with winged seeds.

A few species are grown for ornament and economic interest in southern California, and sometimes under glass. Propagated by seeds.

Calisàya. Tall tree: lvs. oblong to obovate, to 7 in. long, shining, purplish-green below: fls. rose or whitish: caps. ovate, scarcely as long as fls. Bolivia, Peru.

officinàlis. Tall tree: lvs. oblong, to 5 in. long: fls. rose, ½ in. long, in panicles to 6 in. long: caps. oblong, ½ in. long. Peru, Bolivia. Var. **condamínea** has ovate caps.

succirùbra. Tall tree: lvs. ovate or oval, to 9 in. long, pale beneath: fls. rose with purplish-red calyx: caps. lanceolate. Ecuador.

CINERARIA of florists is a Senecio, supposed to be the issue of *S. cruentus* either directly or in hybridization with other species. It is much grown under glass for the profuse bloom in many colors except yellows, well set off by the heavy attractive foliage. The plant is perennial but it is commonly grown as an annual inasmuch as the bloom from strong well-grown new stock is most profuse. The single-flowered kinds are mostly preferred, being raised each year from seeds. For bloom in autumn and early winter seeds may be sown in May: for winter and spring bloom in late summer or early autumn. The main lot is usually started in midsummer. The young plants are pricked off into pots and afterwards shifted to maintain a continuous growth, and not allowed to bloom until in their final 5- or 6-inch pots or 8-inch for very large specimens. The double-flowered kinds are propagated by cuttings of strong shoots that arise after the flowering tops are removed. Cinerarias must be grown cool or they will not give good results, as cool as carnations. If broad bushy plants are desired, the center may be pinched out when the flower-buds begin to show. The cineraria is subject to greenfly or aphis; if fumigation cannot be practiced, the pots may be stood on tobacco stems or tobacco preparations may be employed. Cineraria is adapted to window-garden culture if not grown too hot or neglected and stunted.

Other plants known as cinerarias are some of the dusty millers: see *Senecio Cineraria* and *S. leucostachys*.

CINEREOUS: ash-colored; light gray.

CINNAMÒMUM. *Lauraceæ.* Aromatic trees and shrubs from Asia and Australia, usually evergreen, with coriaceous lvs. strongly 3-nerved from base except in *C. Camphora*, small bisexual or unisexual fls. in panicles, and fr. a berry; grown somewhat far S. for ornament and for medicines and spice, and likely to be seen as specimens in collections of economic plants.

A sandy loam soil is good for them. Propagated by seeds and the seedlings early transplanted into pots preparatory to permanent planting out; also cuttings of half-ripened wood in spring with heat.

Búrmanii. Tree: lvs. opposite or sometimes alternate, ovate-oblong, acuminate. Malaya.

Camphòra (*Camphora officinarum. Laurus Camphora*). CAMPHOR-TREE. Tree to 40 ft., the buds inclosed by large imbricated scales: lvs. alternate, ovate-elliptic, acuminate, to 5 in. long, whitish beneath: fls. yellow, in panicles shorter than lvs. China, Japan.—Wood furnishes commercial camphor; thrives in S. Calif. and in southernmost states, as a street tree.

Cássia. CASSIA-BARK-TREE. Tree to 40 ft.: lvs. opposite, oblong to lanceolate, long-acuminate, to 6 in. long: fls. in panicles as long as lvs. China.—Bark used as substitute for cinnamon.

glandulíferum (*Laurus glandulifera*). Tree: lvs. alternate, elliptic or lanceolate, to 5 in. long, caudate-acuminate: fls. in panicles 2 in. long. Himalayas.

Loureìri. CASSIA-FLOWER-TREE. Medium-sized tree: lvs. alternate or opposite, elliptic to oblong, to 5 in. long. China, Japan.

pedunculàtum. Tree: lvs. alternate, oblong-lanceolate, acuminate, to 5 in. long: fls. in corymbs about length of lvs. Japan.

zeylánicum. CINNAMON-TREE. Tree to 30 ft.: lvs. ovate to ovate-lanceolate, obtuse or acute, to 7 in. long: fls. yellowish-white, in panicles as long as lvs. India, Malaya.—Bark yields commercial cinnamon.

CINNAMON-TREE: *Cinnamomum zeylanicum.* **-Vine:** *Dioscorea Batatas.* **Wild:** *Canella Winterana.*

CINQUEFOIL: *Potentilla.*

CIPÙRA (*Marica*). *Iridaceæ.* Trop. American bulbous herbs with white or blue fls. having short tube and 3 inner petals much shorter than 3 outer; grown under glass or out-of-doors in S. Propagated by offsets and seeds.

martinicénsis: *Trimeza martinicensis.*

paludòsa. Lvs. linear, to 1 ft. long: fls. in clusters, white, ¾ in. long, opening in morning and soon withering. Trinidad, S. Amer.

CIRCÆ̀A. *Onagraceæ.* A few species of small soft erect per. herbs, mostly in woods of the northern hemisphere, not regular hort. plants but sometimes raised in shaded or moist rock-gardens: lvs. opposite, ovate, dentate or angled: fls. whitish, very small, 2-petalled, in terminal raceme: fr. bristly.

lutetiàna. ENCHANTERS-NIGHTSHADE. Soft closely pubescent herb to 2 ft. or more, branched, with thick stolons: lvs. broad-ovate: petals broad-obovate, longer than broad. Eu.—An American plant that has mostly passed under this name is *C. latifolia*, with sts. glabrous below the infl., stolons very slender, lvs. oblong-ovate, petals sometimes as broad as long. N. B. to Tenn. and Okla., and E. Asia.

CIRCASSIAN SEEDS: *Adenanthera pavonina.*

CIRCUMSCISSILE: opening or dehiscing by a line around the anther or fruit, the valve usually coming off as a lid.

CIRRHOPETALUM: *Bulbophyllum.*

CÍRSIUM. PLUMED THISTLE. *Compositæ.* Prickly coarse herbs with basal or alternate very spiny lvs. and purple, yellow or white heads of disk-fls., the bracts of involucre densely imbricated and often spiny-tipped; pappus plumose, this differing from Carduus. A few species are grown for ornament, being adapted to bold effects.

acaùle: *Carlina acaulis.*

altíssimum. Bien. or per. to 10 ft., st. branched, pubescent: lvs. ovate-oblong to ovate-lanceolate, to 8 in. long, densely white-tomentose beneath, margins spinulose, dentate, sometimes pinnate: heads light purple, to 2 in. across, usually solitary. Mass. to Fla. west to Minn. and Tex.

bulbòsum: *C. tuberosum.*

cilìatum. Bien. to 3 ft.: lvs. pinnate into linear-lanceolate segms., hairy above, gray-tomentose below: heads purple. S. Russia.

Diacántha (*Chamæpeuce Diacantha*). FISHBONE THISTLE. Bien. to 3 ft.: lvs. linear-lanceolate, slightly toothed, glabrous above, white-tomentose beaneath: heads purplish. Asia Minor.

díscolor. Bien. or per. to 7 ft.: lvs. pinnately cut into linear toothed segms. white-tomentose beneath: heads pale purple or pink, to 2 in. across. N. B. to Ga. and Mo.

erióphorum. Bien. to 5 ft.: lvs. lanceolate, white-tomentose beneath, not decurrent, margins spiny: heads large, purple, involucral bracts much constricted back of spatulate tip. S. and Cent. Eu.

Híllii. Per. to 2 ft.: lvs. oblong, lobed or pinnatifid into broad obtuse toothed segms., green both sides: heads purple, to 3 in. across. Ont. to Pa. and Ia.

horrídulum. Bien. or per. to 5 ft., woolly when young, becoming glabrescent: lvs. lanceolate to oblong, somewhat clasping at base, green on both sides, margins spiny: heads pale yellow, occasionally purple, to 4 in. across, outer involucral bracts prickle-pointed. Me. to Fla. west to Tex.

lanceolàtum. BULL THISTLE. Bien. to 5 ft.: lvs. pinnatifid into lanceolate toothed segms., hairy above, brown-tomentose beneath: heads dark purple, to 2 in. across. Eu., Asia; nat. in N. Amer.

monspessulànum. Per. to 5 ft.: lvs. oblong-lanceolate to lanceolate, acute, margins ciliate-bristly but not spiny: heads purple, to 1½ in. across. Medit. region.

mùticum. SWAMP THISTLE. Bien. to 8 ft., woolly when young, becoming glabrescent: lvs. lanceolate-oblong, to 8 in. long, pinnatifid, densely white-tomentose beneath, segms. lanceolate, usually serrate and spiny: heads purple, to 1½ in. across, usually solitary, peduncle naked. Newf. to Fla. west to Sask. and Tex.

occidentàle. Bien. to 3 ft., the herbage mostly white-floccose: lvs. lanceolate to oblong, to 10 in. long, dentate or pinnatifid, more or less prickly: heads to 2 in. high, reddish or purple. S. Ore., Calif. Var. **candidíssimum** is very stout and prominently white-tomentose. Var. **Còulteri** has long branches bearing single heads. Var. **venústum** has heads webby rather than wooly or tomentose.

Pítcheri. Bien. to 2 ft., white-tomentose: lvs. lanceolate, to 1 ft. long, pinnately divided, segms. linear, entire or pinnatifid, margins revolute: heads cream-colored, to 1½ in. across. Shores of Lakes Michigan, Huron and Superior.

pulchérrimum. Probably bien. to 1½ ft., leafy, gray-tomentose: lvs. lanceolate, to 6 in. long, white-woolly beneath, pinnately divided, segms. pinnatifid, spiny: heads rose-pink, to 1¾ in. across, outer bracts with yellow spines to ⅓ in. long. Wyo. to N. Mex.

purpuràtum. To 3 ft.: lvs. pinnatifid, to 8 in. long, lower ones with cuneate base and winged petiole, others sessile and cordate, segms. ovate-lanceolate, acute, often spiny-toothed: heads violet-purple, involucral bracts strongly reflexed and pectinose-spined. Japan.

syrìacum (*Notobasis syriaca*). Ann. to 3 ft. or more: lvs. oblong, lobed, spiny-toothed, the upper pinnate into narrow segms., pubescent beneath: heads lilac, to 1 in. long. Medit. region.

tuberòsum (*C. bulbosum*). Bien. to 5 ft.: lvs. elliptic-lanceolate, woolly beneath, pinnate, segms. lobed or serrate: heads purple, rarely bright rose to white, to 1½ in. across, solitary, peduncle naked or nearly so. Cent. Eu.

undulàtum. Bien. to 3 ft., white-tomentose: lvs. lanceolate to oblong-lanceolate, to 8 in. long, lobed or pinnatifid, often prickly: heads rose or purple, to 3 in. across. B. C. to Tex. and Mich.

Velenóvskyi. Per. to 4½ ft.: lvs. pinnatifid into linear-lanceolate or linear segms., spiny: fls. purple, in globose heads to 3½ in. across, the involucre cobwebby. E. Eu.

CÍSSUS. *Vitaceæ.* Mostly tendril-climbing shrubs often with fleshy sts., lvs. simple or compound, deciduous or persistent, fls. with parts in 4's, bisexual or unisexual, in cymes, fr. a berry. Grown under glass, and out-of-doors in warm regions. Propagated by cuttings, and by seeds when obtainable.

ácida (*Vitis acida*). Low somewhat succulent climber: lvs. stiff, 3-foliolate, lfts. sharply toothed near apex: fls. in compound umbel-like clusters: fr. enlarged above middle. S. Fla., Ariz., and south.

adenópodus. Herbaceous climber, roots tuberous: lvs. 3-foliolate, to 6 in. long, pubescent, green above and red beneath, lfts. coarsely serrate with nerves sunken above: fls. pale yellow, in clusters to 4 in. long. Trop. Afr.—A very rapid grower.

álbo-nìtens. Climber: lvs. usually simple, oblong-acuminate, silvery-white and glossy above, base somewhat cordate. Brazil.

antárctica (*Vitis antarctica*). Lvs. ovate to oblong, to 4 in. long, entire or slightly toothed, shining above. Australia.

arbòrea: *Ampelopsis arborea.*

capénsis (*Vitis capensis*). Roots tuberous: lvs. evergreen, orbicular or kidney-shaped, to 8 in. across, wavy-toothed, rusty-tomentose beneath. S. Afr.—Much planted in S. Calif.

díscolor. Lvs. ovate, to 6 in. long, finely toothed, purplish beneath, tinged above with white, pink and purple. Java.—An old greenhouse "foliage plant."

gongylòdes (*Vitis gongylodes* and *pterophora*). Sts. 4-angled and -winged, the branches bearing a terminal tuber to 6 in. long: lvs. of 3 lfts. which are often 3-lobed. Brazil.

himalayàna (*C. neilgherrensis*). Plant without tendrils, fleshy: lvs. 3-foliolate, ovate to obovate, acuminate or obtuse, to 5 in. long: fls. in clusters to 8 in. long. Himalayas.

hypoglaùca (*Ampelopsis* and *Vitis hypoglauca*). Rusty-tomentose when young: lvs. of 5 obovate leathery lfts. to 3 in. long, toothed toward the apex, pale beneath. Australia.

incìsa (*Vitis incisa*). Marine Ivy. Long climber, fleshy: lvs. of 3 ovate lfts. to 1 in. long, coarsely toothed or lobed: fls. in 3-parted clusters: fr. thickened below middle. Mo. to Fla. and Ariz.

neilgherrénsis: *C. himalayana.*

oblónga (*Vitis oblonga*). Bushy tree: lvs. oblong, to 2½ in. long, entire, very obtuse. Australia.

quadrangulàris (*Vitis quadrangularis*). Sts. 4-angled and -winged: lvs. ovate, entire or deeply 3-lobed, to 1½ in. long. Trop. Asia and Afr.

rhombifòlia (*Vitis rhombifolia*). Lvs. evergreen, of 3 rhombic-ovate lfts. to 4 in. long, sharp-toothed, rusty-hairy on veins beneath. N. S. Amer.

sicyoìdes. Climber, sts. striate: lvs. simple, ovate to oblong, to 4 in. long, bristly-serrate or somewhat laciniate, usually pubescent, green: fls. green through white to purplish. Fla., trop. Amer.

striàta. Lvs. evergreen, of 3–5 obovate or spatulate lfts. usually about 1 in. long, toothed at apex. S. Amer.—Has been cult. as *Vitis sempervirens.*

CISTÀCEÆ. Rock-Rose Family. Shrubs or herbs of about 8 genera, characterized by simple entire lvs., regular bisexual fls. with 5 sepals of which 2 are small, 5 petals which usually fall early, numerous stamens, superior 1-celled ovary, and capsular fr.; mostly in the Medit. region and N. Amer. The genera Cistus, Crocanthemum, Fumana, Halimium, Helianthemum and Hudsonia are known to general hort.

CÍSTUS. Rock-Rose. *Cistaceæ.* Low Mediterranean shrubs with opposite simple entire lvs., and showy wide-open white or purple fls. with yellow blotch at base of petals, in terminal cymes or solitary; grown in the rock-garden; mostly evergreen or partially so.

Rock-roses prefer well-drained limestone soil and sunny exposures and will not stand many degrees of frost. Propagated by seeds which should be sown in pots as seedlings do not transplant well. Also increased by layers or cuttings under glass. The species are useful in California and stand in the southern states. They are plants long known to horticulture.

acutifòlius: *C. hybridus.*

álbidus. To 6 ft.: lvs. ovate-oblong, to 2 in. long, sessile, white-tomentose: fls. lilac or rosy, 2½ in. across. S. W. Eu., N. W. Afr.

algarvénsis: *Halimium ocymoides.*

canéscens. Hybrid between *C. albidus* and *C. villosus:* lvs. oblong-lanceolate, slightly petioled, gray-tomentose: fls. dark purple.

corbariénsis: *C. hybridus.*

créticus: *C. villosus* var. *undulatus.*

críspus. To 2 ft.: lvs. oblong-elliptic, 1 in. long, wrinkled: fls. deep rose, to 2 in. across. S. W. Eu.

cýprius. Hybrid between *C. ladaniferus* and *C. laurifolius:* to 6 ft.: lvs. oblong-lanceolate, to 3 in. long, petioled, white-tomentose beneath: umbel 2-many-fld.; fls. white with purple spot at base, 3 in. across.

florentìnus. Hybrid between *C. monspeliensis* and *C. salvifolius:* lvs. lanceolate, to 1½ in. long, petioled: infl. 2-many-fld.; fls. white, 2 in. across.

formòsus: *Halimium lasianthum.*

halimifòlius: *Halimium halimifolium.*

hirsùtus. To 3 ft., hairy: lvs. elliptic-lanceolate, to 2½ in. long, sessile, margins ciliate: fls. white, 1½ in. across. Spain, Portugal.

hýbridus (*C. corbariensis. C. acutifolius*). Hybrid between *C. populifolius* and *C. salvifolius:* lvs. ovate, to 2 in. long: fls. white, 1½ in. across.

ladaníferus. To 5 ft.: lvs. lanceolate, to 4 in. long, sessile, dark green and glutinous above, white-tomentose beneath: fls. solitary, white, sepals 3: carpels 10. S. W. Eu. Var. **albiflòrus** is synonymous with the species. Var. **maculàtus,** petals with crimson blotch at base. Var. **petiolàtus,** lvs. petioled, viscid not glutinous, carpels less than 10. N. Afr.

laurifòlius. To 8 ft.: lvs. ovate to ovate-lanceolate, to 2½ in. long, white- or brown-tomentose beneath: infl. an umbel; fls. white, to 3 in. across, sepals 3: carpels 5.

Lorétii: *C. stenophyllus.*

maculàtus: *C. ladaniferus* var.

monspeliénsis. To 5 ft.: lvs. lanceolate, to 2 in. long, sessile, wrinkled: infl. scorpioid; fls. white, to 1 in. across.

parviflòrus. Shrub to 2 ft., sts. much branched, pubescent: lvs. elliptic-ovate, to 1 in. long, undulate, twisted: fls. pale rose, to 1 in. across, petals not overlapping. Greece.

populifòlius. To 6 ft.: lvs. cordate-ovate, to 3½ in. long: fls. white, 2 in. across.

purpùreus. Hybrid between *C. ladaniferus* and *C. villosus:* lvs. lanceolate, to 2 in. long: fls. purple, yellow at base with maroon spots, 3 in. across.

salvifòlius. To 2 ft.: lvs. oval to oblong, to 1¾ in. long, petioled, wrinkled and tomentose: infl. 1–2-fld.; fls. white.

stenophýllus (*C. Loretii*). Hybrid between *C. monspeliensis* and *C. ladaniferus:* lvs. linear-lanceolate, to 2½ in. long, sticky, gray-pubescent beneath: infl. 2- or more-fld.; fls. white with crimson spot at base, to 2½ in. across.

symphytifòlius. Shrub to 2 ft.: lvs. ovate, acuminate, petioled: fls. dark rose. Canary Isls.

taùricus: *C. villosus* var.

villòsus. To 3 ft.: lvs. ovate-oblong, to 2½ in. long, petioled, gray-tomentose beneath: fls. purple or rose, to 2½ in. across. Var. **taùricus** (*C. tauricus*), lvs. loosely connate, not glandular. Var. **undulàtus** (*C. creticus*), lvs. strongly connate, glandular.

CITHARÉXYLUM. *Verbenaceæ.* Shrubs or small trees with opposite simple lvs. and small fragrant yellow or white fls. in racemes; fr. a little drupe: planted out-of-doors in the lower S. They have something the look of wild cherry trees, and are frequently seen in warm countries.

ilicifòlium. Low shrub: lvs. leathery, to 2 in. long, entire or spiny-toothed: fls. white, in short racemes. Ecuador.

spinòsum. Fiddle-Wood. Tree to 50 ft.: lvs. to 8 in. long, entire or coarsely toothed: fls. white, in slender racemes to 1 ft. long. W. Indies.

CITRANGE: see *Citrus Fruits* (page 184).

CITRANGEQUAT: see *Citrus Fruits* (page 184).

CITRON: *Citrus medica;* name also applied to a form of watermelon, for which see *Citrullus.*

CITRONELLA: *Collinsonia canadensis.*

CITRÓPSIS. African Cherry-Orange. *Rutaceæ.* Several trop. African small spiny trees mentioned as stocks for citrus frs. and for hybridizing, and of interest to cultivators: lvs. with

3, 5 or 7 lfts. and winged rachis and petiole: fls. large and white, borne in the lf.-axils; stamens 8: fr. small, in clusters. **C. Schweinfurthii** has 3–5 narrow-lanceolate acute lfts.: fr. like limes, 1½ in. diam., sweet.

CITRÚLLUS. *Cucurbitaceæ.* Tendril-bearing ann. and per. vines of a few species in S. and trop. Afr. and probably Asia, one extensively cult. for its edible frs.: monœcious: fls. medium-size, solitary in axils, corolla 5-parted.

vulgàris. Watermelon, which see. Ann., long-running, hairy: lvs. pinnately divided or dissected: fls. about 1½ in. across: fr. globular to oblong to cylindric, mottled or striped green, flesh red. Trop. and S. Afr.; run wild in different parts of western hemisphere. Var. **citroìdes.** Citron or Preserving Melon. Fr. small, with white hard flesh, used only for preserving: seeds not marked or marbled (as they usually are in watermelon).

CÍTRUS. *Rutaceæ.* Small or medium-sized mostly evergreen sometimes spiny trees of trop. and subtrop. Asia and regions beyond, comprising several much-prized citrus frs., as orange, lemon, lime, citron: lvs. compound but reduced to a single lft. (developed lfts. may appear on young strong shoots): fls. clustered in the axils or in cymes or sometimes solitary, white or pink and usually very fragrant; stamens 15 or more: fr. mostly thick-skinned, 8–15-celled, juicy, pulpy and aromatic, the kind of fr. known as a hesperidium. Propagated by seeds and by grafting on seedlings. For cult. see *Citrus Fruits.*

aurantifòlia (*C. Limetta* in part). Lime. Small very tender tree with sharp spines: lvs. small, petiole narrowly winged: fls. white: fr. oval, 1½ in. or less diam., thin-skinned and smooth, greenish-yellow, very acid. Probably India and S. E. Asia.—Much grown in W. Indies.

Aurántium (*C. Bigaradia. C. vulgaris*). Sour or Seville Orange. Medium tree with rather blunt spines: petioles broadly winged: fls. white: fr. sour, with a hollow core when ripe, usually with loose skin, globose and somewhat flattened, to 3¼ in. diam. Probably Cochin-China.—*C. myrtifolia* is a short-jointed narrow-lvd. form, useful as a pot-plant.

Bergàmia. Bergamot. Small spiny tree: lvs. oblong-oval, petiole winged: fls. small, white: fr. pyriform, sour, thin-skinned, 3–4 in. diam.—Grown in Eu. for the essential oil and perfume, and sometimes for curiosity here.

Bigaràdia: *C. Aurantium.*

decumàna: *C. maxima.*

deliciòsa: *C. nobilis* var.

grándis: *C. maxima.*

ichangénsis. Small slender-spined tree from S. W. (Ichang region) China, grown somewhat as an ornamental Fla. to Miss.: lvs. narrow-oblong, not much broader than the winged petiole: fls. white: fr. lemon-form, 3–4 in. long.

japónica: *Fortunella japonica.*

Limétta: *C. aurantifolia.*

Limònia. Lemon. Small tree with short spines: lvs. long-ovate, petiole not winged: fls. reddish-tinted in bud: fr. oval or oblong with a terminal nipple, 3–5 in. long, very sour. Probably farther Asia.

máxima (*C. decumana. C. grandis*). Shaddock. Pummelo. Pompelmous. Very tender tree 15–30 ft. high: lvs. large, 4–8 in. long, somewhat pubescent underneath, petiole widely winged: fr. very large, borne singly, flesh coarse-grained and the segms. often separating readily, oil-glands of rind few and large. See *C. paradisi.* Scarcely known in U. S.; native probably of Malaya and Polynesia.

mèdica. Citron. Large thorny shrub or small tree: lvs. oblong, 4–7 in. long, serrate, petiole wingless: fls. large, clustered, reddish in bud: fr. oval or oblong, 6–10 in. long, rough or warty, with scant acid pulp. Probably farther Asia. The specific name is geographic, from the ancient country Media.—Grown in S. Eu. for the peel which is candied; sometimes planted in Fla. and Calif. for interest, being a striking fr. The Etrog is a form of *C. medica.*

mìtis. Calamondin or Panama Orange. Small thick-topped tree, spineless or with few very short prickles: lvs. broad-oval, petiole very narrowly winged: fls. small: fr. borne on tips of branches, globose or oblate, to 1¼ in. diam., with loose skin and acid pulp. Philippines.—One of the hardiest citrus frs.: used same as limes and lemons.

myrtifòlia: see *C. Aurantium.*

nóbilis. King Orange. Small tree, thornless or nearly so, with small lanceolate to oval lvs. and short petioles nearly or quite wingless: fls. small and white: fr. oblate, orange or reddish, with rather loose peel and hollow pith, sweet or subacid, segms. separating from each other and from the rough rind. Cochin-China. Var. **deliciòsa.** Mandarin and Tangerine Oranges. Lvs. willow-like: fr. small, depressed-globose, with nearly or quite smooth loose thin skin, yellow to reddish, all parts separating freely. Sometimes called kid-glove orange. Var. **Únshiu.** Satsuma Orange. Lvs. broad, large, rounded at apex: fr. medium, depressed-globose, pulp orange, of fine quality. Hardiest of the sweet oranges.

paradìsi (*C. maxima* var. *uvacarpa*). Pomelo. Grapefruit. Larger and hardier tree than the pummelo (*C. maxima*) with smooth lvs.: frs. large and borne close together forming clusters, relatively fine-grained, with many small oil-glands in the rind. Much grown in U. S.; origin unknown.

ponderòsa: listed name.

sinénsis. Common or Sweet Orange. Medium tree, with rather blunt spines or none: lvs. oblong-ovate, more or less acuminate, petiole narrowly winged: fls. white: fr. subglobose or oval, with solid core and sweet pulp. China or Cochin-China.—The Navel orange is a form with supernumerary carpels.

taiténsis. Otaheite Orange. Small, usually a little bush of unknown origin, sometimes grown as a pot plant: lvs. oblong to elliptic, finely crenulate, petiole narrowly winged: fls. pink outside, fragrant: fr. lemon-shaped, about 2 in. long, ornamental.

trifoliàta: *Poncirus trifoliata.*

vulgàris: *C. Aurantium.*

CITRUS FRUITS. The genus Citrus, with its allies, yields several fruits of major importance in semi-tropical regions of the world. The present article presents a general discussion of citrus fruits from the pomological point of view, and then separate discussions of certain ones of them as follows (see also *Citrus*):

Sweet oranges, page 182
Sour orange, page 183
Calamondin, page 183
Kumquat, page 183
Trifoliate orange, page 183
Grapefruit, page 183
Shaddock, page 183
Lemon, page 184
Lime, page 184
Citrus hybrids, page 184

Among subtropical fruits those belonging to the citrus group are the most important and they are grown the world around in regions suited to them. In the continental United States they are produced most largely in California and Florida, and in the Rio Grande Valley in Texas, and to a lesser extent in Arizona, and the warmer sections of the Gulf states.

None of these citrus regions is free from the effects of frost, and the extension of culture northward is definitely limited by winter temperatures. Within the group, which includes the lime, lemon, grapefruit, orange, tangerine or mandarin, satsuma, calamondin and kumquat there is a marked variation in their cold resistance. Roughly they are hardy in the order named and while the lime requires an almost frostless climate and succeeds well in the tropics, the kumquat has withstood temperatures down to about 12° or 15° F. Tangerine fruits are more tender to freezing injury than oranges, though the wood is more hardy. Indeed it is doubtful whether the best citrus fruits of some kinds can be grown outside those regions in which frosts occur at intervals during their ripening season. Orchard heating is standard procedure in the intensive citrus districts particularly in California.

Soils varying from very light sand to heavy sticky clay are capable of producing citrus fruits. A careful survey of older plantings, however, makes it plain that many soils on which groves are planted are not satisfactory and should have been avoided. If soils are too light and sandy, it is more difficult and expensive to maintain fertility and the optimum of organic matter so necessary to the welfare of the trees. On the other hand, those that are too heavy and sticky are difficult to handle and are likely to be poorly drained. The necessity for adequate drainage must be emphasized, as nothing is more inimical to the welfare of the trees than the presence of stagnant water. A deep mellow rather open soil is desirable.

Propagation of citrus trees for orchard planting is by shield-budding desired varieties on two- or three-year seedling stocks of the same or other species. Seedling sweet orange, sour orange, grapefruit, rough lemon and trifoliate orange have all been employed, but propagation is now limited mostly to sour orange, rough lemon and trifoliate orange. Sour orange is used for lands of good quality, rough lemon for light sandy soils, and trifoliate orange for heavier soils with good moisture supply in the colder districts. Rough lemon is the most tender of the three. Seeds are sown in rows or drills much as are garden peas. They are liberally supplied with fertilizer and usually the seed-beds are irrigated. At the end of twelve to eighteen months, the seedlings are large enough to plant out in the nursery rows. About 8,000 are set to an acre. Selection is made at time of transplanting and only the most vigorous seedlings saved. In the nursery rows they are grown for one or two years, when they are budded.

Best results follow dormant budding in autumn, thus giving a full growing season when the buds start in spring. Just before the buds push out, the stocks are cut off with a sloping cut. As soon as the buds are started, a stake is set against each one and the growing shoot trained and tied to it until a height of 24 to 30 inches is reached, where the top of the bud growth is cut off to force branching. At the end of the seasons growth they are ready for transplanting or they may be allowed to remain a year or two longer.

Planting of nursery trees in the grove is usually in winter, but to a limited extent they are also set during the early summer season in the Southeast. If rains are sufficient and frequent enough, this can be undertaken successfully. The usual planting distances are 25–30 feet for oranges and grapefruit, 20–25 feet for tangerines and lemons and 15 feet for kumquats. It is important that trees should be set no deeper than they grew in the nursery, with earth well packed about the roots and in the drier districts watered copiously.

Cover-crops and tillage must receive careful attention. The maintenance of an adequate supply of organic matter in citrus soils is important. It is impossible to keep a planting in good condition unless the humus is adequate. In California and other irrigation districts this is accomplished by growing cover-crops in winter, while in the southern and southeastern sections they are commonly grown in the summer season. In the first instance they are raised in winter because water is then available, while in the latter they do the useful work of using up the surplus moisture supplied by summer rains. In the West the favorite cover-crops are vetch, Canada field peas and bur clover, while in the East cowpeas, velvet beans, beggarweed and crotalaria are used. Occasionally groves are grown in sod, grass in the East and alfalfa in the West.

Citrus groves or orchards are usually clean-tilled in the eastern districts from early spring, when growth starts after the winter dormant season until about the first of July, when the summer rainy season starts; and in the western irrigation sections throughout the summer. Once every week or ten days is usually sufficient to keep down weed growth. Disk, spring-tooth or acme harrows are employed. In autumn the groves are either plowed or disked to incorporate the summer cover-crop in the soil and as a safeguard against fire.

Irrigation is essential in the western districts, with an insufficient rainfall of about 25 inches; sufficient water is added to meet the requirements of the trees. Thus a total of 40 to 45 inches is secured. Irrigation and cultivation are alternated. In the southeastern districts irrigation is seldom practiced.

Fertilizers are applied to citrus plantings to supply nitrogen, phosphorus, and potash. In some sections, as in Florida, the use of commercial fertilizer is an important part of successful citrus culture. Indeed, there are few locations in that area where their judicious and continued use is not necessary, and results are usually in direct proportion to their liberal use. In California, on the other hand, soils commonly contain sufficient phosphorus and potash and only fertilizers containing nitrogen are useful.

The common practice in Florida is to make three applications each year, February, June, September or October. Young trees receive applications containing relatively higher amounts of nitrogen or ammonia, while bearing trees receive larger amounts of phosphorus or phosphoric acid and potash. A standard formula for young trees in Florida contains 6 per cent phosphoric acid, 5 per cent potash and 4 per cent ammonia, while a mixture for fruiting trees will contain about 8 per cent phosphoric acid, 10 per cent potash and 3 per cent ammonia. The amount required will depend on the size and age of the trees and the crop carried. It will vary from 4 or 5 pounds each for young trees to 50 or more pounds for old trees in full bearing. Application may be made by machinery, but fertilizer is more frequently scattered by hand, being evenly distributed fairly close to and around young trees and over the whole surface of the ground in old established groves. Immediately after being applied the ground is usually cultivated. In recent years the practice of supplying certain trace elements to the trees either as a soil amendment or in the form of a foliage spray to control certain physiological disorders has been a spectacular development in both Florida and California. Zinc, copper, manganese and magnesium are the principal trace element supplements used.

Pruning nursery trees, one to three years old, is by cutting back to 18 to 24 inches at time of planting, thus insuring low branched heads. No further pruning is undertaken for a year or two unless to remove sprouts that have come from below the bud union. The first pruning after the trees are well established consists in removing all branches from the original stem except four or five chosen to form the framework of the tree.

It is the habit of citrus trees to grow with shapely symmetrical heads and comparatively little pruning is required to secure this end. Too numerous sprouts are removed from time to time. Dead branches are taken out. If these are the result of frost injury it is best to allow sufficient time for new shoots to grow before pruning away the dead parts; by so doing much unnecessary labor is avoided. Neglected or out-of-condition trees can often be rejuvenated by heading back.

Harvesting, marketing, yields vary greatly in different regions. Citrus fruits are in the markets in quantity the year around. The Florida crop, consisting of oranges and grapefruit, is marketed from October 15th to July 1st. California oranges are shipped the year around, the navel orange crop moving from November to May and the Valencia oranges from June to October. Lemons are harvested in California to some extent every month in the year, the heaviest cropping season being in February, March and April. Limes are harvested in greatest quantity in the summer months. Oranges and grapefruit are allowed to mature on the trees. If picked green, development is checked and the product is unsatisfactory. The shipment of green fruit is prohibited by law. Lemons and limes are picked when still green although they must have reached a certain size and degree of maturity. Lemons are cured and ripened before shipment. Limes are shipped while still green but have usually colored wholly or in part when seen on the markets.

Citrus fruits of all kinds are gathered carefully to prevent bruising or injury to the rind, each individual fruit being cut closely with short stems and smooth cuts. Special clippers are used for the purpose. As a rule the crop is prepared for packing in large centralized packing-houses by washing and polishing, graded by hand and sized by machinery, wrapped and packed by hand in standard boxes. More recently Florida oranges have been artificially colored to improve their appearance. Much of the fruit is waxed to delay dessication and improve the "finish." Quantities of lower grade fruit reach the market without wrapping in boxes or sacks made from netting. When loaded in cars for shipment the boxes are stood on end and securely cleated or braced in place to prevent shifting. The bulk of the American crop is sold through cooperative marketing agencies. The total crop approximates 90,000,000 boxes annually. An average of three boxes a tree for oranges and five boxes for grapefruit is a good yield at ten to twelve years.

Insects and diseases are numerous, although many of them are of minor importance. The greater portion of the damage from year to year is credited to purple scale, red scale, black scale, whitefly and rust mite among insects, and stem-end rot, scab, melanose, anthracnose and brown-rot among diseases. The fungus diseases are more troublesome in moist climates than in dry ones and insects more difficult to control in dry climates than in moist ones. In damp climates insects are held in check to a considerable extent by the attacks upon them by parasitic fungi.

In the Florida and other southern districts insect and disease control is almost entirely by spraying with bordeaux mixture and lime-sulfur or wettable sulfur wash, while in California fumigation with hydrocyanic acid gas is the favorite method against most insects. The popular sprays against insects are miscible oil and lime-sulfur wash. In all sections powdered sulfur in different combinations is employed for dusting to control red-spider and rust or silver mite.

Sweet oranges

The sweet oranges of grove cultivation and the markets are botanically *Citrus sinensis,* of numerous varieties. Products of these plants far surpass all other citrus fruits in quantity produced and the esteem in which they are held. The crop for 1937 produced in Florida was 24,000,000 boxes and 40,461,000 boxes in California. Its cultivation in these states goes back to the earliest beginnings of fruit-growing, and orange culture with its related industries has become a commercial enterprise of vast proportions. Interest in planting and cultivation has had much to do with the development of those sections in which oranges are grown. American markets are supplied almost entirely from domestic sources.

Orange culture in America was started with trees raised from seed, and many seedling plantings are still in bearing. The product of these groves still makes up a large part of the Florida midseason crop, while a relatively smaller amount is still marketed from California. Many seedling trees have been top-worked. Numerous seedling varieties have been selected, propagated by budding and planted, but in later years the number has been greatly reduced.

A large number of varieties, such as Valencia, Majorca, Jaffa and Ruby were introduced from Mediterranean countries and elsewhere. Few of these have gained a permanent place in grove plantings. As the growing of citrus fruits has become a great commercial enterprise, the standardization of cultural practices and marketing procedure has made it necessary to limit more recent plantings to a smaller number of varieties of proved merit.

Climatic conditions in California make it possible to cover a twelve-month shipping season with two varieties, the Bahia or Washington Navel (from Brazil) covering the period from November to April and May, and the Valencia (from Spain) covering the season from May or June to November. A miscellaneous crop of seedling and other varieties is marketed in May and June.

It is necessary to use a larger number of varieties in Florida to cover the shipping season from October to July. In order of their ripening from early to late the varieties commonly planted are Hamlin and Parson Brown, Homasassa, Pineapple, Valencia and Lue Gim Gong. All except Valencia are seedlings of local origin.

Of the fruits referable to *Citrus nobilis,* the high quality King orange, with a green color and rough skin, is grown sparingly in Florida as a fancy fruit. The mandarin or tangerine oranges (var. *deliciosa*) are of greater importance, particularly the variety Dancy which is planted commercially in Florida and is usually available on northern markets in early winter. The Satsuma orange (var. *Unshiu*) is one of the hardiest citrus fruits when grown on trifoliate stock and has been planted in northern Florida and the coastal regions of the Gulf states. Severe freezes make the growing of even this hardy variety precarious outside the citrus regions of Florida.

Sour orange

In Spain the sour orange, *Citrus Aurantium*, is grown for its fruit and some of the most beautiful plantings in that country are of this species. In America, however, the sour orange is not a cultivated fruit in the usual accepted sense of the term. Such trees as occur here and there are either those that are feral on the shores of lake and river or in similar locations, as in Florida, or are to be found in plantings of sweet oranges when the top variety has died out and the stock has sprouted and taken its place. Under these conditions the trees are usually neglected and ill-kept. The fruit of the sour orange is valuable in the making of orangeade and marmalade. For the latter purpose it is widely and largely employed and the quality of the product is scarcely surpassed by that secured from any other citrus. Seedlings are largely used for stock on which to grow many other kinds of citrus. The stock is adapted to heavy and moist soils of good depth; it is very hardy, remarkably resistant or immune to foot-rot and gum diseases. On it a high quality fruit is produced and in a world-wide way it is more commonly used than any other stock.

Calamondin

The calamondin, *Citrus mitis*, is unique among citrus fruits in being the hardiest of the acid species now grown in America. Its dense head with bright green leaves, upright habit, and small fruits resembling tangerines in shape and color make it one of the most ornamental of the citrus allies. The fruits are bright orange-red, 1–1½ inches in diameter, with deep orange flesh. The juice is well flavored and very acid. It is a valuable garden fruit adapted to those sections where the Satsuma orange and kumquat are grown. Among ade-making fruits it is unsurpassed.

Kumquat

The kumquats, the smallest both in size of plant and fruit among the citrus in cultivation in America, are closely related to the genus Citrus. Commonly they are grown as shrubs, the largest reaching a height of 12 feet or so with a head diameter of about 8 feet. The tops are dense and when well fruited the plants are very ornamental.

Three kinds representing as many species are grown. These are Nagami (*Fortunella margarita*), Marumi (*Fortunella japonica*), Meiwa (*Fortunella crassifolia*). The fruits of Nagami are oblong, 1¼ by 1½ inches, with acid juice; those of Marumi are round, 1¼ inch in diameter, acid; those of Meiwa are round, 1½ inch in diameter, with sweet rind and almost juiceless pulp. They are grown as ornamental shrubs, the fruits are used for decorations and in the making of jellies and fine marmalades. They are propagated on trifoliate orange and rough lemon stocks and commonly planted 15 feet apart when grown in orchards.

Trifoliate orange

The trifoliate (trifoliolate) or three-leaved orange is *Poncirus trifoliata* (formerly *Citrus trifoliata*). The fruit is not eaten but the plant is prized for its hardiness as an ornamental and hedge plant, as far north as Washington and Philadelphia; for use as stocks on which to work sweet and Satsuma oranges; and as a parent in hybridization in the procuring of hardy races and of fruits superior for the making of ades. Trifoliate seedlings are extensively grown as orange stocks, to be employed on the northern limits of orange culture and for moist deep rich soils.

Grapefruit

Once considered to be of the same species as the shaddock, the grapefruit or pomelo is now regarded as a distinct species, *Citrus paradisi*. The culture of grapefruit, essentially an American enterprise, has been developed in Florida to a greater extent than in other citrus districts of the continental United States, although also grown in southern Texas and California. Total production in the United States in 1937 was 26,000,000 boxes. The fruit was unknown to early European citrus growers; there is evidence that it originated as a seedling sport in the West Indies and its introduction into the United States, probably about 1809, was much more recent than that of the sour or sweet orange. The first fruit was marketed from Florida about 1880 or 1885. Plantings have been increased greatly, to the point of serious over-production. The market outlook has been improved somewhat by the use of very considerable amounts of fruit in canning the pulp and juice.

Here and there small seedling grapefruit groves are to be found, but in a large way the fruit marketed is the product of budded trees. The varieties are of Florida origin, selections from earlier plantings of seedling trees. The number of varieties introduced from time to time is much less than that of sweet oranges. Present plantings are usually made with Duncan, McCarty, or Marsh. Other varieties are Walters, Hall, and occasionally Triumph. The last is a small-sized early sort. Marsh is the favorite variety in California. When varieties containing seeds are held late on the trees, the seeds sprout and the flavor of the fruit is impaired. Marsh is favored as a late variety because it is seedless. Duncan is hardy and unsurpassed in quality. Several pink-fleshed varieties, including the Foster, Thompson and Pink Marsh, are grown somewhat in groves and as garden fruits and commercially in Texas.

Shaddock

This fruit, *Citrus maxima*, has taken its name from Captain Shaddock who is credited with having brought it to Barbados some time prior to 1707. It is also properly called pummelo. In the far East it is known as pampelmous. By some writers it has been regarded as the progenitor of the grapefruit. It is of no commercial importance in North America but is occasionally found in the warmer citrus districts where its large glossy foliage and huge fruits (sometimes weighing several pounds) make it an interesting and valued garden plant. Since it is tender, its cultural range is limited. In southern Asia the shaddock is highly esteemed.

Lemon

Of the acid citrus fruits, the lemon (*Citrus Limonia*) is the most widely and largely grown in commercial plantings. The success achieved in the culture of the lemon in California is one of the outstanding horticultural developments of recent years. Elsewhere in American citrus districts it is grown only as a garden fruit. At one time considerable quantities of lemons were raised in Florida, but a combination of difficulties, among which may be mentioned cold weather, scab and other diseases, and troubles in curing, led to the abandonment of the plantings.

The lemon is hardier than the lime but less hardy than the orange and, consequently, unless adequate protection can be given, its cultivation is limited to warmer locations than are required for that fruit. In addition to this lack of hardiness the lemon is perhaps less resistant to certain diseases than either the orange or grapefruit. Lemons are picked green when they have reached a diameter over 2¼ inches. This is determined by passing them through a ring of that size. Those that pass through are allowed to remain and increase in size. They are cured to shrivel the rind and become light yellow in color before marketing. The greater care in picking and curing add materially to the cost of handling. Losses sometimes occur in curing.

The principal varieties planted in California are Lisbon and Eureka. The latter is the favorite. In Florida the variety usually planted is Villa Franca. Recently the Perrine, a lime-lemon hybrid, has seemed promising.

Lime

The acid lime (*Citrus aurantifolia*) is a distinctly tropical fruit. It is grown in the tropics the world around and, because it is very tender, its culture does not extend far outside that region. In southern California it is grown as a home-garden fruit, while in extreme southern Florida it is a crop of considerable importance. It is also grown in the latter state as a garden fruit for considerable distances north of the commercial areas.

The greater part of the lime crop that finds its way into the markets both from Florida and from the tropics is the product of seedling trees. Usually this fruit is named for the point of origin, as Key, West Indian, or Mexican lime. The trees are very thorny and very thick-headed and receive a minimum of attention in pruning, cultivation and fertilizer; they are much like wild trees. The fruit is thin-skinned, round, about 1½ inches in diameter, and very acid. It is produced to some extent the year around but the season of heaviest production is the summer months. The Tahitian limes, apparently a distinct race or type, are larger, resembling small-fruited lemons. On rough lemon stock they are grown in small plantings for home use and local market. The Bearss, a variety grown in California, is of this type. Rangpur from India is not a true lime and is much hardier. It is orange-red in color, aromatic, and very acid.

Citrus hybrids

Citrus hybrids are many. By far the most important are the tangelos obtained by crossing the grapefruit and the tangerine in various ways. The fruits of many of these are of good size, beautifully colored and of excellent flavor and aroma. Unfortunately they have the disadvantage of being too tender to stand up under long-distance shipment and are mostly limited to local market and home use. Among the varieties listed are the Sampson, Thornton, Seminole and Mineola.

The citrange is a hybrid between the sweet and the trifoliate orange. The plants are hardier than oranges and on trifoliate stock may be grown in southern Georgia and the southern part of the cotton belt. The acid orange-like fruits 2–3 inches in diameter are used for ades and culinary purposes. Named varieties are the Coleman, Morton and Rusk. The citrangequats are secondary hybrids produced by crossing the citrange with the kumquat. They are useful for ades and marmalades and because of their hardiness may be grown north of the citrus belt.

Hybrids of the Marumi kumquat and the West Indian lime have been named "limequats." One variety, the Eustis, has light yellow oval fruits about 2 inches long that are agreeably acid. Propagated on trifoliate orange stock they have about the same cultural range as the kumquat.

The citrus breeding work of the federal and state experiment stations has produced many new and promising hybrids that have not been tested as to their merit. A good summary is given in the United States Department of Agriculture Yearbook of Agriculture for 1937.

CLADÁNTHUS. *Compositæ.* One herbaceous strong-smelling ann. native in S. Spain and Morocco and sometimes grown in the flower-garden. **C. arábicus** (*C. proliferus. Anthemis arabica*). To 3½ ft.: lvs. alternate, finely divided: heads solitary and others arising from beneath them, yellow, of ray- and disk-fls.; pappus none.

CLADOTHÁMNUS. *Ericaceæ.* One deciduous shrub native Alaska to Ore. and sometimes planted, related to Ledum and Elliottia. **C. pyrolæflòrus.** To 10 ft., much branched: lvs. alternate, obovate-oblong, to 3 in. long, entire: fls. pink, to 1 in. across, usually solitary.

CLADRÁSTIS. Yellow-Wood. *Leguminosæ.* Deciduous trees native in N. Amer. and E. Asia, with pinnate lvs. and alternate lfts., white papilionaceous fls. in usually panicled racemes, and flattened pods; planted for ornament. See *Maackia.*

Propagated by seeds in spring, and by root-cuttings kept over winter in moderately cool and moist sand or moss.

amurénsis: *Maackia amurensis.*

lùtea (*C. tinctoria. Virgilia lutea*). To 50 ft.: lvs. of 7–9 ovate lfts.: fls. 1 in. long, fragrant, in June: pods to 4 in. long. S. E. U. S.

platycárpa (*Sophora platycarpa*). To 60 ft.: lvs. of 7–15 ovate lfts.: fls. ½ in. long, white with yellow spot at base: pods to 3 in. long, winged all around. Japan.

sinénsis. To 80 ft.: lvs. of 9–13 oblong lfts.: fls. ½ in. long, June–July: pods to 3 in. long. China.

tinctòria: *C. lutea.*

CLÁRKIA. *Onagraceæ.* Ann. herbs with alternate lvs., rose or purple showy fls. in racemes or solitary, and linear capsular frs.

Grown in flower-gardens and latterly as greenhouse subjects for winter and spring bloom. Of easy cultivation in sunny situations. Propagated by seeds sown where plants are to stand in the open.

álba: listed name of a hort. form.

Brèweri (*Eucharidium Breweri*). Fairy Fans. To 9 in.: lvs. lanceolate, to 2 in. long: fls. deep pink, petals fan-shaped, 3-lobed, middle lobe much narrower than lateral ones. Calif.

concínna (*C. grandiflora. Eucharidium concinnum, E. grandiflorum*). Red Ribbons. To 2 ft.: lvs. ovate-lanceolate to elliptical, to 2¾ in. long: fls. deep pink to lavender, petals fan-shaped, 3-lobed, middle lobe as wide as lateral ones. Calif.

élegans. To 3 ft. (more under glass), with reddish glaucous sts.: lvs. ovate to ovate-lanceolate: fls. purple or rose or white in var. **álba**, sometimes double; claws of petals not toothed or notched. Calif. Var. **salmònea**, fls. salmon-pink.

grandiflòra: *C. concinna.*

pulchélla. To 1½ ft.: lvs. linear to linear-lanceolate: fls. lilac varying to white in var. **álba**, the claws of petals toothed. B. C. to Calif. Var. **holopétala** (var. *integripetala*) has entire petals. Var. **marginàta** has claws of petals notched at tip.

CLARY: *Salvia Sclarea.*

CLASPING: leaf partly or wholly surrounding stem.

CLAUSÈNA. *Rutaceæ.* Several species of spineless trees in trop. Asia, Australia and Afr., with pinnate lvs. and small fls. in racemes or terminal panicles; stamens 8–10: fr. berry-like, small and globose, 4–5-celled. **C. punctàta** (*C. Lansium. C. Wampi*). Wampi. Small tree sometimes planted far S. for ornament or interest: lfts. 5–9, ovate-elliptic, more or less punctate: fr. ovate-globose, about 1 in. long. China, where it is sometimes cult. as a fruit-tree; can be grafted on Citrus.

CLAVATE: club-shaped; said of a long body thickened toward the top.

CLAVEL DE LA INDIA: *Ervatamia coronaria.*

CLAVÌJA. *Theophrastaceæ.* Evergreen trees or shrubs with unbranched trunk bearing at top a cluster of stiff simple lvs. with spike-like racemes of unisexual fls. in the axils; fls. white, yellow or orange; native in trop. Amer. and one intro. in S. Calif. Propagated by seeds and cuttings of half-ripe wood.

longifòlia (*C. ornata*). Diœcious tree to 20 ft.: lvs. to 2 ft. long and 6 in. wide, with few spiny teeth: fls. small, deep orange, the staminate fragrant, in drooping racemes to 10 in. long. Trinidad, S. Amer.

ornàta: *C. longifolia.*

CLAW: the long narrow petiole-like base of petals or sepals in some flowers.

CLAYTÒNIA. Spring Beauty. *Portulacaceæ.* Succulent little spring-blooming perennials having deep-seated hard corm or tuber, 2-lvd. sts., white or rose fls. in terminal racemes, and capsular frs.; sometimes transplanted from the wild to moist shady positions and rock-gardens.

caroliniàna. Per. to 1 ft.: lvs. broad in middle, to ¾ in., obtuse, those on st. with distinct petiole. E. N. Amer.

megarrhìza. Per., sts. and lvs. from fleshy root: basal lvs. spatulate with margined petioles, to 6 in. long: fls. pink or white, sessile, in 3–7-fld. corymbs. Wash. to New Mex.

multiscàpa. To 6 in.: basal lvs. narrowly oblong to oblanceolate, to 2 in. long, st.-lvs. lanceolate, shorter: fls. white with purple veins, sepals rhombic-ovate. Iowa to Mont.

nivàlis. To 3 in., with tap-root, corm absent: basal lvs. very fleshy, in rosette, spatulate, to 3 in. long: fls. rose-pink, to ¾ in. across, in 3–7-fld. corymbs on pedicels about ½ in. long, sepals ovate, ⅓ in. long. Wash.

parviflòra: *Montia parviflora.*

perfoliàta: *Montia perfoliata.*

ròsea. To 4 in. or more: lvs. rarely basal, spatulate, to 2 in. long, sessile: fls. rose-pink, sepals rounded-ovate, ¼ in. long or less. Colo. to Utah and Wyo.

Sweètseri: see *Montia Sweetseri.*

virgínica. Per., sts. to 1 ft. long: lvs. linear or linear-lanceolate, to 5 in. long, about ½ in. broad: fls. white tinged with pink, ¾ in. across. E. N. Amer.

CLEÍSTES. *Orchidaceæ.* A small genus of terrestrial American orchids closely allied to Pogonia and Isotria, differing from Pogonia in having compound pollen-grains which cohere in 4's and from Isotria in having its lvs. solitary or alternate, not whorled. One species, **C. divaricàta** (*Pogonia divaricata*) is cult. To 2½ ft.: lf. oblong or lanceolate-elliptic, to 6 in. long: petals pale salmon-pink, elliptic–lanceolate, sepals narrower and darker colored, lip greenish with purple veins, not bearded. Apr.–July. N. J. to Fla. and Ala.

CLEISTOCÁCTUS. *Cactaceæ.* Slender erect or clambering plants known by the fl. remaining closed or the perianth-limb not expanding, of S. S. Amer.: spines many and slender and very sharp; ribs many, not prominent, the areoles close together: fls. orange-red. See *Cacti.*

areolàtus. Sts. columnar; ribs 12, acute, shallow, conspicuously notched; radial spines 9–10, slender; central 2–4, stout. Andes.

aùreus: *Erdisia Meyenii.*

Baùmannii (*Cereus Baumannii* and *colubrinus*). Sts. columnar and flexuose, to 6 ft. and 1½ in. diam., with few erect branches and fascicled yellow-brown spines most of them about ¼ in. long; ribs usually 14 with yellow-brown areoles: fls. orange-scarlet, to 3 in. long: fr. a small red berry. Uruguay, Paraguay, Argentina. Var. **colubrìnus** is listed and may not be distinct from the typical form, although said to differ in its slightly thicker and darker green sts. and longer nearly black spines.

Búchtienii: *C. Herzogianus* var.

Herzogiànus. Tree-like, to 7 ft., sts. to 2 in. diam., dull gray-green; ribs usually 11, obtuse and slightly notched; radial spines usually 8, to 3/16 in. long; 1 central spine to ¾ in. long, all pale yellow: fls. bright red, to 2 in. long or less: fr. pinkish-orange. Bolivia. Var. **Búchtienii** is listed with wine-red fls. to 2½ in. long and 12 radial spines with central spine to 1¼ in. long.

Morawetziànus. Much branched shrub to 7 ft., sts. erect, gray-green; spines golden-yellow becoming grayish: fls. white, to 2 in. long and ⅓ in. diam., cylindrical, style long-exserted. Peru.

Roézlii. Erect, sts. to 2 in. diam.; ribs about 9, low, rounded, notched, areoles white-woolly; radial spines 10–12, slender, glossy-white; central 1, to ¾ in. long: fls. brick-red, to 2 in. long, tube somewhat constricted. Bolivia.

smaragdiflòrus. Sts. to 1 in. diam.; ribs 12–14; central spines to ¾ in. long: fls. to 2 in. long, outer petals emerald-green, inner ones orange-red. Argentina.

Straùssii (*Borzicactus, Cereus* and *Pilocereus Straussii*). Sts. erect to 3½ ft., light green; ribs usually 23–27, shallow; spines bristle-like, white, to ⅝ in. long with 2–4 yellow stiff spines ¾–1½ in. long: fls. red to carmine-violet, to nearly 4 in. long. Bolivia. Var. **jujuyénsis** is offered in the trade as is var. **tupizénsis** (*C. tupizensis*), a red-spined form with somewhat paler red fls.

tupizénsis: *C. Straussii* var.

CLEISTOGAMOUS FLOWERS: small closed self-fertilized flowers, as in some violets; they are mostly on or under the ground.

CLEISTOYUCCA: *Yucca.*

CLÉMATIS. Clematis. Virgins-Bower. *Ranunculaceæ.* Per. herbs or woody climbing vines with opposite usually compound lvs., solitary or panicled fls. without petals but with petal-like sepals and numerous stamens (unless otherwise stated the fls. open wide and flat), and fr. an achene with commonly a long feathery style; mostly native in the north temp. zone, and many of them much prized for ornament.

Clematis prospers in fertile light loamy soil which is well drained. Propagated by stratified seeds, layers, division, and cuttings under glass in summer. Varieties may be grafted on roots of *C. Flammula* or *C. Viticella;* roots should be taken from plants out-of-doors to avoid nematode infection, and cions from those grown in a greenhouse.

Some clematises are perennial herbs and should be treated as such in the border. Others are small-flowered woody vines not much modified by domestication, planted for permanent cover of fences, arbors and porches. Others are large-flowered vines used extensively in the development of horticultural hybrids.

These hybrids are segregated into three groups, with the divisions based on the nature of growth and time of blossoming. They are: (1) the Florida group, whose flowers appear on old wood in summer; (2) the Patens group, whose flowers appear on old wood in spring; and (3) the Jackmanii type (including also those of *C. lanuginosa* and *C. Viticella* parentage) which blossom on new wood during summer and autumn. The plants of all three groups should be grown on trellises or posts.

Plants of the Florida group should be pruned lightly and not too frequently. Members of this group in cultivation include: Barillet-Deschamps, Belle of Woking, Comete, Coste et La Brix, Duchess of Edinburgh, Enchantress, Lucie Lemoine, Mme. Alfred Bourneau, Mme. Andre Lecaux, Mme. Chas. Lecaux, Mme. Jouannet, Mme. Victor Vandermarcq, Miss Cavell, Proteus, Soldat Inconnu, T. J. Patyn, Undine, Venus Victrix, Ville de Limoges.

Plants of the Patens group should be treated as the above and include, among others, the following named forms: Baronne de Verdiers, Countess of Lovelaces, Duke of Buccleigh, Edith Jackman, Edouard Defosse, Etoile de Paris, Fair Rosamond, King of the Belgians, Lady Loudesborough, LaLorraine, Lasurstern, La Cid, Lord Gifford, Lord Napier, Miss Bateman, Miss Crawshay, M. Koster, Monstrosa, Mrs. Quilter, Nelly Koster, Sir Garnet Wolseley, Standishii, Stella, The Bride, The Queen, Uranus, Violacea.

Those plants that bloom on wood of the current season should be pruned to the ground during the dormant period. Generally speaking, these plants are more resistant to extreme cold than are the other large-flowered hybrids. Members of this group include such forms as: Admiration, Alexandra, ascotiensis, Beauty of Worcester, Comtesse de Bouchard, Countess of Onslow, Crimson King, Duchess of Albany, Duchess of York, Elsa Späth, Empress of India, Gipsy Queen, Henryi, Jackmannii superba, lanuginosa candida, Lady Caroline Neville, Lawsoniana, Lord Neville, Mme. Baron-Veillard, Mme. Edouard André, Mrs. Cholmondeley, Nelly Moser, Prince Hendick, Ramona, Ville de Lyon, William Kennett.

Most of these hybrids succeed best when planted in partial shade, in well-drained soil to which some lime has been added. It is advisable to provide the base of the stems with some protection against mechanical injury until plants are well established. In regions where the ground freezes about the roots clematis will not be seriously infested with the nematode disease.

Áddisonii. Per. herb to 3 ft.: lower lvs. simple and sessile, upper lvs. pinnate: fls. red to bluish-purple, nodding, solitary, sepals thick and leathery. May–Aug. Va., Tenn. and N. C.

æthusifòlia. Climbing to 6 ft.: lvs. 1- or 2-pinnate into small deeply cut lfts.: fls. pale yellow, ½ in. long, in few-fld. clusters. Aug.–Sept. China, Manchuria. Var. **latisécta** has 1-pinnate lvs. with lfts. often deeply lobed, fls. white.

afoliàta. Climbing, sts. leafless: lvs. of young plants of 3 minute lfts.: fls. greenish-white, to ¾ in. across, in few-fld. clusters. New Zeal.

akebioìdes: *A. glauca* var.

alpìna (*Atragene alpina*). Climbing to 6 ft.: lvs. usually biternate, lfts. coarsely toothed: fls. violet-blue, 1½ in. long, solitary, spring. Eu., Asia. Var. **occidentàlis** is *C. pseudoalpina.* Var. **sibírica.** Fls. yellowish-white. Siberia.

angustifòlia. To 3 ft.: lvs. of few or many narrow entire glabrous lfts.: fls. yellowish-white, 1½–2 in. across, in loose terminal panicles. Asia, S. Eu.

apiifòlia. Climbing to 10 ft.: lvs. of 3 toothed or lobed lfts., sometimes biternate: fls. white, about ½ in. across, in axillary panicles. Sept.–Oct. Japan.

aristàta. Diœcious evergreen vine to 30 ft.: lvs. ternate, margins briefly and sparsely serrate: fls. white, campanulate, erect, to ¾ in. across, in corymbs of 4–7, peduncles shorter than lvs. Australia.

Ármandii. Evergreen, climbing to 15 ft.: lvs. of 3 entire leathery lfts.: fls. white, to 2½ in. across, in axillary leafless panicles, in spring. China. Var. **Farquhariàna** has light pink fls.

aromática. Hybrid between *C. Flammula* and *C. integrifolia:* upright, to 6 ft.: fls. bluish-violet, fragrant, to 1½ in. across, in terminal cymes. July–Sept.

ascotiénsis. Hybrid with large azure-blue fls. having greenish-white band down center of back of each sepal. June–Aug.

austràlis. Climbing: lvs. ternate, lfts. pinnate: fls. white, to 1 in. across, in few-fld. panicles or solitary. New Zeal.

Báldwinii (*Viorna Baldwinii*). PINE-HYACINTH. Erect herb to 1½ ft.: lvs. simple or the upper ones of 3 lfts.: fls. urn-shaped, purple or pinkish, about 1 in. long, solitary and nodding, in early spring. Fla.

baleárica. Climbing: lvs. of 3 toothed or 3-lobed lfts.: fls. greenish-yellow spotted with red inside, in spring. S. Eu., Asia Minor.

Beàdlei (*Viorna Beadlei*). Vine, sts. pubescent at nodes: lfts. ovate to lanceolate, to 3 in. long, usually lobed, acute to acuminate: fls. to 1 in. long. Mts. of Tenn. to Ga.

brachiàta. Climbing: lvs. 1–2-pinnate into coarsely toothed lfts.: fls. greenish-white, fragrant, to 1½ in. across, in axillary panicles. S. Afr.

brevicaudàta. Climbing: lvs. bipinnate, lfts. toothed or entire: fls. white, to ¾ in. across, in axillary cymes. Aug.–Oct. Manchuria, W. China.

Buchananiàna. Climbing, hairy: lvs. pinnate into toothed or lobed lfts.: fls. to 3 in. across, in panicles. Himalayas.

cærùlea: *C. patens.*

campaniflòra. Climbing to 20 ft.: lvs. bipinnate into entire or lobed lfts.: fls. white, to 1 in. across, nodding. July–Aug. Portugal.

Catesbyàna (*C. holosericea*). Climbing: lvs. mostly biternate, lfts. lobed or entire: fls. white, 1 in. across, in panicles, spring and summer. S. C. to Fla. and Miss.

chinénsis. Climbing to 10 ft.: lvs. of usually 5 entire lfts.: fls. white, to ¾ in. across, in axillary leafless panicles. China to Indo-China.

chrysócoma. Erect or climbing to 20 ft.: lvs. of 2 coarsely toothed or 3-lobed lfts., yellow-pubescent: fls. white or pinkish, 2 in. across, in clusters. June–Sept. China. Var. **serícea** (*C. Spooneri*). Fls. to 3½ in. across, from old wood.

cirrhòsa. Climbing to 10 ft.: lvs. simple, toothed or sometimes lobed: fls. yellowish-white, to 2 in. across, 1–2 in the axils. Mar.–May. S. Eu., Asia Minor. Var. **heterophýlla** is listed.

coccínea: *C. texensis.*

Colensòi. Climbing: lvs. of 3 toothed, lobed or divided lfts.: fls. greenish-yellow, to 1 in. across, in panicles or solitary. New Zeal.

columbiàna: the western representative of *C. verticillaris:* fls. blue or purple, with narrow pointed sepals and narrow mostly entire lfts.

connàta. Climbing to 25 ft.: lvs. pinnate, glabrous, lfts. ovate-lanceolate, toothed or rarely 3-lobed, frequently connate, petioles dilated at base: fls. pale yellow, 1 in. across, in panicles. Aug.–Sept. Himalayas, China.

críspa (*C. cylindrica. Viorna crispa*). Climbing to 10 ft.: lvs. of 3–7 thin entire or lobed lfts.: fls. urn-shaped, bluish-purple, to 1½ in. long, solitary and nodding, fragrant, June–Sept.: achenes without plumose styles. Va. to Fla. and Tex. Var. **Wálteri.** Lfts. linear or linear-lanceolate.

cylíndrica: *C. crispa.*

Davidiàna: *C. heraclexfolia* var.

Delavàyi. Shrub to 5 ft.: lvs. pinnate, lfts. entire, silvery-white underneath: fls. white, 1 in. across, silky outside, in terminal cymes. July–Aug. China.

dioscoreæfòlia: *C. paniculata* var.

Doúglasii. Erect herb to 2 ft.: lvs. 2- or 3-pinnate into linear or linear-lanceolate lfts.: fls. tubular, purple inside, paler outside, to 1½ in. long, solitary, calyx elongate-campanulate, distal fourth of sepals spreading. May–July. Colo. to Wash.—By some authorities this is treated as synonymous with *C. hirsutissima,* a plant now placed in the genus Anemone. Var. **Scóttii** is *C. Scottii.*

Drúmmondii. Climbing, ashy-pubescent: lvs. pinnate, lfts. coarsely cut: fls. white, ¾ in. across, in cymes or solitary. Sept. Tex. to Ariz.

Durándii. Hybrid between *C. Jackmanii* and *C. integrifolia:* climbing to 10 ft.: lvs. simple: fls. violet-blue, to 5 in. across. June–Sept.

erécta: *C. recta.*

erióphora (*Viorna eriophora*). Erect white-hairy herb to 1½ ft.: lvs. 2-pinnate into linear lfts.: fls. bell-shaped, purple, about 1 in. long, solitary and nodding. May–June. Wyo. to New Mex.

eriostèmon (*C. Hendersonii. C. intermedia*). Hybrid between *C. Viticella* and *C. integrifolia:* subshrub to 10 ft. with blue fls. to 2½ in. across.

Fárgesii. Climbing to 20 ft.: lvs. bipinnate, lfts. cut or lobed: fls. white, to 2 in. across, in cymes or solitary. June–Sept. China.

Flámmula. Climbing to 15 ft.: lvs. 2-pinnate, the lfts. entire or lobed: fls. white, fragrant, about ¾ in. across, in many-fld. panicles. Aug.–Oct. Medit. region to Persia. Var. **ròsea-purpùrea,** fls. listed as rose-colored. Var. **rotundifòlia** has lfts. broader than type.

flórida. Climbing to 12 ft.: lvs. usually biternate, the lfts. entire or lobed: fls. creamy-white with green band on back and purple stamens, to 4 in. across, solitary, June–July: styles not plumose. Cent. China. In var. **plèna** the fls. are double. In var. **Sièboldii** (*C. Sieboldii*) part of the stamens are changed to purple staminodia.

fœtida. Climbing: lvs. of 3 entire or lobed lfts.: fls. yellowish, fragrant, to ¾ in. across, in branched panicles. New Zeal.

Fórtunei: *C. patens* var.

Frèmontii (*Viorna Fremontii*). Erect herb to 1½ ft.: lvs. simple, leathery and reticulated, sessile: fls. bell-shaped, purple, 1 in. long, solitary and nodding, spring and summer. Mo. to Neb.

fruticòsa. Erect shrub: lvs. simple, lanceolate, entire or cut-toothed: fls. yellow, in clusters of 1–4. Cent. Asia.

fúsca. Climbing to 15 ft.: lvs. of 5–7 entire lfts.: fls. violet, brownish-pubescent outside, 1 in. long, solitary, nodding. June–Aug. Asia. Var. **violàcea,** fls. violet outside.

Gáttingeri (*Viorna Gattingeri*). Climbing to 10 ft.: lvs. pinnate, pubescent and glandular: fls. purple, ½ in. long, summer. Tenn.

Gebleriàna: *C. songarica.*

gentianoìdes. Sts. prostrate or creeping, to 4 ft.: lvs. simple or of 3 ovate-lanceolate or lanceolate lfts.: fls. white, solitary or few. Tasmania.

glaùca. Climbing: lvs. 1–2-pinnate, lfts. 2-3-lobed: fls. yellow, to 2 in. across, solitary or few. Aug.–Sept. China, Siberia. Var. **akebioìdes** has broad toothed lfts. and bronzy-yellow fls. Var. **angustifòlia** has narrow lfts.

globulòsa. Hybrid between *C. Scottii* and *C. texensis:* fls. deep purple.

Gouriàna. Climbing: lvs. of 5–7 lfts.: fls. white, ½ in. across, in large panicles. Himalayas, China. Var. **Finétii** has glabrous foliage.

grandiflòra. Slender climber: lvs. usually pinnately 5-foliolate, lfts. ovate-lanceolate, to 6 in. long, broadly crenate-toothed to denticulate, teeth mucronate: fls. greenish, to 1¾ in. long, solitary, axillary, sepals nearly erect. Trop. Afr.

gràta. Climbing: lvs. usually of 5 coarsely toothed lfts.: fls. white, to ¾ in. across, in panicles, sepals spreading. Sept.–Oct. Himalayas. Var. **argentilùcida** (var. *grandidentata*) has larger and more coarsely toothed lfts., with fls. to 1 in. across. W. China. Reported to be a more vigorous grower than type.

gravèolens: *C. orientalis.*

grewiæflòra. Climbing, tomentose: lvs. of 3–5 toothed or lobed lfts.: fls. tawny-yellow, 1½ in. long. Himalayas.

Héndersonii: *C. eriostemon.*

Hénryi: *C. Lawsoniana* var.

heracleæfòlia (*C. tubulosa*). Erect herb to 4 ft., woody at base: lvs. of 3 large coarsely toothed lfts.: fls. tubular, polygamous, to 1 in. long, blue, in axillary clusters. Aug.–Sept. China. Var. **Davidiàna** (*C. Davidiana*) has diœcious fragrant deep blue fls.

hexasépala. Climbing: lvs. of 3 toothed or lobed leathery lfts.: fls. white, to 1½ in. across, in panicles. New Zeal.

Hilárii. Climbing: lvs. of 3 toothed or 3-lobed lfts.: fls. diœcious, in few-fld. panicles. Brazil.

hirsutíssima: *Anemone patens.*

holoserícea: *C. Catesbyana.*

indivìsa. Climbing, with thick woody sts.: lvs. of 3 leathery entire or lobed lfts.: fls. diœcious, white, to 4 in. across, in axillary panicles, in spring, or winter when grown indoors. New Zeal. Var. **lobàta** is listed.

instrícta: listed name of no known botanical standing.

integrifòlia. Erect herb or subshrub to 3 ft.: lvs. thin, simple and entire, sessile: fls. urn-shaped, blue, to 1½ in. long, solitary and nodding. June–July. Eu., Asia.

intermèdia: *C. eriostemon.*

Jáckmanii. A group of hybrids between *C. lanuginosa* and *C. Viticella:* climbing to 10 ft.: lvs. pinnate or the upper simple: fls. violet-purple, to 6 in. across, usually in 3's and forming terminal panicles. Listed color forms include **álba, purpùrea supérba** and **rùbra.** See introductory paragraph for other names having this parentage.

Jouiniàna. Hybrid between *C. heracleæfolia* and *C. Vitalba:* climbing: fls. white or lilac, 1 in. across, in large panicles. Aug.–Oct.

jubàta. To 3 ft., herbaceous: lfts. ovate or heart-shaped, glaucous when young: fls. white or cream, fragrant, in large terminal panicles, early summer. Habitat unknown.

koreàna. Prostrate: lvs. of 3 toothed lfts. which are lobed or parted: fls. yellow or violet, solitary and nodding. Korea. Var. **lùtea,** fls. creamy-yellow with dark centers, fragrant. July–Oct.

lancifòlia. Shrub to 15 in.: lvs. lanceolate or ovate-lanceolate, leathery, deep green: fls. 1 in. across, solitary. China.

lanuginòsa. Climbing to 6 ft.: lvs. simple or of 3 entire lfts.: fls. lavender or white, to 8 in. across, 1–3 together. July–Sept. China. Var. **cándida,** fls. white with light purplish shading around sepal margins.

lasiándra. Climbing to 15 ft.: lvs. bipinnate, lfts. toothed: fls. whitish or dull violet, ½ in. long, solitary or few. Aug.–Sept. China.

lasiántha. Pipestem C. Climbing: lvs. of 3 coarsely toothed or lobed lfts.: fls. polygamous, white, to 2½ in. across, fragrant, 1–3 together. Apr.–May. Calif.

Lawsoniàna. A group of hybrids between *C. lanuginosa* and *C. patens:* lvs. usually ternate: fls. rose-purple with darker veins, to 6 in. across, solitary. Var. **Hénryi** (*C. Henryi*) has creamy-white fls.

ligusticifòlia. Climbing to 20 ft.: lvs. of 5–7 coarsely toothed or 3-lobed lfts.: fls. diœcious, white, ¾ in. across, in cymes. Aug.–Sept. B. C. to Calif. and New Mex.

lilácina floribúnda: listed as a large-fld. hybrid.

macropétala. Climbing: lfts. deeply toothed or lobed: fls. violet, 2 in. long, solitary. China, Siberia.

mandschùrica: *C. recta* var.

maràta. Tall evergreen vine: lvs. dark brownish-green, ternate, lfts. linear, to 1 in. long: fls. greenish-yellow, to 1 in. across, fragrant, abundant in long panicles. New Zeal.

Meyeniàna. Climbing: lvs. of 3 entire leathery lfts.: fls. white, to 1 in. across, in many-fld. panicles, summer. Asia.

microphýlla. Climbing: lvs. 2–3-ternate into small lfts.: fls. cream-colored, ½ in. long, in short panicles. Australia.

missouriénsis: *C. virginiana* var.

montàna. Climbing to 25 ft.: lvs. of 3 cut-toothed lfts., fls. white turning pink, with yellow stamens, to 2 in. across: in 1–5-fld. clusters, fragrant. May–June. Himalayas, China. Var. **álba,** fls. white. Var. **grandiflòra** has fls. to 3 in. across. Var. **lilácina,** fls. bluish-lilac. Var. **perfécta,** fls. bluish-white, large. Var. **platyphýlla** is listed. Var. **rùbens,** fls. rose or pink, lvs. purplish. Var. **undulàta** is a cross between *C. montana* and *C. gracilifolia,* with large bluish-white fls. Var. **Wílsonii** has fls. to 3 in. across.

ochroleùca (*C. ovata. Viorna ochroleuca* and *ovata*). Erect herb to 2 ft.: lvs. simple, entire, sessile, base rounded or cordate: fls. yellowish-white or sometimes suffused with purple, to 1 in. long, nodding, solitary, sepals silky outside: achenes with yellowish-brown plumes. May–June. N. Y. to Ga.

Ólgæ: said to be an oriental form of *C. integrifolia.*

orientàlis (*C. graveolens*). Climbing to 20 ft.: lvs. pinnate or bipinnate, the lfts. coarsely toothed or lobed: fls. yellow, to 2 in. across, solitary or in few-fld. clusters. Aug.–Sept. Persia to Himalayas.

ovàta: *C. ochroleuca.*

paniculàta. Climbing to 30 ft.: lvs. of 3–5 entire or lobed lfts.: fls. white, about 1 in. across, fragrant, in many-fld. panicles. Sept.–Oct. Japan. Var. **dioscoreæfòlia** (*C. dioscoreæfolia*) has heart-shaped lfts. and broader sepals. Var. **grandiflòra** is an improved or selected form.

pàtens (*C. cærulea*). Climbing to 12 ft.: lvs. of 3–5 entire lfts.: fls. violet to white, to 6 in. across, solitary. May–June. Japan. Var. **Fórtunei** (*C. Fortunei*). Fls. creamy-white turning pink, to 5 in. across. Var. **grandiflòra** has larger fls. Var. **Stándishii.** Fls. lilac-blue: lfts. 3.

pauciflòra. Climbing: lvs. of 5–9 toothed or lobed lfts.: fls. white, to 1 in. across, usually solitary. Mar.–Apr. S. Calif.

Pítcheri (*Viorna Pitcheri. C.* and *Viorna Simsii*). Climbing: lvs. of 3–7 entire or lobed lfts., the terminal one sometimes a tendril: fls. urn-shaped, purplish, to 1 in. long, solitary, in summer: achenes without plumose style. Ind. to Neb. and Tex. Var. **Sárgentii** has smaller and paler fls. than type and lfts. rarely lobed.

pseudoalpìna (*C. alpina* var. *occidentalis*). Climbing: lvs. biternate, lfts. lobed or cut-toothed: fls. purple or blue, to 2 in. long, solitary. Colo., Utah, New Mex.

pseudoflámmula. To 5 ft., upright: fls. creamy-white, fragrant. Aug. Caucasus.

pubéscens. Climbing: lvs. of 3 slightly toothed or entire lfts.: fls. white, in panicles. Mex.

récta (*C. erecta*). Erect or ascending herb to 5 ft.: lvs. of 5–9 entire lfts.: fls. white, to 1 in. across, fragrant, in many-fld. terminal panicles, in summer. S. Eu. Var. **fòliis purpùreis** has dark brownish-red foliage. Var. **grandiflòra,** fls. white, to 2 in. across. Var. **mandschùrica** (*C.*

mandschurica) has sts. decumbent and longer with terminal and axillary panicles. Var. **plèna** has double fls. Other listed forms are *hispanica, lathyrifolia.*

Rehderiàna. Climbing to 25 ft.: lvs. pinnate, lfts. toothed or 3-lobed, silky beneath: fls. pale yellow, fragrant, ½ in. long, nodding, in short panicles. Aug.–Oct. China.

reticulàta (*Viorna reticulata*). Climbing to 10 ft.: lvs. of 3–7 entire leathery reticulated lfts.: fls. urn-shaped, yellowish outside, pale violet within, about ¾ in. long, solitary and nodding. July. S. C. to Fla. and Tex.

Scóttii (*Viorna Scottii*). Erect herb to 1½ ft.: lvs. bipinnate, the petioles often twisted: fls. urn-shaped, purplish-brown, to 1¼ in. long, solitary. May–July. Wyo. to New Mex.

serratifòlia. Climbing to 10 ft.: lvs. biternate, the lfts. toothed or lobed: fls. yellow with purple stamens, 2 in. across, 1–3 together. Aug.–Sept. Korea.

serrulàta: listed name, perhaps referable to *C. orientalis* var. or to *C. serratifolia.*

sibírica: *C. alpina* var.

Sièboldii: *C. florida* var.

Símsii: *C. Pitcheri.*

smilacifòlia. Climbing: lvs. ovate, leathery, entire or rarely ternate: fls. purple, brown-tomentose outside, to 1½ in. across, in axillary panicles. Himalayas, E. Indies.

songárica (*C. Gebleriana*). Shrub to 5 ft.: lvs. lanceolate, toothed or slightly pinnatifid near base: fls. yellowish-white, 1 in. across, in terminal cymes. Aug.–Sept. Asia.

Spoòneri: *C. chrysocoma* var. *sericea.*

stáns. Erect herb to 6 ft.: lvs. of 3 large coarsely toothed or lobed lfts.: fls. diœcious, tubular, white or bluish, about ½ in. long, in long terminal panicles and axillary clusters. Sept.–Oct. Japan.—Sometimes woody at base and closely related to *C. heraclexfolia.*

tangùtica. Golden C. Climbing to 10 ft.: lvs. pinnate or bipinnate, the lfts. toothed or lobed: fls. bright yellow, to 4 in. across, usually solitary. June and again in autumn. Mongolia, N. China. Var. **obtusiúscula** has smaller lfts. and more obtuse sepals. Var. **Fárreri,** fls. golden.

texénsis (*C.* and *Viorna coccinea*). Scarlet C. Climbing to 6 ft.: lvs. of 4–8 rather thick glaucous lfts.: fls. urn-shaped, scarlet, about 1 in. long, solitary and nodding. July–Sept. Tex.

Thúnbergii. Climbing: lvs. pinnate or ternate, lfts. toothed or cut: fls. to 2 in. across, in many-fld. panicles. Afr.

trifoliàta. Climbing vine to 10 ft. or more, sts. tinged purple: lvs. ternately decompound, glabrous, lfts. ovate, obtuse, dentate, petioles about 1½ in. long: fls. whitish, in panicles. Japan.

troutbeckiàna. Climbing to 10 ft.: lower lvs. simple, ovate, to 4 in. long; upper lvs. pinnate into entire lfts.: fls. lavender outside, pale green inside, in compound infl. July–Aug. Perhaps a natural hybrid allied to *C. Viorna.*

tubulòsa: *C. heraclexfolia.*

vedrariénsis. Hybrid between *C. montana* and *C. chrysocoma:* fls. mauve-pink or rose, 2 in. across.

Veitchiàna. Climbing: lvs. bipinnate, lfts. toothed or 3-lobed, silky beneath: fls. yellowish, fragrant, ½ in. long, nodding, in panicles. Sept.–Oct. China.

versícolor (*Viorna versicolor*). Climbing to 12 ft.: lvs. pinnate, the lfts. entire, glaucous beneath: fls. urn-shaped, ¾ in. long, purplish, solitary and nodding. July. Mo., Ark.

verticillàris (*Atragene americana*). Climbing or trailing to 10 ft.: lvs. of 3 entire or coarsely toothed lfts.: fls. purple, to 4 in. across, solitary. May–June. N. Amer.

Viórna (*Viorna Viorna*). Climbing to 10 ft.: lvs. of 5–7 entire or lobed lfts.: fls. urn-shaped, reddish-purple, about 1 in. long, solitary and nodding. May–Aug. Pa. to Ga. and Ala.

virginiàna. Climbing to 20 ft.: lvs. of usually 3 coarsely toothed lfts., glabrous beneath: fls. diœcious, white, to 1 in. across, in leafy panicles. Aug.–Sept. N. S. to Ga. and Kans. Var. **missouriénsis** (*C. missouriensis*) usually has 5 lfts., 2–3 in. long, appressed hairy beneath.

Vitálba. Travelers-Joy. Old-Mans-Beard. Climbing to 30 ft.: lvs. of 5 entire, toothed or 3-lobed lfts.: fls. greenish-white, to 1 in. across, fragrant, in panicles. July–Sept. Eu., N. Afr., S. W. Asia.

Viticélla. Climbing to 12 ft.: lvs. pinnate or bipinnate, the lfts. entire or 3-lobed: fls. blue, purple or rose-purple, the stamens yellow, to 2 in. across, 1–3 together, June–Aug.: achenes without plumose styles. S. Eu., W. Asia. Var. **albiflòra** (var. *alba*), fls. white. Var. **cærùlea,** fls. blue-violet. Var. **kermesìna** has wine-red fls. Var. **purpùrea** (var. *rubra*), fls. reddish-purple.

CLEMENTSIA: *Sedum rhodanthum.*

CLEÒME. *Capparidaceæ.* Warm-country herbs and subshrubs with simple or palmately compound lvs., white, green, yellowish or purplish fls. solitary or in racemes, petals narrow and stamens long, the ovary long-stalked (on a gynophore), and narrow capsular frs.

One annual species is commonly cultivated as a flower-garden and border subject for its rose-purple or white flowers; it is raised from seeds sown usually where the plants are to stand.

arbòrea. Pubescent white-fld. shrub of Venezuela; the *arborea* of the trade is sometimes (perhaps always) *C. spinosa.*

gigantèa: *C. spinosa.*

grándis: see under *C. spinosa.*

integrifòlia: *C. serrulata.*

lùtea. Ann. to 3 ft., glabrous: lfts. 3–5: fls. golden-yellow. Wash. to Calif. and Colo.

púngens: *C. spinosa.*

serrulàta (*C. integrifolia*). Glabrous ann., 2–3 ft., sometimes planted, formerly as a bee-plant: lfts. 3: fls. pink or white. N. Amer.

speciòsa: *Gynandropsis speciosa.*

spinòsa (*C. gigantea* of the trade. *C. pungens*). Spider-Flower. Pubescent erect strong-scented ann. to 4 ft., with short strong spines on the sts. and very long stamens and stalked pods: lfts. 5–7. Trop. Amer., sometimes run wild. Vars. **álba** and **ròsea** are listed.—Some of the stock raised as *C. gigantea* and *C. grandis* is *Polanisia trachysperma* (which see).

CLERODÉNDRUM (*Volkameria*). Glory-Bower. *Verbenaceæ.* Trees, shrubs or herbs with opposite or whorled simple lvs. and white, violet or red fls. in terminal cymes or panicles, the stamens long-exserted; grown in the greenhouse or out-of-doors in the S. Propagated by seeds or cuttings of half-ripened wood kept in a temperature of about 70°.

Bálfouri: *C. Thomsoniæ.*

Búngei (*C. fœtidum*). Shrub to 6 ft.: lvs. broadly ovate, to 1 ft. long, coarsely toothed, reddish pubescent beneath: fls. rose-red, ¾ in. across, in a head-like cluster to 8 in. across. China; adapted only to southern parts, as Fla., Gulf Coast, Calif.

Colebrookiànum. Shrub to 8 ft.: lvs. cordate-ovate, to 9 in. long: fls. rose-purple to white, in loose panicles 1–2 ft. across, corolla-tube to 1 in. long: fr. blue, to ⅓ in. across. India.

cyrtophýllum. Shrub: lvs. oblong-ovate to lanceolate, usually long-acuminate, glabrous, pale beneath: fls. in cymose panicles, calyx 4-lobed, lobes acute. N. China.

deléctum: *C. Thomsoniæ* var.

fállax: *C. speciosissimum.*

Fárgesii: *C. trichotomum* var.

fœtidum: *C. Bungei.*

fràgans. Shrub 5 to 8 ft.: lvs. broadly ovate, to 10 in. and more long, coarsely toothed, pubescent: fls. white or pale pink, 1 in. across, in terminal clusters resembling the hydrangea, fragrant, with exserted stamens and pistils. China, Japan; adapted Fla. to Calif.—The single-fld. form is seldom seen, the common one both in cult. and run wild being var. **pleniflòrum,** with double fls. in a very compact head.

glàbrum. Shrub or small tree, glabrous except sometimes on veins of lvs., which are opposite or whorled, oblong-ovate, to 5 in. long, mostly pointed, entire, glossy above: fls. small, white or pinkish, fragrant, in dense broad terminal cluster. S. Afr.; adapted to S. Calif., S. Fla.

hýbridum is listed as a red-fld. hort. form.

japónicum (*C. squamatum*). Shrub to 10 ft.: lvs. oval, cordate at base, entire or toothed: fls. bright scarlet, in panicles. China.

nùtans. Shrub 5–7 ft. high: lvs. obovate to oblanceolate, to 8 in. long, acuminate and often sharply so, usually entire: fls. white, few in lax terminal panicles, tube to ⅓ in. long: fr. purple, to ½ in. across. Assam to Himalayas.

Siphonánthus (*Siphonanthus indica*). Tubeflower. Turks-Turban. Striking erect shrub or woody herb to 8 ft., bearing terminal panicles of white fls. with tube to 4 in. long, closing in morning: lvs. mostly whorled, lance-oblong, to 5 in. or more, entire: fr. showy, red-purple persistent berry subtended by red-brown calyx. E. India; grown in Fla. and spontaneous.

speciosíssimum (*C. fallax*). Shrub to 4 ft.: lvs. ovate, heart-shaped at base, to 1 ft. long, entire or toothed, densely pubescent: fls. bright scarlet, to 2 in. across, in panicles to 1½ ft. long. Java.

speciòsum. Hybrid between *C. Thomsoniæ* and *C. splendens*, having dull red fls.

spléndens. Twining shrub: lvs. oblong or elliptic, to 6 in. long: fls. bright scarlet or yellow, 1 in. across, in many-fld. cymes. Trop. Afr.—Grown under glass.

squamàtum: *C. japonicum.*

Thómsoniæ (*C. Balfouri*). Twining evergreen shrub, favorite in greenhouses: lvs. ovate, to 5 in. long, entire: fls. crimson with large white calyx, in branching racemes. W. Afr. Var. **deléctum** has very large clusters of rose-magenta fls. Var. **variegàtum** is a variegated form.

trichótomum. Shrub to 10 ft.: lvs. ovate, to 5 in. long, entire or toothed, pubescent: fls. white with conspicuous reddish-brown calyx, in panicles. Japan; hardy N. Var. **Fárgesii** (*C. Fargesii*) has smaller nearly glabrous lvs.

CLÉTHRA. White-Alder. *Clethraceæ.* Shrubs or small trees with alternate simple toothed deciduous or persistent lvs. and fragrant white or pink fls. in terminal racemes or panicles in late summer. Allied to Ericaceæ; species in E. Asia, E. N. Amer., Madeira, and in tropics; most of those listed below are hardy in northern or north-central states.

Propagated by seeds sown in pans in spring, greenwood cuttings under glass, layers, and division.

acuminàta. To 15 ft.: lvs. oval or oblong, to 8 in. long, acuminate: racemes nodding, usually solitary. Va. to Ga.

alnifòlia. Sweet Pepperbush. Summer Sweet. To 10 ft.: lvs. obovate, to 4 in. long, obtuse or acute: racemes erect, usually panicled. Me. to Fla. Var. **paniculàta** (*C. paniculata*) has lvs. less toothed, smooth on both sides; fls. in panicles; by some authors not considered distinct from the typical form. Var. **ròsea** has pink fls.

arbòrea. To 20 ft., evergreen: lvs. narrow-elliptic, to 4 in. long, acuminate, shining above: racemes panicled; fls. fragrant. Madeira; not hardy N.

barbinérvis. To 30 ft.: lvs. obovate, to 5 in. long, acuminate, pubescent: racemes panicled; fls. fragrant. Japan.

Fárgesii. To 12 ft.: lvs. oblong-ovate, to 6 in. long, sharply toothed: fls. white, in racemes to 7 in. long, fragrant. Cent. China.

paniculàta: *C. alnifolia* var.

tomentòsa. To 8 ft.: lvs. obovate, to 4 in. long, acute or acuminate, tomentose beneath: racemes erect, solitary or few. N. C. to Fla. and Ala.

CLETHRÀCEÆ. White-Alder Family. Only one genus, Clethra, which is grown for ornament. Family is characterized by regular bisexual fls. having 5-parted calyx, 5 separate petals, 10 stamens, superior 3-celled ovary, and capsular frs.

CLEYERA JAPONICA: *Eurya ochnacea.*

CLIÁNTHUS. *Leguminosæ.* Shrubs partially trailing and often trained on rafters in greenhouses or grown out-of-doors in the S., with pinnate lvs. of many small lfts., large papilionaceous fls. in pendulous axillary racemes, the keel petal long and beak-like, and cylindrical inflated pods. Propagated by seeds and cuttings and *C. Dampieri* by grafting on roots of *Colutea arborescens.*

Dampieri. Glory-Pea. To 4 ft., grayish-pubescent: fls. scarlet with a large purplish-black blotch at base of standard, to 3 in. long: pods to 2½ in. long. Australia.

puníceus. Parrots-Bill. Parrot-Beak. Red Kowhai. To 6 ft.: fls. crimson, to 3 in. long: pods to 3 in. long. New Zeal. Var. **álbus** has white fls.

CLIFF-BRAKE: *Pellæa.*

CLIFTÒNIA. Buckwheat-Tree. Titi. *Cyrillaceæ.* An evergreen shrub or small tree, **C. monophýlla** (*C. ligustrina*), native in swamps Ga., Fla. to La., may sometimes be transplanted to grounds. It has narrow simple lvs. to 2 in. long and terminal racemes of white-blush fls. in spring, and winged fr.

CLINOPÒDIUM. *Labiatæ.* Shrubs or herbs of the north temp. zone: fls. in axillary cymes, the calyx and corolla 2-lipped; stamens 4. By many authors this genus is included in Satureja.

Calamíntha: *Satureja Calamintha.*

caroliniànum: *C. georgianum.*

coccíneum (*Satureja coccinea*). Shrub to 3 ft.: lvs. obovate or spatulate, entire: fls. scarlet, about 1½ in. long, in axillary cymes. Ga. to Ala.

dentàtum. Shrub to 2½ ft.: lvs. obovate to elliptic, about ½ in. long or less, toothed at apex, petioled: fls. white or purplish, to ½ in. long, in clusters of 1–3. Fla.

georgiànum (*C. carolinianum*). Shrub to 2 ft.: lvs. ovate, to 1 in. long, toothed, sessile or nearly so: fls. white or pinkish-purple spotted with purple, ½ in. long, in clusters of 5–6. N. C. to Fla. and Miss.

Népeta: *Satureja Nepeta.*

CLINTÒNIA. *Liliaceæ.* Herbs spreading by long underground rhizomes, having broad basal lvs. and fls. in umbels or solitary at end of scape, the perianth-segms. distinct; native in N. Amer. and E. Asia. There is another Clintonia which is properly Downingia, comprising the species *elegans* and *pulchella.*

Clintonias should be planted in moist shady and woodsy places. Propagated by division of roots in spring; attractive for colonizing.

Andrewsiàna. To 1½ ft.: fls. rose-purple, ½ in. long, in umbels: berries blue. Calif.

boreàlis. To 1½ ft.: fls. greenish-yellow, ¾ in. long, nodding, in 3–6-fld. umbels: berries blue. E. N. Amer.

umbellàta. To 1½ ft.: fls. white often spotted with purple, ⅕ in. long, in many-fld. umbels: berries black. N. Y. to Ga. and Tenn.

uniflòra. Queen-Cup. To 8 in.: lvs. ovate-lanceolate: fls. pure white, to 1½ in. across, usually solitary: berries prussian blue. Deep woods, N. W. U. S. and B. C.

CLITÒRIA. Butterfly-Pea. *Leguminosæ.* Per. herbs or shrubs, often climbing, with pinnate lvs., showy papilionaceous fls., solitary or in axillary racemes, and flattened pods; grown for ornament far S. and also under glass. Propagated by seeds or cuttings under glass.

cajanifòlia. Herb to 2 ft.: lfts. 3, gray-pubescent beneath: fls. pale violet, to 1½ in. long: pods to 2½ in. long. Trop. Amer., trop. Asia.—Grown as a cover-crop in the tropics.

marιàna. To 3 ft., often twining: lfts. 3: fls. light blue, 2 in. long., June–July: pods to 2 in. long. N. J. to Fla. and Tex.

ternatèa. Slender twiner: lfts. 5–7: fls. bright dark blue with lighter markings, 2 in. long: pods to 4½ in. long. Spread in the tropics, probably Asian.—An attractive climber, hardy only in southern parts. Fls. sometimes more or less double, also white.

CLÌVIA. Kafir-Lily. *Amaryllidaceæ.* S. African herbs with fleshy roots, the expanded lf.-bases forming bulb-like parts, narrow evergreen lvs., and showy reddish-yellow or scarlet fls. in terminal umbels, the perianth-tube short.

Clivias are good greenhouse or house subjects. Well-grown plants should be kept in the same pots for several years, giving applications of liquid manure. Water should be practically withheld during resting period. In subtropics they are grown in shady places. Propagated by division.

cyrtanthiflòra (*Imantophyllum cyrtanthiflorum*). Hybrid between *C. miniata* and *C. nobilis.*

hýbrida: hort. name.

miniàta (*Imantophyllum miniatum*). Lvs. to 1½ ft. long and 2 in. wide, thick and glossy: fls. erect, scarlet, yellow inside, to 3 in. long: berries bright red, 1 in. long.—The usual species in cult.

nóbilis. Fls. many, drooping, narrower and shorter than in *C. miniata*, red and yellow and tipped green.

CLOCK-VINE: *Thunbergia.*

CLON, CLONE. Variety, group or variation propagated by asexual or vegetative parts. Such races may not "come true" from seeds. The horticultural varieties of roses, apples, oranges, strawberries, carnations are clons, also the cultivated forms of day-lilies and plantain-lilies that do not produce seeds. Clon is a horticultural rather than taxonomic term.

CLOUDBERRY: *Rubus Chamæmorus.*

CLOVER. Species of Trifolium. The clovers are primarily hardy forage and meadow plants and do not come within the range of this Hortus. Many of the species are interesting and showy in the garden, as for example *Trifolium rubens, T. incarnatum, T. alpestre, T. hybridum;* some of the small kinds are useful in the rock-garden. Clovers are best propagated by seeds; some of them are annuals but even the perennials are likely to be short-lived. *T. repens* may be increased by the rooting runners, but as a constituent of lawns it is started from seeds. See *Trifolium,* also *Alysicarpus.*

CLOVER: *Trifolium, Medicago.* Alyce: *Alysicarpus.* Bokhara: *Melilotus alba.* Bur: *Medicago.* Bush: *Lespedeza.* Holy: *Onobrychis viciæfolia.* Hubam: *Melilotus alba* var. *annua.* Japan: *Lespedeza striata.* Mexican: *Richardia scabra.* Muck-: *Erodium moschatum.* Owls: *Orthocarpus.* Prairie: *Petalostemum.* Sweet: *Melilotus.* Tick: *Desmodium.* Water-: *Marsilea.*

CLOVE-TREE: *Eugenia aromatica.*

CLUB-MOSS: *Lycopodium.*

CLÙSIA. *Guttiferæ.* Diœcious trees and shrubs of trop. and subtrop. Amer., occasionally seemingly epiphytic in habit, branches usually horizontal, and lvs. leathery without conspicuous lateral veins. Technically the fls. differ from those of Calophyllum and Mammea in having a many-ovuled ovary with style wanting or very short: fr. a fleshy caps.

rôsea. Tree 20–50 ft. high, growing on other trees and rocks: lvs. obovate, to 8 in. long, base cuneate: fls. pink and white, to nearly 2 in. across: fr. greenish-white, globose, to 3 in. diam. W. Indies, Panama, Venezuela.—The seeds contain a sticky resin which is extracted and used in caulking the seams of boats.

CLYTÓSTOMA. *Bignoniaceæ.* Evergreen climbing shrubs with lvs. of 2 entire lfts. and a terminal tendril (or simple on blooming twigs), large attractive funnelform fls. in panicles, and prickly capsular frs.; native in S. Amer.

Clytostomas are grown under glass in the North and in the open in warm regions. They thrive in fertile soil. Propagated by cuttings.

callistegioìdes (*Bignonia speciosa*). Lfts. oval-oblong, to 3 in. long, wavy-margined: fls. lavender and streaked, to 3 in. long and 3 in. across. Brazil, Argentina.

purpùreum (*Bignonia purpurea*). Lfts. ovate-oblong, to 3 in. long, usually entire: fls. mauve with white throat, 1 in. long. Uruguay.

CNEORÍDIUM. *Rutaceæ.* Stiff-twiggy evergreen shrub 2–4 ft. high, on hills in S. Calif., with abundant very fragrant pedicelled fls. in upper axils or in very short clusters, nearly white inside and pinkish outside: lvs. linear, about 1 in. long, obtuse, dotted: fr. globose, drupe-like, reddish-brown, about ¼ in. diam. **C. dumòsum** is the only species; adapted to cult. in its region.

CNEÒRUM, the only genus of *Cneoraceæ.* Shrubs with alternate leathery entire lvs. and solitary or cymose fls. having 3–4 sepals, petals and stamens, and fr. a 3-parted drupe; native in the Medit. region and Canary Isls.; to be grown in mild climates.

tricóccon. Spurge-Olive. Evergreen, to 4 ft., glabrous: lvs. oblong, to 2 in. long, shining: fls. deep yellow, 1–3 in the axils: fr. greenish-black. S. Eu.

CNÍCUS. Blessed Thistle. *Compositæ.* One branching thistle-like ann. in the Medit. region and Caucasus, suitable for rock- and wild-gardens. Easily grown from seed. **C. benedíctus** (*Carduus benedictus. Centaurea benedicta*). To 2 ft.: lvs. oblong, pinnately cut and toothed, spiny: heads yellow, 1 in. across, terminal, surrounded by leafy bristly bracts. See *Cirsium* and *Carlina* for other species advertised as Cnicus.

CNIDÓSCOLUS. Tread-Softly. *Euphorbiaceæ.* Per. monœcious American herbs or subshrubs, mostly with stinging-bristly foliage: lvs. alternate, petioled, entire, toothed or divided: fls. in cymes, apetalous: fr. an ovoid caps. separating into 2-valved carpels. Distinguished from Jatropha by the apetalous fls. and staminate fls. with 10–30 stamens.

texànus (*Jatropha texana*). To 2 ft., covered with stiff bristly yellowish hairs: lvs. to 6 in. across, deeply 3–5-lobed into toothed or cut segms. on long petioles: fls. white, small, staminate calyces bristly. Ark. to Tex.—A closely related species not known to be in cult. is *C. stimulosus,* having stinging hairs and staminate calyces mostly glabrous at maturity. Va. to Fla. and Tex.

COACH-WHIP: *Fouquieria splendens.*

COAT-FLOWER: *Tunica Saxifraga.*

COBÆA (*Rosenbergia*). *Polemoniaceæ.* Trop. American climbing shrubs or big herbs with pinnately compound lvs. terminating in a branched tendril and bell-shaped violet or bright green fls. solitary in the axils, the calyx large, inflated and leaf-like; grown under glass and in the open. Treated as annuals in northern gardens. Propagated by seeds.

macrostòma. Climbing to 10 ft.: lvs. of 6 obovate lfts.: fls. yellowish-green, on long stalks. Guatemala.

scándens. Climbing to 25 ft.: lvs. of 4–6 oval or oblong lfts.: fls. violet or greenish-purple, 2 in. long and 1½ in. across, on very long stalks. Mex. Var. **álba** has white fls. and **purpùrea** deeper purple.

COBNUT: *Corylus Avellana* var. *grandis.*

COCA: *Erythroxylon Coca.*

COCAINE-PLANT: *Erythroxylon Coca.*

COCCÍNIA (*Cephalandra*). *Cucurbitaceæ.* Tendril-bearing vines from the Asian and African tropics, perhaps a score of species, one of which is rarely seen under glass and is somewhat run wild in trop. Amer.: lvs. angled or lobed: plants mostly diœcious, the pistillate fls. solitary and staminate solitary or racemose: fr. roundish to oblong and somewhat berry-like, small, indehiscent.

cordifòlia (*C. indica*). Ivy Gourd. Climbing or prostrate, to 6 ft. or more, smooth, root per.: lvs. broadly triangular-ovate and angled, 2–4 in. across: fls. white, bell-shaped, corolla about 1½ in. long with sharp lobes: fr. ovoid or oblong, smooth, scarlet. Asia, Afr.

índica: *C. cordifolia.*

COCCOCÝPSELUM (*Tontanea*). *Rubiaceæ.* Prostrate herbs of trop. Amer. with opposite simple lvs. and funnelform fls. in heads; one suitable for ground-cover or basket-plant.

guianénse. Lvs. ovate, to 2½ in. long, hairy: fls. purplish, small: fr. a blue berry about ¾ in. long. Trinidad, N. S. Amer.

COCCÓLOBIS (sometimes spelled *Coccoloba*). *Polygonaceæ.* Trop. and subtrop. American trees and shrubs with alternate entire often very large lvs., greenish fls. in racemes or spikes and fleshy berry-like frs.

Grown out-of-doors in warm and frostless climates, and under glass northward. They do best in rich sandy soil. Propagated by seeds, cuttings of ripe wood and layering.

floridàna (*C. laurifolia*). Pigeon-Plum. Small tree near coast in S. Fla.: lvs. oblong, entire, 2–4 in. long: racemes short bearing edible pear-shaped fr. about ⅓ in. long.

grandifòlia (*C. pubescens*). Tree to 80 ft.: lvs. orbicular, to 3 ft. across, rusty-pubescent below and with prominent veins: fls. greenish, in erect terminal racemes to 2 ft. long.—Grown in its juvenile stage as a pot-plant for the great ornamental lvs.

laurifòlia: *C. floridana.*

pubéscens: *C. grandifolia.*

uvífera. Sea-Grape. Tree to 20 ft. or more: lvs. orbicular, to 8 in. across, cordate at base, leathery, glossy and veined red: fls. white, in dense racemes to 10 in. long: frs, purple, resembling bunches of grapes, used for jelly. A characteristic native tree on coasts from S. Fla. southward.

COCCOTHRÌNAX. Seamberry Palms. *Palmaceæ.* Perhaps 30 species now recognized, from S. Fla. through the W. Indies: small or slender unarmed hermaphrodite fan-palms distinguished from Thrinax by the spadix mostly shorter than petioles (and often curling or incurving with age), stamens mostly 9–12, fr. dark colored inside and out, berry-like, and particularly by albumen ruminate and outside of seed furrowed to correspond. The species have been greatly confused and it is not yet clear how many of them may be planted within our territory.

álta (*Thrincoma alta. Thringis laxa* and *latifrons*). To 20 or 30 ft., with large lvs. and broad segms. silvery underneath and fr. distinctly pedicelled; segms. curved over but usually not hanging, main ones to 1½ in. broad at middle: fr. about ⅓ in. diam., dark brown to blackish. Puerto Rico.—Planted in S. Fla. where it has been called *Thrinax altissima.*

anómala: *Zombia antillarum.*

argentàta (*C. jucunda. C. Garberi*). To about 15 or 20 ft. but sometimes (in the stature called *Garberi*) fruiting at only 1–2 or 3 ft. of trunk, with small very deeply divided lvs. decidedly silvery underneath and glossy above, the segms. narrow (usually less than 1 in. broad) and in mature plants many of them hanging in irregular fashion: fr. ⅜–⅝ in. diam., short-pedicelled, brown at maturity. S. Fla. (Broward Co. to Marquesas Isls.), Bahamas.

argéntea. To 30 ft. or more, with medium large lvs. silvery underneath and dull green above; segms. usually not drooping and about ¾–1 in. across: fr. ⅓ in. diam., sessile. Hispaniola.—Apparently little known in U. S.

barbadénsis: confused name.

crinita. To 30 ft., stocky, the trunk buried in very long hair-like fibers: lvs. parted ½ or more depth of blade, greenish underneath and glossy above, segms. ¾–1½ in. broad and curved over: fr. to ¾ in. diam., on short thick pedicels. Cuba, where it was long known only in a sterile state; it has been represented in the U. S. by a single sterile plant under glass at the Brooklyn Bot. Gard., but may now be expected elsewhere.

Gárberi: *C. argentata.*

jucúnda: *C. argentata.*

radiàta: confused name.

CÓCCULUS (*Cebatha. Epibaterium*). Snailseed. *Menispermaceæ.* Shrubs, erect or twining, with alternate, entire or lobed lvs., small unshowy unisexual fls. in racemes or panicles, and drupaceous frs.; of wide distribution. Easily cult. in moist soil. Propagated by seeds or cuttings of half-ripened wood under glass.

carolìnus. Carolina Moonseed. Twining: lvs. ovate, to 4 in. long, entire or 3–5-lobed, pubescent beneath: panicles to 5 in. long: fr. red. Va. to Fla. and Tex.; hardy well N.

laurifòlius. Evergreen shrub to 15 ft.: lvs. oblong, to 6 in. long, leathery and shining: panicles to 2 in. long: fr. black. Himalayas; adaptable only in warm climates.

trìlobus. Twining: lvs. ovate, to 3½ in. long, entire or 3-lobed, pubescent on both sides: fls. in axillary cymes: fr. black. Japan, China, Philippines; hardy N.

COCHEMIÈA. *Cactaceæ.* A few small cylindric tubercled cacti of Lower Calif. with tubular slender scarlet fls. bearing petal-like sepals, formerly included in Mammillaria and treated the same under cult. See *Cacti.*

Hàlei (*Mammillaria Halei*). Cespitose, sts. nearly upright to 20 in., densely covered with reddish-brown to gray spines, tubercles short with woolly axils; radials 10–20; centrals 3 or 4, to nearly 1½ in. long, not hooked: fls. to 2 in. long, scarlet-red.

marítima: an invalid name for a plant differing from *C. Halei* in the spines being bright reddish-brown and arising from white-woolly areoles. Lower Calif.

Póndii (*Cactus Pondii*). Sts. to 18 in. tall and 2½ in. diam., tubercles conical; radial spines 15–25 the outer ones white, the inner brown; centrals 4–6, to $\frac{3}{16}$ in. long, often hooked: fls. glossy pale scarlet.

Posélgeri (*Mammillaria Poselgeri* and *M. Roseana*). Sts. numerous, sometimes creeping or hanging, often 6 ft. long and 1½ in. thick, tubercles far apart and somewhat flattened; radials 7–9; central 1 and hooked: fls. about 1¼ in. long.

setispìna (*Mammillaria setispina*). Sts. ascending, to 1 ft. high, axils woolly; radials 10–12 and white with black tips; centrals 1–4: fls. about 2½ in. long, scarlet-red.

COCHINEAL PLANT: *Nopalea cochenillifera.*

COCHLEÀRIA. Scurvy-Grass. *Cruciferæ.* One little bien. or per., **C. officinàlis,** of high northern regions, is a medicinal plant, and has been grown as a salad plant but the tarry flavor is against it for most persons. For salad, it is grown as an ann., lvs. being ready two to three months after sowing; succession sowings may be made. The plant prefers a cool position, or one partially shaded. It grows 1 ft. high, less or more, when in bloom; the early basal lvs. are heart-shaped or kidney-shaped; fls. small, white, in spring; pod or silicle ¼ in. or less long. Other species of Cochlearia inhabit the colder parts of north temp. zone but are not cult. For *C. saxatilis* and *Boissieri* see *Kernera.*

COCHLIÒDA. *Orchidaceæ.* Epiphytic orchids native in the Andes of S. Amer., having rose or scarlet fls. in commonly long racemes, the sepals and petals similar. Cult. as for *Odontoglossum.*

Noezliàna. Pseudobulbs to 2 in. long: lvs. linear-oblong: fls. orange-scarlet or rose-red, about 1¼ in. across; lip 3-lobed with yellow on disk. Peru, Bolivia.

COCHLOSPERMÀCEÆ. Cochlospermum Family. Two genera of woody plants native in trop. regions, separated from Bixaceæ on technical characters of fls. and capsules. Cochlospermum is treated below.

COCHLOSPÉRMUM (*Maximilianea*). *Cochlospermaceæ.* Trop. trees or shrubs with palmately lobed or divided lvs., fls. in racemes or panicles appearing at end of dry season before the lvs., and capsular fr.; one species grown in tropics and intro. in S. Calif.

vitifòlium. Tree to 40 ft.: lvs. alternate, deeply 5-lobed, to 1 ft. across, the lobes toothed: fls. bright yellow, 4 in. and more across, in terminal clusters, with numerous stamens: caps. to 3 in. long, velvety-pubescent. Mex., Cent. and S. Amer.

COCKSCOMB: *Celosia argentea* var. *cristata.*

COCKS-EGGS: *Salpichroa rhomboidea.*

COCKS-FOOT: *Dactylis glomerata.*

COCONUT. The fruit of *Cocos nucifera*, a widespread palm. The products of the coconut tree are mainly four: toddy or beverage derived from the sap obtained from incising the flower-clusters and which may also be a source of sugar; coir, the fiber from the husk of the nut, much used in cordage and in the making of brushes and mats and otherwise; copra, the dried meat of the nut, employed in the making of oil; the mature edible nut itself.

Coconuts thrive in the tropics, but not necessarily on the seacoast, and grow well in southern Florida but the nuts are there less an article of commerce than for propagating purposes; that is, in Florida they are planted for ornament and home use. The tree is grown only from seeds, which are ordinarily planted in a shaded seedbed with the nut not completely covered and preferably once or more transplanted before being set in permanent place. When only a few trees are desired, the nut may be planted where the plant is to grow if quick effects are not desired. For fruit-bearing, the trees are planted when perhaps three or four years old. About 25 feet apart each way is a good spacing for a commercial grove. Ordinarily coconuts receive little attention in tillage or fertilizing but they respond to good treatment as well as other plants. A few fruits may be borne in four or five years but no important yield is to be expected before about ten years. Beyond twenty years the grove should be in full bearing. A good tree on fertile ground should yield 75 or more nuts a year, but the average is probably not more than one-third of this number. There are many varieties of coconuts; and in any case the grower should choose nuts from trees producing abundantly of choice fruits if he expects the best product.

COCONUT, DOUBLE: *Lodoicea.*

CÒCOS. *Palmaceæ.* As now defined, a monotypic genus including only the coconut, **C. nucífera,** considered to be of Asiatic or Polynesian origin. Ubiquitous practically unarmed tree in trop. littorals, reaching 60–80 ft. or more, with a more or less crooked or inclined trunk, the spadices from the lower axils of the crown; spathe striate on the outside but not plicate-sulcate: lvs. pinnate, to 15 or more ft. long; pinnæ many, linear-lanceolate and long-pointed, of firm texture: staminate fls. numerous and borne on the upper part of the branches of the spadix, the few large pistillate fls. near the base; stamens 6; sepals and petals of pistillate fls. convolute-imbricate: fr. very large, 1-seeded, with an interior cavity containing nutrient liquid. An abundant tree in southern part of peninsular Fla., apparently spontaneous on some of the Keys. See *Coconut.*

The breaking up of the old genus Cocos places the kinds planted in the U. S. or in our literature under the following genera: Arecastrum, Arikuryroba, Butia, Rhyticocos, Syagrus. Following are the Cocos names likely to be met in lists:

Alphónsei: unrecognized name.

amàra: *Rhyticocos amara.*

Arechavaletàna: *Arecastrum Romanzoffianum* var. *australe.*

argéntea: *Syagrus argentea,* apparently not cult., and probably the hort. name belongs with another palm.

austràlis: *Butia capitata;* of botanists, *Arecastrum Romanzoffianum* var. *australe.*

Blumenàvia: see *Butia eriospatha.*

Bonnètii: *Butia Bonnetii.*

botryóphora: *Arecastrum Romanzoffianum* var. *botryophorum.*

braziliénsis: unidentified name.

campéstris: *Syagrus campestris,* probably not in cult. here, but the name has been attached to a Butia.

capitàta: *Butia capitata.*

comòsa: *Syagrus comosa,* apparently not in cult., but name has been associated with a Butia.

coronàta: see *Butia capitata.*

Datíl: *Arecastrum Romanzoffianum* var. *australe.*

eriospàtha: *Butia eriospatha.*

flexuòsa: *Arecastrum Romanzoffianum* var. *australe;* of botanists, a Syagrus apparently not in cult.

Gaértneri: *Butia Bonnetii.*

hùmilis: unidentified name; has been applied to a Butia.

insígnis: *Syagrus insignis.*

lapidèa: confused name; has been attached to a Butia.

littoràlis: unidentified name; has been used for a Butia.

macrocárpa: *Syagrus macrocarpa.*

Màrìæ-Regìnæ: unidentified name.

marítima: unidentified name.

Maximiliàna: probably a Syagrus.

Nehrlingiàna: *Butia capitata* var. *Nehrlingiana.*

Normánbyi: *Normanbya Normanbyi.*

odoràta: *Butia capitata* var. *odorata.*

paraguayénsis: *Butia paraguayensis;* apparently not in cult. in our territory.

petræ̀a: *Syagrus petræa.*

plumòsa: *Arecastrum Romanzoffianum.*

Procopiàna: *Syagrus macrocarpa.*

pulpòsa: *Butia capitata* var. *pulposa.*

Romanzoffiàna: *Arecastrum Romanzoffianum.*

rupéstris: *Syagrus petræa.*

sápida: *Syagrus sapida,* probably not grown here; the hort. name may mean *Rhopalostylis sapida.*

schizophýlla: *Arikuryroba schizophylla.*

vinífera: applied to an undetermined Butia.

Weddelliàna: *Syagrus Weddelliana.*

Yatày: *Butia Yatay.*

Yurumáguas: a doubtful Butia.

CODARIOCALYX: *Desmodium motorium.*

CODIÆ̀UM (*Phyllaurea*). CROTON (of florists). *Euphorbiaceæ.* Shrubs from the Old World tropics with thick alternate simple or lobed lvs., small monœcious fls. in axillary racemes, and capsular fr.; extensively grown in southern regions and under glass for the colored ornamental foliage, extensively variable.

Any good soil is suitable for crotons. They develop better coloring if planted in sunny situations. Propagated by seeds, but named sorts should be increased by cuttings of half-ripened wood over bottom heat. Separate plants may be produced from large branches by air-layering; a cut is made in the stem below the leaves and tied with moss; roots will form in about three weeks and the part may be cut and potted.

variegàtum var. **píctum.** To 6 ft. and more: lvs. ovate-lanceolate to linear, entire or lobed, sometimes cut almost to midrib, variously marked with white, yellow or red: fls. white.—Runs into numerous named forms of which the following are the best known: **amábile** with bright colored lanceolate lvs.; **anatoménse** with narrow lvs.; **Andreànum** with broad yellow lvs.; **aucubæfòlium** with broad yellow red-blotched lvs.; **aùreo-maculàtum** with green lvs. spotted yellow; **Bérgmanii** with broad cream-yellow lvs. blotched with green; **brilliantíssimum** with narrow lvs.; **bruxellénse** with broad lvs.; **Chantrièri** with narrow red lvs.; **Chélsonii** with yellow red-mottled lvs.; **Chíldsonii** with narrow lvs.; **cornùtum** with mottled yellow lvs. and projecting midribs; **Cràigii** with 3-lobed lvs.; **Crónstædii** with spirally twisted lvs. variegated yellow; **Dàvisii** with narrow lvs. variegated white; **Dormanniànum,** small bronze-red and yellow lvs.; **edmonténse** with narrow bright colored lvs.; **elegantíssimum** with narrow yellow dotted lvs. and red petiole; **Evansiànum** with 3-lobed yellow lvs. veined and mottled with red; **fasciàtum** with broad lvs. veined yellow; **filifòlium aùreum** with narrow lvs.; **gloriòsum,** lvs. linear with practically no red coloration; **Hámmondii** with narrow lvs.; **Hanburyànum** with narrow yellow lvs. marked with rose; **illústre** with 3-lobed lvs. variegated with yellow; **inimitábile,** lvs. yellow veined with red; **interrúptum,** lvs. yellow with red midrib, sometimes twisted; **irregulàre** with irregular lvs. and yellow spots and midrib; **Jàmesii** with broad lvs. irregularly blotched with yellow or white; **Johánnis,** long narrow lvs. with yellow margins and center; **macrophýllum** with large lvs.; **montefontainénse,** with slightly 3-lobed red lvs. veined with yellow; **Mórtii,** lvs. broad, green and yellow; **musàicum** with yellow and green lvs.; **Nèwmannii** with broad dark crimson lvs.; **nóbile** with linear yellow lvs. variegated with red; **picturàtum** with richly colored lvs.; **Pucciànum** with broad lvs.; **punctàtum aùreum** with narrow lvs.; **Rèidii,** lvs. yellow variegated with red; **ròseo-píctum,** lvs. variegated with yellow and red; **rubérrimum,** linear crimson lvs. marked with creamy white; **rùbro-lineàtum** with yellow lvs. shaded with crimson; **Sánderi** with broad irregularly blotched lvs.; **Scháttii** with broad lvs.; **Sinitziànum** with narrow lvs. spotted with yellow or white; **supérbum,** narrow lvs. mottled green and yellow; **Thómsonii,** lvs. prominently yellow marked; **tórtile** with spirally twisted lvs. variegated with red; **trílobum** with 3-lobed yellow blotched lvs.; **undulàtum,** broad wavy lvs. veined with red or purple; **variábilis** with narrow lvs.; **Veìtchii** with broad lvs. variegated with red; **volùtum** with narrow lvs.; **Wárrenii,** lvs. yellow variegated with red; **Weìsmanii** with narrow wavy-margined lvs. variegated with yellow and with red petiole.

CODONÓPSIS. *Campanulaceæ.* Per. herbs of Cent. and E. Asia, 40 or more species, bearing bell-shaped or nearly rotate fls. in shades of blue and yellow with darker veins and blotches, some of them climbing or lopping, with milky juice and heavy scent: lvs. mostly opposite: fr. a caps. They are odd rather than showy plants; require winter protection in the N.; otherwise cult. as for Campanula.

clematídea (*Glossocomia clematidea*). St. erect to 1 ft. or sometimes flexuose and more or less running or climbing: lvs. ovate to oblong to nearly lanceolate, about 1 in. long, petiolate: fls. terminal and usually solitary, pale blue with dark lines and purple blotch inside, nearly or quite 1 in. long, broadly bell-shaped; calyx-lobes large and at length strongly reflexed, not ciliate unless at tip. Cent. W. Asia.

meleàgris. St. erect, to 18 in.: lvs. clustered near base, oblong, nearly sessile, 2–3 in. long: fls. terminal, solitary, drooping, greenish-yellow with purplish spots and veins, 1½ in. long. W. China.

ovàta. St. upright or somewhat decumbent at base, to 1 ft.: lvs. ovate, about ¾ in. long, sessile or nearly so: fls. solitary or few on long bracted pedicels, 1 in. or more long, narrowly bell-shaped, blue with darker veins; calyx-lobes erect, finely ciliate on margins. Kashmir.—Plants grown under this name are likely to be *C. clematidea.*

pilósula (*C. silvestris*). Twining: lvs. broadly ovate and subcordate, undulate, hairy underneath: fls. pale yellow or greenish-yellow, bell-shaped, 1 in. long more or less; calyx-lobes broadly lanceolate, glabrous. N. E. Asia.

rotundifòlia. Trailing or climbing, somewhat hairy: lvs. ovate, mostly cordate, petioled, crenate-serrate: fls. solitary and terminal, to 1 in. long, narrow-bell-shaped, yellowish-green and veined purple; calyx-lobes large and leaf-like, nearly as long as corolla, becoming reflexed. Himalayas.

silvéstris: *C. pilosula.*

Tángshen. Twining, more or less hairy at joints: lvs. ovate to ovate-lanceolate, about 2 in. long, short-petioled, indistinctly crenate-serrate: fls. axillary on long peduncles, bell-shaped, more than 1 in. long, greenish with purplish stripes and spots; calyx-lobes oblong-lanceolate. China.

thalictrifòlia. Very slender: lvs. small, rounded, densely hairy, not more than ⅓ in. long: fls. nearly cylindrical or tubular, about 1 in. long, blue. Himalayas.

viridiflòra. Climbing: lvs. ovate to lanceolate, 1 in. long more or less, subcordate, lightly hairy, petioled, sinuate: fls. terminal, long-stalked, about 1 in. long, yellowish-green with purplish dots in base; calyx-lobes serrate. E. Asia.

CŒ̀LIA. *Orchidaceæ.* Epiphytes native in Cent. Amer. and W. Indies having pseudobulbs bearing 2–4 lvs. and fls. in dense racemes, the column produced into a foot to which the lateral sepals are attached at base. For cult. see *Orchids.*

Baueriàna: *C. triptera.*

macrostàchya. Lvs. narrowly oblong-lanceolate, to about 2 ft. long: fls. rose, on scapes somewhat shorter than the lvs., the lip with 2 small sacs below. Aug.–Oct. Mex. to Costa Rica.

tríptera (*C. Baueriana*). Lvs. linear-lanceolate, to 18 in. long: fls. white, on short scapes to about 6 in. long, the ovary sharply 3-winged. Mar.–May. Mex., W. Indies, Guatemala?

CŒLOGLOSSUM: *Habenaria viridis* var. *bracteata.*

CŒLÓGYNE. *Orchidaceæ.* Epiphytes from the eastern hemisphere having pseudobulbs bearing 1–2 lvs. and showy fls. in racemes, the lip concave at base, usually 3-lobed and keeled. Grown under glass, often suspended, mostly in intermediate temperatures: see *Orchids.*

asperàta. Lvs. to about 2½ ft. long and 3–6 in. wide: fls. white or cream-white, fragrant, 3 in. across, in several- to many-fld. drooping racemes to about 16 in. long; lip marked with yellow, orange and brown, and wavy on margins. Mar.–Aug., Dec. E. Indies, Philippines, Malaya.

barbàta. Lvs. to 18 in. long and about 2 in. wide: fls. in a dense erect raceme about as long as the lvs., white with lip brownish within and fringed. Oct.–Feb. Himalayas.

burfordiénse. Hybrid between *C. asperata* and *C. pandurata* having green sepals and brown lip.

cinnamòmea. Lvs. oblong-lanceolate: fls. in 6–8-fld. recurved racemes, yellowish or yellowish-white, the side lobes of lip yellowish-brown with white margin. Java.

corrugàta: *C. nervosa.*

cristàta. Lvs. to 1 ft. long and 1 in. wide: fls. in drooping racemes, large, fragrant, snow-white with 5 yellow keels on lip. Feb.–Apr. Himalayas. Var. **Chátsworthii** has large pseudobulbs and fls. Var. **hololeùca** (var. *alba*) has white keels. Var. **Lemoniàna** has keels fringed with citron-yellow. Var. **máxima** has very large fls.

Dayàna. Lvs. to 1⅔ ft. long and 4 in. wide: racemes drooping, loosely many-fld., to 40 in. long; fls. to 2½ in. across, whitish or pale yellow with the lip blotched with chocolate-brown within and traversed by 6 white keels. May–Aug. Malaya. Var. **grándis** is listed.

elàta. Lvs. to 1½ ft. long and 3 in. wide: racemes erect, to 14-fld., to 16 in. high; fls. white or cream-white with lip having orange or yellow spot and 2 keels edged with red. Feb.–May. Himalayas.

fimbriàta. Lvs. to 5 in. long and rarely 1½ in. wide: fls. in 1–4-fld. racemes, white or greenish-yellow with fringed lip streaked with brown. July–Nov. China, Himalayas.

fláccida. Lvs. to 1 ft. long and about 1 in. wide: racemes to 10 in. long, to 12-fld.; fls. white or cream-white with lip having brownish streaked side lobes, yellow spot in the middle in front, and 3 yellow keels. Feb.–Apr. Himalayas.

fuliginòsa. Lvs. to 7 in. long and about 1 in. wide: racemes shorter than the lvs., to 5-fld.; fls. brownish-yellow or brownish-white with fringed lip blotched with deep brown. Aug.–Nov. Himalayas, Burma, Java.

Huettneriàna. Lvs. to about 10 in. long and 2 in. wide: racemes drooping, 8–10-fld.; fls. white with lip spotted with citron-yellow. Apr.–June. Burma. Var. **láctea** (*C. lactea*) has no yellow on lip.

láctea: *C. Huettneriana* var.

Lawrenceàna. Lvs. to about 11 in. long and 1 in. wide: racemes to 8 in. long; fls. 1–3, large, greenish-yellow or brownish-white, the lip having brown side lobes, a large central brown spot, white on sides separated by a sulfur-colored band. Mar.–Apr. Indo-China.

lentiginòsa. Lvs. to 8 in. long and 1½ in. wide: racemes to 4 in. long, about 4–8-fld.; fls. straw-yellow or yellow-green with the white lip having brown edged side lobes and orange blotched mid-lobe. Dec.–Mar. Burma.

Massangeàna. Lvs. to 20 in. long and 6 in. wide: racemes pendulous, to 2 ft. long, loosely many-fld.; fls. pale yellow with lip having brown and yellow streaked side lobes and yellow, brown and white mid-lobe. Mar.–June, Oct.–Nov. Assam, Malaya, Java.

Mayeriàna. Lvs. to 8 in. long and 1 in. wide: racemes to 1 ft. long, to 10-fld.; fls. green with lip streaked with dark brown. Apr., Oct.–Nov. Malaya.

Mooreàna. Lvs. to 20 in. long and 2 in. wide: fls. in 3–8-fld. racemes to 16 in. long, snow-white with lip spotted with golden-yellow. Dec. Cochin-China.

nervòsa (*C. corrugata*). Lvs. to 6 in. or more long and about 1 in. wide: fls. in 3–6-fld. racemes, white with lip marked with yellow. Aug.–Sept. India.

nítida (*C. ocellata*). Lvs. to 10 in. long and 1½ in. wide: racemes 3–6-fld.; fls. white with golden-yellow spots on lip. Mar.–May, Sept.–Nov. Himalayas, Burma, Indo-China. Var. **máxima** has much larger fls.

ocellàta: *C. nitida.*

panduràta. Lvs. to about 26 in. long and 2½ in. wide: racemes arching, nearly as long as lvs., up to 9-fld.; fls. large, pale green, having a warty lip marked with blackish-brown or black. Jan.–Mar., May–July. Malaya, Borneo, Sumatra.

prolífera. Lvs. to 7 in. long: fls. in many-fld. racemes subtended by bracts, greenish-yellow. Himalayas.

Rhodeàna. Lvs. to 14 in. long and about 1 in. wide: racemes 3–5-fld., to 4 in. long; fls. greenish-white, the lip with brown side lobes and 2 yellow stripes on mid-lobe. Molucca Isls.

Sanderiàna. Lvs. to 15 in. long and 3 in. wide: racemes as long as the lvs., to 9-fld.; fls. large, white with side lobes marked with brown and mid-lobe yellow. Sunda Isls., Borneo.

spársa. Lvs. to about 6 in. long and 1½ in. wide: racemes arching, 7½ in. or less long, up to 7-fld.; fls. small, whitish with brown mottling on side lobes of lip and orange blotch on mid-lobe. Jan.–May, Nov. Philippines.

speciòsa. Lvs. to 15 in. long and over 2 in. wide: racemes shorter than lvs., 1–4-fld.; fls. very large, greenish or yellowish-brown, lip yellowish-white heavily marked with dark brown. Feb.–July, Sept. Java.

tomentòsa. Lvs. to 20 in. long and 3 in. wide: racemes pendulous, hairy, to 18 in. long; fls. large, light orange-red or red-brown, lip with side lobes streaked with brown and mid-lobe yellow with brown margins. May. Malaya.

COFFÈA. Coffee. *Rubiaceæ.* Evergreen shrubs and trees with usually opposite lvs., cream or white salverform fls. in axillary clusters, and a small 2-seeded colored berry; native in Asia and trop. Afr. and widely grown in the tropics for the coffee "beans" which are really the seeds within the pulpy fr.

In the United States coffee is grown only occasionally as an ornamental subject and for its general interest, and is sometimes seen under glass. Propagated by cuttings of ripe wood, and in the tropics by seeds from which the pulp is removed.

arábica. Common or Arabian C. Shrub to 15 ft.: lvs. oval, to 6 in. long, shining dark green: fls. pure white, fragrant, 5-lobed, ¾ in. long: fr. red, ½ in. long. Trop. Afr.—Listed names of hort. forms are: **columnàris, erécta** and **excélsa.**

libèrica. Liberian C. Shrub: lvs. obovate, to 1 ft. long, shining: fls. 6–7-lobed, 1 in. long: fr. black, ¾ in. long. Trop. Afr.

Zanguebàriæ. Zanzibar C. Tree to 6 ft.: lvs. oval or obovate, to 4 in. long: fls. 6–7-lobed: fr. red turning black, ½ in. long, nerved longitudinally. Trop. Afr.

COFFEE: *Coffea.* **-Berry:** *Rhamnus californica.* **-Tree, Kentucky:** *Gymnocladus dioica.* **Wild-:** *Psychotria.*

COGSWELLIA: *Lomatium.*

COHERENT: two or more similar parts or organs joined.

COHOSH: *Actæa.* **Black:** *Cimicifuga racemosa.* **Blue:** *Caulophyllum thalictroides.*

COIR: see *Coconut.*

CÒIX. *Gramineæ.* Tall grasses with broad lvs., grown for the peculiar bead-like involucre which contains the pistillate spikelets, the staminate spikelets deciduous and borne on the axis projecting from the bead; source of a cereal food (adlay) in parts of Asia. See *Grasses.*

Lácryma-Jòbi. Jobs-Tears. Per. but grown as an ann. and not winter-hardy in cold countries, to 4 ft.: lvs. to 2 ft. long and 1½ in. wide: beads from pearly white to lead color, to 1½ in. across, hard and shining. Trop. Asia, but nat. elsewhere. Var. **aùrea zebrìna** has lvs. striped yellow.

CÒLA. *Sterculiaceæ.* Trop. African trees with alternate entire or lobed lvs., unisexual or polygamous fls. without petals borne in axillary panicles, and fr. of 4–5 leathery or woody carpels; grown in the tropics for the kernel of the fr. which is used in making drinks and in medicine.

Colas do best on sandy loam soil. Propagated by seeds, preferably singly in pots and then set out permanently, as they do not transplant well; also by cuttings of mature wood over heat.

acuminàta. Cola or Goora Nut. To 40 ft. evergreen: lvs. entire, obovate, to 8 in. long, leathery: fls. yellow: fr. to 6 in. long.

CÓLCHICUM. Autumn-Crocus. *Liliaceæ.* Mostly autumn-blooming cormous herbs with broad basal lvs. the following spring, and very long-tubed purple or white fls. arising from the ground without sts.

Adapted to the sunny border and a loamy soil. Bulbs should be planted 2–3 inches deep in August or September, and not lifted until they show signs of deterioration. Propagated by separation of bulbs and by seeds.

agrippìnum. Similar to *C. variegatum* but more robust and lvs. nearly erect. Cultigen.

autumnàle. To 4 in.: lvs. to 2 in. wide: fls. purple or white, sometimes double, to 4 in. across, in autumn. Eu., N. Afr. Var. **álbum** has white fls., **atropurpùreum** purple. Var. **màjus** is more robust. Var. **mìnus** is listed as a dwarf form. Var. **ròseum,** fls. rose-pink.

Bornmùelleri. To 8 in.: lvs. to 2 in. wide: fls. rose or lilac turning purple, the tube white, 5 in. across, in autumn. Asia Minor.

byzantìnum. To 6 in.: lvs. to 4 in. wide: fls. lilac-purple, to 4 in. across, many from a spathe, in autumn. S. E. Eu.

Decaìsnei. Lvs. to 1½ in. wide: fls. pale rose, 3 in. or more across. Nov.–Jan. Medit. region.

gigantèum: hort. form with pink fls.

lùteum. Lvs. to ½ in. wide: fls. yellow, to 1½ in. across, in spring. Himalayas.

Párkinsonii. To 8 in.: lvs. usually 3, lanceolate, margins strongly undulate, lying flat on the ground: fls. white, heavily tessellated with purple, to 4 in. across, segms. narrowly lanceolate, autumn. S. Eu.—By some considered synonymous with *C. variegatum.*

speciòsum. To 1 ft.: lvs. to 4 in. wide: fls. violet with white throat or pink, to 6 in. across, in autumn. Caucasus. Var. **álbum** has white fls. Vars. **illýricum** and **magníficum** are listed.

variegàtum. To 3 in.: lvs. 1 in. wide: fls. rose with white tube, checkered, to 4 in. across, in autumn. Greece, Asia Minor.

COLE, COLEWORT. A general name for what may be called the true Brassicas as distinguished from the mustards. The term covers the blue-leaved species, mostly biennial, as the cabbage tribe, kohlrabi, rutabaga, rape.

COLEONÈMA. *Rutaceæ.* S. African shrubs with scattered linear lvs., fls. solitary in the axils, and capsular frs.; one species sometimes planted in warm climates and grown under glass in pots. For cult. see *Diosma.*

álbum (*Diosma alba*). To 1 ft. or more, much branched: lvs. ½ in. long: fls. white, about ⅛ in. across.

púlchrum. Taller than *C. album,* with longer lvs. and larger red fls.

COLEOSANTHUS: *Brickellia.*

CÒLEUS. *Labiatæ.* Ann. or per. showy-lvd. herbs grown in the window-garden, greenhouse, porch boxes, and to some extent for bedding-out: lvs. toothed: fls. small or medium-sized, usually blue or lilac, in terminal spike-like racemes: native in tropics of Old World.

Coleus is very easily propagated from short cuttings taken at any time; seeds produce many interesting variations. New plants from cuttings every year give best results.

amboínicus (*C. aromaticus*). Per. to 3 ft., hairy-pubescent: lvs. broad-ovate, to 2 in. long, coarsely round-toothed, fleshy: fls. pale purplish. India, E. Indies.—Cult. in trop. Amer. and shoots sometimes seen in market as "Spanish thyme;" aromatic.

aromáticus: *C. amboinicus.*

Autrànii. Sts. villous at nodes and glabrous along internodes: lvs. broadly ovate, to 5 in. long, base cordate to rounded, pilose above and briefly hispid beneath: fls. lilac. in spikes to 6 in. long, corolla to nearly ¾ in. long. Ethiopia.

barbàtus. Per. to 4 ft., woody toward base: lvs. ovate to oblong, to 4 in. long, cuneate, apex obtuse, margins crenate, very hairy on both sides: fls. bright blue, to ½ in. long, in lax racemose panicles to 2 ft. long. Trop. Afr.

Blùmei. The common cult. coleus, in many forms: per. to 3 ft., erect: lvs. ovate, acuminate or pointed, obtusely toothed, 4 in. or more long, variously colored with yellow, dull red and purplish, sometimes deeply cut: fls. dark blue or whitish, the whorls nearly sessile in the spike. Java. Var. **Verschafféltii** is more branching and brilliantly colored.

hýbridus: hort. name for probable garden hybrids of unknown parentage.

lanuginòsus. Herb, the root bearing tubers: lvs. ovate, to 3 in. long, densely pubescent: fls. in short-stalked clusters in long loose panicles. Cent. Afr.

ornàtus: hort. name for a large-lvd. form of *C. Blumei.*

Persoònii. Erect herb: lvs. ovate, wrinkled and soft-pubescent, in many-fld. nearly sessile clusters. Madagascar.

pùmilus. Sts. lax, more or less decumbent and rooting at lower joints: lvs. small, mostly 2 in. or less long, broad and obtuse, coarsely toothed, sometimes lighter colored along rib and nerves: fls. small, in long racemes. Philippines; sometimes cult., and somewhat escaped in S. Fla.

regàlis: listed name.

Rehneltiànus. Per., sts. much branched, procumbent: lvs. ovate-triangular, to ¾ in. long, usually wider than long, obtuse, crenate, base acuminate to heart-shaped, margins dark-purple–hairy: fls. blue, about ½ in. long, in 7–8-fld. cymes forming an elongate raceme to 6 in. long, corolla-lip of 4 white lobes. Ceylon. Var. **supérbus** is listed.

shirénsis. Per. to 3 ft.: lvs. ovate, to 3 in. long, deeply toothed, pubescent beneath: fls. dark blue, in stalked clusters in large erect terminal panicles. Cent. Afr.

thyrsoídeus. Bush C. Shrub to 3 ft.: lvs. cordate-ovate, to 7 in. long: fls. bright blue, the clusters in the spike-like racemes long-stalked. Cent. Afr.

Verschafféltii: *C. Blumei* var.

COLEWORT: see *Cole.*

COLIC-ROOT: *Dioscorea villosa.* **Yellow:** *Aletris aurea.*

COLLARD, COLLARDS. A large kale, *Brassica oleracea* var. *acephala*, grown in the South for greens. It is biennial or potentially perennial, producing a hard stalk 1–2 feet high and bearing a loose crown of cabbage-like leaves (but not a solid head) which are eaten. Sometimes collards are grown as a winter annual for spring use; and sometimes the leaves are taken as needed and the plant allowed to stand for a year or more, where winters are very mild. The usual procedure is to sow seeds in spring in a seed-bed, transplant to 3 or 4 feet apart in the field, till through the season, and harvest the crop in autumn; the plant endures hot weather better than cabbage. If seed is wanted, the stocks may be allowed to stand where climate permits, or they may be stored for the winter and planted out the next year as are cabbage stumps.

Sometimes young cabbage plants, or related things, are erroneously called collards when used for greens.

COLLÈTIA. *Rhamnaceæ.* Spiny stiff S. American shrubs with thickened often flattened branchlets, the lvs. very small or usually wanting, yellowish or white fls., and fr. a leathery 3-lobed caps.; grown out-of-doors in warm regions or under glass as a curiosity. Propagated by seeds or cuttings of half-ripened wood.

armàta. Branches and spines usually pubescent, spines straight or slightly curved, to ¾ in. long, lvs. small: fls. Sept.–Dec. Chile.

cruciàta. Anchor-Plant. To 4 ft., with very broad-spiny flattened branches and few small lvs.: fls. yellowish-white, in autumn. S. Brazil, Uruguay; seen in Fla. and S. Calif.

Éphedra. Small shrub with flattened branches: fls. white, in spring. Chile.

hórrida: a synonym of the true *C. spinosa* but in hort. applied either to *C. cruciata* or *C. infausta.*

infaùsta. To 10 ft., the stiff green branches with cylindrical spines to 1 in. long and small lvs.: fls. greenish-white, in early spring. Chile.

spinòsa of gardens is *C. infausta* or *C. armata;* the plant long known botanically as *C. spinosa* is now considered to be two distinct species, *C. spinosissima* of Argentina and *C. aciculata* of Peru, neither in cult.

COLLÌNIA. *Palmaceæ.* One graceful pinnate-lvd. shade palm of Mex. and Cent. Amer., differing from Chamædorea in having inner floral envelopes of staminate fls. united at base with filaments and pistillode, corolla of both staminate and pistillate fls. campanulate-tubiform and open at apex.

élegans (*Chamædorea elegans. Neanthe bella*). Sts. solitary or somewhat clustered, ringed, 2–8 ft.: pinnæ narrow-lanceolate and long-acuminate but sometimes broader and short, green on both surfaces, not ridged, not harsh in texture: spadix much branched: fr. small, globular.—A good porch and pot plant.

COLLÍNSIA. *Scrophulariaceæ.* Hardy herbaceous attractive annuals with lvs. opposite or in whorls of 3's, the bell-shaped 2-lipped fls. in the axils of the lvs. either solitary or in umbel-like clusters, blooming in mid-summer, the colors ranging from white, lilac, rose to violet and clear bright blue; mostly native in W. N. Amer.

Collinsias require only the usual treatment for annuals, the seed may be sown outdoors in autumn, if well protected in winter, but preferably in spring in the North.

bartsiæfòlia. Seaside C. To 1 ft., sticky: lvs. ovate to linear, 1 in. long: fls. nearly sessile, whitish, marked with lilac or purple, with short upper lip. Calif.

bícolor. To 2 ft., glabrous or sticky: lvs. oblong, toothed, to 2 in. long: fls. nearly sessile, to 1 in. long, lower lip violet or rose-purple, upper lip white. Calif. Var. **candidíssima** has all white fls. Var. **multícolor** (*C. multicolor*) has variegated fls. Var. **purpùrea,** fls. rich purple.

candidíssima: *C. bicolor* var.

cárnea: listed name, probably a color form of *C. bicolor.*

grandiflòra. Blue-Lips. To 15 in.: lvs. oblong to linear, to 1¾ in. long, entire: fls. to ¾ in. long, pedicels length of fls., corolla-tube shorter than limb, lower lip deep blue or violet, upper lip purple or white. Calif. to B. C.

multícolor: *C. bicolor* var.

parviflòra (*C. tenella*). Erect or spreading, to 8 in. high: lvs. orbicular, oblong or linear, often toothed, acutish, to ¾ in. long, in whorls of 3–5: fls. violet or blue, to ⅓ in. long, axillary, usually solitary, the tube of corolla longer than limb. Ore., Wash.—Some of the material so listed is *Tonella tenella.*

tenélla: *C. parviflora.*

tinctòria. To 2 ft., sticky, giving off an iodine-like stain: lvs. ovate to lanceolate, to 4 in. long: fls. nearly sessile, pale purplish or nearly white and streaked, the upper lip very short. Calif.

vérna. Blue-eyed Mary. To 2 ft.: lvs. ovate to oblong, to 2 in. long: fls. ½ in. long, long-stalked, lower lip bright blue, upper white or purplish. N. Y. to Wis. and Ky.

COLLINSÒNIA. Horse-Balm. Horse-Weed. Stone-Root. *Labiatæ.* Aromatic per. herbs of E. N. Amer., with large opposite lvs. and small yellowish fls. in panicled racemes, the 2 stamens long-exserted; one sometimes grown in the wild-garden in moist woodsy places.

canadénsis. Citronella. To 5 ft., with thick clumpy root: lvs. ovate or ovate-oblong, to 10 in. long, coarsely toothed: fls. ½ in. long, lemon-scented, in panicles to 1 ft. long. Que. to Fla. and Ark.

COLLÒMIA. *Polemoniaceæ.* Herbs from W. N. Amer. and Chile, allied to Gilia but differing in technical characters, with alternate lvs. and red, yellow or white tubular fls. often borne in heads subtended by leafy bracts.

Of easy cultivation in any garden soil. Propagated by seeds sown where plants are to stand, in open exposures.

biflòra (*C.* and *Gilia coccinea*). Ann. to 2 ft.: lvs. linear, toothed or cut near end: fls. scarlet tinged outside with buff. Bolivia, Chile, Argentina.

coccínea: *C. biflora.*

grandiflòra (*Gilia grandiflora*). Variable ann. to 2½ ft.: lvs. linear-lanceolate, entire: fls. buff or salmon-color. Rocky Mts. to Calif.

Lársenii. Ann. to 6 in. tall or less: lvs. pedately 3–7-divided, to 1 in. long: fls. violet, ½ in. long. Wash., Ore., Calif.

lineàris (*Gilia linearis*). Ann. to 16 in.: lvs. linear to linear-lanceolate, entire: fls. red-purple or pink. B. C. to Calif. and Colo.

purpùrea: listed name.

COLOCÀSIA (*Leucocasia*). Elephants-Ear. *Araceæ.* Big trop. Asian herbs grown for ornament or the edible tubers, having peltate heart- or arrow-shaped lvs. and unisexual fls. borne on spadices which are shorter than the spathes.

Colocasias are usually planted out-of-doors for subtropical foliage effects, tubers having been started indoors. They should have damp rich soil. The dasheen is grown for the edible roots in warm climates. Tubers may be planted in hills 3 feet apart in rows 4 feet apart. In about seven months the tubers will be ready for harvesting. The young shoots of dasheen forced and blanched are used as a winter vegetable. Taro is also widely grown for food in the Hawaiian and other Pacific Islands, particularly in the form of "poi."

antiquòrum. Lvs. ovate-cordate, to 2 ft. long, green, the petioles to 5 ft. long: spathes pale yellow, to 15 in. long; spadix with very long sterile appendage. E. Indies.—Runs into several forms, a few of which are: Var. **euchlòra** having dark green lvs. with violet margins and petioles; var. **Fontanèsii** (*C. violacea*) with dull green lvs. margined and veined with purple and purplish petioles; var. **illústris** has lvs. spotted with dark green between the veins and violet petioles.

esculénta (*Caladium esculentum*). Taro. Eddo. Dasheen. Closely resembling the above but having large edible tubers and the spadix with very short sterile appendage.

índica. Lvs. ovate-cordate, to 1½ ft. long, the petioles to 3 ft. long: spathes glaucous, to 6 in. long; spadix with short sterile appendage. Malaya.

monorhìza: hort. name.

multiflòra: hort. name.

nèo-guineénsis: *Schismatoglottis neo-guineensis.*

odoràta: *Alocasia indica.*

violàcea: *C. antiquorum* var. *Fontanesii.*

COLPOTHRÌNAX. *Palmaceæ.* One species of fan-palm in Cuba, sometimes referred to Pritchardia but differing in the singularly swollen trunk and in technical floral characters as well as in its range.

Wrìghtii (*Pritchardia Wrightii*). Bottle or Barrel Palm, endemic in Pinar del Rio and Isle of Pines, where it is known as barrigona palm. Tree to 40 ft., the trunk much swollen at or below the middle, slender above: lvs. more or less circular in outline, to 5 ft. or more across, with many segms.: fls. sessile, fleshy: fr. globose, ½ in. or more diam.

COLQUHOÙNIA. *Labiatæ.* Tender erect or twining shrubs with all parts of the plants white-woolly when young, the fls. scarlet and yellow; native to S. Asia, one cult. somewhat in the S. Propagated by cuttings of growing tips in summer and rooted under glass.

vestìta. To 4 ft., permanently white-woolly: lvs. oval or ovate, to 2½ in. long, wavy-toothed: fls. orange-scarlet, ¾ in. long, in whorls, autumn and winter.

COLTSFOOT: *Tussilago Farfara.* **Sweet:** *Petasites fragrans.*

COLUMBINE: *Aquilegia.*

COLUMBO: *Frasera.*

COLUMN: body formed of union of stamens and pistil in orchids, or of stamens, as in mallows.

COLUMNBERRY, TRUEHEDGE: *Berberis Thunbergii* var. *pluriflora.*

COLÚMNEA. *Gesneriaceæ.* Trop. American shrubs or vines with opposite lvs., 2-lipped tubular red or yellow fls. solitary or clustered in the axils, and fr. a berry; grown in the greenhouse. Propagated by cuttings.

gloriòsa. Per., epiphytic, hairy: lvs. ovate to ovate-oblong, to 1¼ in. long, strongly nerved: fls. scarlet and yellow, to 3 in. long, 2-lipped, solitary. Costa Rica.

hírta. Per., epiphytic, glandular-hairy: lvs. narrowly elliptic, to 2½ in. long, entire or remotely toothed: fls. vermillion marked orange, to 3 in. long, solitary in leafy axils. Costa Rica.

spléndens: *Nematanthus longipes.*

COLÙTEA. Bladder Senna. *Leguminosæ.* Shrubs or little trees from the Medit. region to the Himalayas, with deciduous pinnate lvs., papilionaceous fls. in axillary few-fld. racemes, and inflated bladder-like pods; planted for ornament and hardy N. Propagated by seeds, cuttings in autumn, or choice varieties by grafting on *C. arborescens.*

arbòrea is *arborescens.*

arboréscens. To 15 ft.: fls. yellow, the wings about as long as keel: pods to 3 in. long. S. Eu., N. Afr. Var. **bullàta** is a dwarf form with small lfts. Var. **críspa** has wavy-edged lvs.

cilícica (*C. longialata*). Differs from *C. arborescens* in the wings being longer than the keel. Asia Minor.

cruénta: *C. orientalis.*

halépica: *C. istria.*

ístria (*C. halepica*). To 6 ft.: fls. orange-yellow, the wings longer than keel. Asia Minor.

longialàta: *C. cilicica.*

mèdia. Hybrid probably between *C. arborescens* and *C. orientalis:* to 10 ft.: fls. orange or reddish-yellow.

orientàlis (*C. cruenta*). To 6 ft.: fls. brownish-red with yellow spot at base of standard, the wings shorter than keel: pods 1½ in. long. S. E. Eu., Asia.

pérsica. To 8 ft.: fls. yellow, the wings longer than keel: pods to 2 in. long. Persia, Kurdistan.

COLVÍLLEA. *Leguminosæ.* One African tree rarely planted in semi-trop. regions for the showy bloom. Propagated by seeds. **C. racemòsa.** To 50 ft., with thick trunk: lvs. 2-pinnate into segms. ½ in. long: fls. scarlet with yellow stamens, in dense drooping showy racemes to 1½ ft. long: pods round.

COLZA: *Brassica Napus.*

COMANTHOSPHÀCE. *Labiatæ.* Hardy Japanese subshrubs or suffrutescent per. related to Elsholtzia, having 5-lobed strongly bilobed corolla and globose 2-valved anthers, large early-deciduous bracts subtending the fls. and usually apparent only beneath the undeveloped terminal part of infl. One species, **C. japónica,** is cult. To 2 ft. or more: lvs. ovate-lanceolate, to 5 in. long, acuminate, serrate, base cuneate, veins depressed above: fls. yellow, to ⅜ in. long, in erect terminal and axillary spikes, stamens and style long-exserted, bracts orbicular to ovate, to ½ in. long.

COMAROSTAPHYLIS: *Arctostaphylos diversifolia.*

COMARUM: *Potentilla palustris.*

COMBRETÀCEÆ. Combretum Family. Trees and shrubs of about 15 trop. genera, in eastern and western hemispheres, characterized by simple lvs., mostly small bisexual fls. having 4–8-lobed calyx, 4–5 petals or none, 4–10 stamens, inferior 1-celled ovary, and dry often winged fr. Bucida, Combretum, Quisqualis and Terminalia are cult for ornament and fr.

COMBRÈTUM. *Combretaceæ.* Trop. trees and shrubs, often climbing, with mostly opposite entire lvs., polygamous fls. in spikes or racemes, the stamens long-exserted, and leathery 4–6-winged frs.

coccíneum (*Grislea coccinea*). Vine to 20 ft.: lvs. oblong, to 4 in. long: fls. bright red, ½ in. long, in terminal panicled racemes. Madagascar.

grandiflòrum. Vine: lvs. ovate-elliptic, to 4 in. long, briefly acuminate, pubescent becoming glabrous: fls. red, about 2 in. long, in short axillary and terminal spikes. Trop. Afr.

secúndum. Vine: lvs. oval-oblong, to 6 in. long: fls. scarlet, 1½ in. long, in dense terminal spikes. Trinidad, N. S. Amer.

COMESPÉRMA. *Polygalaceæ.* Australian herbs or shrubs, often twining, with small alternate lvs. and irregular fls. in terminal racemes; one planted in Calif.

spinòsum. Much branched leafless shrub with thorny branches, the lvs. reduced to scales: fls. small, solitary and scattered.

COMFREY: *Symphytum.*

COMMELÌNA. Day-Flower. *Commelinaceæ.* Widely distributed herbs with jointed sts., alternate entire lvs. and irregular mostly blue short-lived fls. in cymes subtended by a leafy bract; grown in greenhouses or out-of-doors, often as ground-cover. Propagated by seeds, cuttings over heat, or division of the tubers when produced.

angustifòlia. Sts. erect or diffuse, to 2 ft. or more long: lvs. nearly or quite linear, to 5 in. long: sheaths often purplish: fls. blue. S. U. S.

clandestìna: confused name of uncertain application.

cœléstis. Per. with fibrous or tuberous roots, to 1½ ft. high: fls. deep blue, to 1 in. across. Mex.—A frequent greenhouse plant. Var. **álba** has white fls. and **variegàta** blue and white.

críspa. Creeping per. with sts. to 3 ft. long: lvs. lanceolate or linear-lanceolate, to 3¼ in. long, crisped: fls. with 2 upper petals light blue and lower white. Mo. to New Mex.

diffùsa (*C. nudiflora. C. Sellowiana*). Creeping per. with sts. rooting at joints: fls. blue, to ½ in. across. N. Amer., S. Amer., Asia, Afr., growing natively as far north as N. J.—Employed as an open-garden plant.

nudiflòra: *C. diffusa.*

satìva: listed name, possibly referable to *C. tuberosa.*

Sellowiàna: *C. diffusa.*

sikkiménsis. Creeping per.: lvs. lanceolate, to 3 in. long, base unequal and usually obtuse: sheaths glabrous or nearly so: fls. blue, usually 6–12 in terminal cymes. Himalayas.

tuberòsa. Diffusely branching from tuberous root: lvs. narrowly lanceolate, to 3 in. long: sheaths pubescent: fls. blue. Mts. of Mex.—When planted in the open, the tubers should be lifted and stored in dry sand during winter.

virgínica. To 3 ft.: lvs. linear-lanceolate, to 5 in. long and 1 in. across: sheaths often pubescent: fls. blue, to 1 in. across. June–Sept. N. Y. to Mich. south to Paraguay.

COMMELINÀCEÆ. SPIDERWORT FAMILY. Herbs of about 26 genera widely scattered, particularly in the tropics, with simple, alternate, parallel-veined, mostly sheathing and entire lvs., bisexual fls. in cymes subtended by leafy bracts (spathes), having 3 sepals and petals, mostly 6 stamens, superior 2–3-celled ovary and capsular or sometimes berry-like frs. The family provides many ornamental subjects, the larger part of which are grown under glass in the N. The genera known to hort. are Commelina, Commelinantia, Cuthbertia, Cyanotis, Dichorisandra, Palisota, Pollia, Rhœo, Spironema, Tinantia, Tradescantia, Zebrina.

COMMELINÁNTIA. *Commelinaceæ.* Ann. succulent herbs, erect or decumbent, native in Tex., one sometimes grown in that region. **C. anómala** (*Tinantia anomala. Tradescantia anomala*). Basal lvs. linear-spatulate, to 1 ft. long: fls. lavender-blue with small white petal, 2–16 in terminal infl. subtended by leaf-like spathe.

COMPARÉTTIA. *Orchidaceæ.* Small genus of American epiphytes with pendulous simple or branched racemes, similar to Ionopsis from which it differs in having lateral sepals forming long slender spur in contrast to lateral sepals only saccate at base. See *Orchids.*

falcàta. Pseudobulbs oblong, clustered, smooth, 1-lvd.: lf. elliptic-lanceolate, acute, to 6 in. long or less: scape arising from base of lf., pendent, to 28 in. long, filiform, bearing loose raceme of 2–15 (more when paniculate) purple-red to crimson fls.; spur slender. Cent. Amer., W. Indies, S. Amer.

COMPASS-PLANT: *Silphium laciniatum.*

COMPÓSITÆ. COMPOSITE FAMILY. Over 800 widely dispersed genera of herbs and sometimes shrubs or little trees characterized by the fls. being assembled in involucrate heads and with the anthers joined around the pistil; corolla gamopetalous, often of two kinds in one head, regular and 4–5-lobed, and ligulate or produced into a long limb on one side; stamens 4–5; ovary inferior, 1-celled: fr. an achene mostly crowned by a pappus of scales, barbs or hairs. The family contains numerous ornamental subjects and others grown as vegetables. Most of them are sun-loving plants of simple cultural requirements; the predominant types are summer- and autumn-blooming. The genera known to hort. are Achillea, Actinea, Actinomeris, Ageratum, Agoseris, Amberboa, Amellus, Ammobium, Anacyclus, Anaphalis, Antennaria, Anthemis, Aphanostephus, Arctium, Arctotis, Arnica, Artemisia, Aster, Athanasia, Baccharis, Baeria, Baileya, Balsamorhiza, Bellis, Bellium, Berlandiera, Bidens, Boltonia, Brachycome, Brachyglottis, Brickellia, Buphthalmum, Calendula, Calimeris, Callistephus, Calocephalus, Carduus, Carlina, Carpephorus, Carthamus, Cassinia, Catananche, Celmisia, Centaurea, Chnaæctis, Chaptalia, Charieis, Chrysanthemum, Chrysocoma, Chrysogonum, Chrysopsis, Chrysothamnus, Cichorium, Cirsium, Cladanthus, Cnicus, Coreopsis, Corethrogyne, Cosmos, Cotula, Craspedia, Crepis, Crocidium, Crupina, Cryptostemma, Cynara, Dahlia, Dimorphotheca, Diotis, Doronicum, Echinacea, Echinops, Emilia, Encelia, Engelmannia, Ericameria, Erigeron, Eriocephalus, Eriophyllum, Erlangea, Eupatorium, Euryops, Felicia, Filago, Gaillardia, Galactites, Gamolepis, Garberia, Gazania, Geræa, Gerberia, Gnaphalium, Grindelia, Guizotia, Gutierrezia, Gynura, Haastia, Haplopappus, Hazardia, Helenium, Helianthella, Helianthus, Helichrysum, Heliopsis, Helipterum, Heteropappus, Heterospermum, Heterotheca, Hidalgoa, Hieracium, Homogyne, Hulsea, Humea, Hymenopappus, Hypochœris, Hysterionica, Inula, Jasonia, Jurinea, Kleinia, Krigia, Kuhnia, Lactuca, Lagenophora, Lasthenia, Layia, Leontodon, Leontopodium, Lepachys, Leptosyne, Lessingia, Leucheria, Leucogenes, Leuzea, Liatris, Ligularia, Lindheimera, Linosyris, Lonas, Luina, Machæranthera, Madia, Malacothrix, Marshallia, Matricaria, Melampodium, Microglossa, Mikania, Monolopia, Montanoa, Moscharia, Mutisia, Myconella, Myriocephalus, Notonia, Odontospermum, Olearia, Onorpordum, Othonna, Pachystegia, Parthenium, Perezia, Pericome, Petasites, Phagnalon, Picris, Piqueria, Pluchea, Podachænium, Podolepis, Polypteris, Prenanthes, Pulicaria, Pyrethrum, Raoulia, Rainiera, Reichardia, Rudbeckia, Santolina, Sanvitalia, Saussurea, Scolymus, Scorzonera, Senecio, Sericocarpus, Serratula, Sideranthus, Silphium, Silybum, Solidago, Solidaster, Sonchus, Spilanthes, Stephanomeria, Stevia, Stokesia, Tagetes, Tanacetum, Taraxacum, Thelesperma, Thymophylla, Tithonia, Tolpis, Townsendia, Tragopogon, Tridax, Trilisa, Tripteris, Tussilago, Uropappus, Urospermum, Ursinia, Venidium, Verbesina, Vernonia, Vittadinia, Wedelia, Wyethia, Xanthisma, Xeranthemum, Zexmenia, Zinnia.

COMPOSITE: compound; said of an apparently simple or homogeneous organ or structure made up of several really distinct parts; applied to the heads of Compositæ.

COMPOUND: of two or more similar parts in one organ, as a leaf of 2 or more leaflets, a fruit of 2 or more carpels.

COMPRESSED: flattened, especially sidewise.

COMPSOA: *Tricyrtis.*

COMPTÒNIA. *Myricaceæ.* One fragrant deciduous shrub native in E. N. Amer., adapted for covering banks or dry sandy soil. **C. peregrìna** (*C. asplenifolia. Myrica asplenifolia*). SWEET-FERN. To 5 ft.: lvs. fern-like, linear-oblong, deeply pinnately cut, pubescent: fls. unisexual, in catkins.—Propagated by seeds, layers, and division of the clumps.

CONÁNDRON. *Gesneriaceæ.* One stemless tuberous-rooted herb native in the mts. of Japan and suitable for rock-gardens in S. U. S. **C. ramondioìdes.** Lvs. basal, to 7 in. long, oblong, wrinkled and toothed: fls. white or pink with purple eye, 1 in. across, in drooping clusters on scapes to 1 ft. long.

CONCHITA: *Centrosema.*

CONDÀLIA. *Rhamnaceæ.* Shrubs and trees inhabiting the New World, mostly in warm regions, with alternate usually entire lvs. and fls. in umbels, with or without petals; one species is grown out-of-doors in Calif.

lineàta. Spiny shrub: lvs. spatulate or obovate, ⅓ in. long, leathery, without veins above: fls. whitish, without petals: fr. an oblong drupe ¼ in. long. Patagonia.

CONE: a dense and usually elongated collection of flowers or fruits borne beneath scales, the whole with scales and axis forming a detachable homogeneous fruit-like body; some cones are of short duration, as those of araucaria, and others become dry, woody and durable.

CONEFLOWER: *Echinacea, Lepachys, Rudbeckia.*

CONE-PLANT: *Conophytum.*

CONFEDERATE-ROSE: *Hibiscus mutabilis.*

CONFEDERATE-VINE: *Antigonon leptopus.*

CÓNGEA. *Verbenaceæ.* Malayan climbing shrubs with opposite entire lvs., fls. in head-like cymes subtended by leaf-like bracts and borne in large panicles, and fr. a small drupe; one species sometimes grown out-of-doors in S. Calif. and other mild climates.

tomentòsa. Lvs. ovate, to 3 in. long, tomentose beneath: fls. white, the oval bracts to 1 in. long, white or lilac, tomentose. India.

CONICÒSIA. *Aizoaceæ.* S. African segregate from Mesembryanthemum (which see for cult.), per. with erect or procumbent sts., alternate crowded long narrow 3-sided soft lvs. without dots, and large yellow pedicelled fls.; stigmas 10–20.

elongàta (*M. elongatum*). St. ann., prostrate, 1 ft. or more, from a tuberous root: lvs. to 6 in. long and ¼ in. thick, semi-cylindrical: fls. solitary on peduncles to 6 in. long, the petals linear.—Somewhat escaped in Calif.

Mùirii: see under *C. pugioniformis.*

pugionifórmis (*M. pugioniforme*). St. tall, thick, to 2 ft.: lvs. to 6 in. long, glaucous, 3-angled, gradually tapering from base to apex (pugioniform or dagger-shaped): petals as long as calyx-lobes.—Plants passing under this name may be *C. capensis*, a weak not erect plant and petals shorter than calyx-lobes. *C. Muirii* may be involved: it has a long fleshy radish-like tuber crowned by the tuft of lvs., whereas *C. capensis* has a fibrous root and a st. 2–3 ft. long.

CONIFERS. A general term employed for cone-bearing trees of the pine, spruce and cypress kind, but sometimes used as the English equivalent of Coniferæ, a technical family name for plants now segregated in the eight families, Araucariaceæ, Cephalotaxaceæ, Cupressaceæ, Ginkgoaceæ, Pinaceæ, Podocarpaceæ, Taxaceæ and Taxodiaceæ.

The conifers are gymnosperms, representative of a class of plants with ovules naked rather than borne in a sac or ovary as in the angiosperms; other living gymnosperms are the cycads, of about 10 genera. Gymnosperms and angiosperms together comprise the spermatophytes (phenogams or "flowering plants"). The conifers, in a broad usage to include also ginkgo, the junipers and yews, are about 300 species, in about 40 genera, widely spread over the globe but most prominent in temperate regions; they are all woody plants, many of them shrubs and others majestic trees that give character to extensive areas. They are well represented in the native flora of North America. To cover the families Taxaceæ and Pinaceæ, the word conifer has a definite connotation even though some of the kinds bear berry-like fruits rather than true cones; but the characters of foliage and of woody structure, and the balsamic odors, are such as to show the similarities of most of them even to uncritical observers. A few species, as the larches, bear deciduous leaves, but the group as a whole is known as "the evergreens" and it has a horticultural unity. The conifers are treated in their various relations and adaptabilities for American conditions in "The Cultivated Conifers," published by the Macmillan Company.

Conifers are grown for ornament as single specimens, for shelter-belts, the smaller ones for foundation-planting about buildings and in private grounds, and the arboreous species for groves and forests. The timber trees among the conifers constitute the main large forestry stands in this country. All the kinds abound in interest, because of their evergreen character and their strong individuality. Although lacking showy flowers, the striking habit, interesting cones, details of foliage and color of new growths give them an ornamental quality quite their own. They are particularly striking in the winter landscape. These qualities vary widely between the different genera. Most of the genera are known in cultivation somewhere in the United States and Canada.

The conifers are mostly high-land plants. Many of them do well on rather thin land, yet the best results are to be expected in private grounds, when the soil is good or well enriched, for much of the beauty depends on the verdurous growth. For low grounds, the larches, taxodiums, and chamæcyparis may be chosen. The common arbor-vitæ is particularly valuable in low and even swampy places. For effects in large trees, the pines, spruces and firs are generally most adaptable, particularly in cold climates, but cryptomeria, Douglas fir, and sequoias are majestic in milder climates. Of the smaller and shrubby kinds, selections may be made among the true cypresses, junipers, chamæcyparis, thuja, yews; the retinisporas are juvenile states of chamæcyparis and thuja. Inasmuch as so many species of conifers are available for cultivation from so many parts of the world and of such varied characteristics, it follows that the successful planter of them is the one who notes with much care the requirements of each as to climate, soil and exposure.

Seedlings of many conifers vary widely, as in Thuja, Juniperus, Chamæcyparis, and even in some species of Picea. The dwarf forms originating in this way, propagated often by cuttings and layers, are specially interesting for small places and for rock-gardens, and they have the charm of special form and variety of color.

Transplanting of conifers is best performed, as a rule, in spring just before the active new growth begins or about when the buds begin to swell. Early autumn planting is satisfactory in mild climates and with small potted or pruned stock if the land is moist and in good condition and the exposure protected so that they do not dry out seriously before making a roothold. August planting, after the main growth is completed, is often successful if the rainfall is adequate or sufficient water can be supplied. The younger the tree the greater is the likelihood of success in transplanting; but the usual height for the arboreous species is 2 to 3 feet; any additional height is likely to entail greater care in the transplanting. Very large conifers should be moved only by those skilled in the work. Experience shows that moving large conifers with a frozen ball of earth large enough to include all the roots is usually successful.

The top is not pruned, as a rule, at transplanting. Therefore the roots should be kept intact as much as possible, special care being exercised in the digging, and they should not be allowed to dry out. Plants from shady positions should not be transplanted to the open sun. If the hemlock, for example, is wanted in a sunny exposed place, young trees occupying such positions in the wild should be found. Better results, however, with all conifers, are to be expected from well-handled nursery-grown plants. Newly planted trees may be mulched the first year with straw or similar material to retain the moisture. All the conifers, and especially the hemlocks, should be well guyed after transplanting, for loss is certain if the newly planted tree is racked by the wind.

The after care of conifers requires no peculiar attention except to meet the attacks of the special insects and fungi, and for this work the most recent authoritative books or bulletins should be consulted. Probably the most serious of the diseases at present, since it involves natural forests, is the white pine blister-rust, due to an imported fungus. It attacks the five-leaved or white pines, appearing on the twigs and extending into the trunk. Thorough removal of the blistered or cankered twigs from valuable trees as soon as the injury appears may save the specimen. But the main procedure is to destroy the alternate host on which the fungus lives. These other hosts are currants and gooseberries, and none of these plants should be allowed to stand within 200 to 300 yards of white pines; the cultivated black currant is particularly amenable to the disease. For aphis and scale insects, thorough spraying is the proper safeguard. The five-needle pines also suffer from the white pine weevil, which attacks the leading shoots.

Conifers require the minimum of pruning inasmuch as most of them are symmetrical growers. Pines seldom give satisfactory results when clipped. To keep spruces, firs and some of the smaller kinds within bounds or to make them compact and to delay the death of the lower limbs, the tips of the shoots may be pinched back in spring or early summer.

Propagation of conifers is accomplished by means of seeds, cuttings, grafting on other stocks. Seeds are the usual means for the raising of forest stock and for the propagation of the species in general. The horticultural varieties, however, must be increased by cuttings, for seedlings may not come true. Species of which seed is not available, and also certain of the named cultivated varieties, are grafted on other stocks.

Seeds are gathered as soon as ripe and kept in bags or boxes in a dry place until the following spring or else stratified over winter. The seeds are planted in rows in a mellow well-prepared seed-bed, and covered one-half inch or less depending on the size. Small seeds may be broadcast. Rows are usually as close together as 6 inches, and the bed is strewn with pine needles or other mulch. The young seedlings require protection under lath screens or brush and plenty of moisture, although the seeds themselves may be kept fairly free from water until germination takes place; seed-beds therefore should be in well-drained soil. If mice, squirrels or birds are likely to be troublesome, the beds may be covered with wire netting; the beds would better be protected from washing by a border of boards. Care must be taken to avoid damping-off under the screens. The plants will need protection the first winter. Care should be taken to keep the young seedlings constantly lightly mulched to prevent rain from spattering them with soil, which adheres to the young plants and causes considerable loss. In eighteen months or more, when making the first set of rough leaves, the seedlings may be transplanted; and the subsequent process will determine itself for each species. Conifer seeds may also be stratified the first autumn in boxes or flats, and the seedlings allowed to grow in these boxes the first year; this is a good method for small quantities or for garden practice, and for tender species. Seedlings of some of the rarer species, as of Abies, are so small that it is inadvisable to transplant them until the end of the second year.

Cuttings are made from firm tip shoots late in the season, representing one-year wood and a two-year base, the bottom third or half being trimmed of leaves. These are set in clean sand or peat in flats or a greenhouse bench, close together in rows and the soil firmed tightly about them. Mild bottom heat should be given at first, and raised to perhaps 70° later. In four to eight months, depending on the kind of conifer and the conditions, the cuttings should be rooted and ready for transplanting. Taxus, cedrus, thujas, retinisporas, chamæcyparis, junipers, and the like are the kinds most commonly grown from cuttings, although the piceas and others are amenable. Piceas and others that contain a large amount of resin are the most difficult to root, and removal of the resin by dipping the lower end in hot water has been recommended.

Cuttings may also be rooted in outdoor summer frames, with bottom heat provided by a little fermenting manure or other means; a fair percentage of some kinds will root without other bottom heat than that supplied by the sun.

Grafting of conifers is performed on stocks of the same genus, usually in spring when the roots begin to start. The stocks may be grown from seeds or cuttings, usually the former. The stock in any case represents the most abundant or most easily propagated or most seedful species of the genus, as red-cedar for the other junipers, native arborvitæ for the other thujas, Norway spruce for the other piceas, white pine for related species, and so on. When large enough for grafting, the stocks are potted and the cion is sideworked near the root and firmly tied. The grafted plants are kept in frames or a propagating house, and in four to six weeks union should have taken place. See the article *Propagation.*

CONIOGRÁMME (*Dictyogramma*). *Polypodiaceæ.* Strong-growing conservatory ferns, useful as specimen plants; fronds 1–2-pinnate; sori naked, following the veins; native in Japan and Pacific Isls. Sometimes cult. under glass, requiring a rather cool or moderate atmosphere and a well-drained soil. See *Ferns*.

japónica (*Gymnogramma japonica*). Bamboo-Fern. Fronds mostly 1-pinnate, to 2 ft. long, pinnæ to 1 ft. long and 1 in. wide, finely toothed. Japan, Formosa.

CONÌUM. *Umbelliferæ*. Poisonous herbs with pinnately decompound lvs., small white fls. in compound umbels, and ovate somewhat flattened frs.; one species grown for medicinal purposes. Propagated by seeds.

maculàtum. Poison-Hemlock. Bien. to 4 ft.: lvs. finely cut into ovate toothed segms., dark green, sometimes known as "winter-fern." Eu.; nat. in N. and S. Amer.

CONNATE: united or joined; in particular, like or similar structures joined as one body or organ, as opposite leaf-blades united about a stem.

CONNECTIVE: the filament or tissue connecting the two cells of an anther, particularly when the cells are distinctly separated.

CONNIVENT: coming together or converging, but not organically connected.

CONOCLINIUM: *Eupatorium*.

CONOPHÝLLUM. *Aizoaceæ*. Small succulent shrubs of the Mesembryanthemum group of S. Afr., close to the genus Mitrophyllum: lvs. of two kinds, one pair united into a conical body: fls. whitish.

chrysoleùcum: *Monilaria chrysoleuca*.

Hérrei. To 1½ ft.: plant-body 2 in. long and 1 in. thick: fls. to 3 in. across, on pedicels 1 in. long; stigmas 5.

CONÓPHYTUM. Cone-Plant. *Aizoaceæ*. One of the groups separated from the old polymorphous genus Mesembryanthemum, native in S. Afr.: very small succulent plants with abbreviated roots, several or many growths in a clump but stemless at least when young: each of the growths consists of 2 lvs. completely joined into one body which is globose, obconic, or depressed, 2-lobed or notched at apex and with a small orifice at the center; from this orifice arises a solitary fl., the corolla having a slender tube, color white to rosy, magenta, red, yellow.

albéscens. Plant-body about 1 in. high and broad and ½ in. thick, harsh to the touch, whitish-green, indistinctly dotted: fls. yellow, 1 in. across.

bîlobum (*M. bilobum*). Plant-body heart-shaped, 1½ in. high and 1 in. broad and thick: fls. yellow, 1¼ in. across.

Braùnsii: *C. Pearsonii* var. *minor*.

brève. Plant-body about ⅓ in. high and broad, flattish at top, smooth, pale glaucous-green with a few darker dots: fls. yellow, ½ in. across.

Cálculus (*M. Calculus*). Plant-body globose, to 1 in. across, smooth and whitish-green: fls. light yellow, ⅗ in. across.

Erniànum. Plant-body to 1 in. high and ¾ in. broad, gray-green spotted with dark green: fls. rose or lilac, to 1 in. across.

frutéscens. Shrubby, to 4 in.: plant-body oblong, 1 in. long and ⅓ in. wide, deeply 2-lobed, keeled with red: fls. of a very peculiar coppery-orange, 1 in. across.

Johánnis-Wínkleri (*M. Johannis-Winkleri*). Tufted: plant-body about ½ in. high and wide, glaucous-green: fls. not described.

kubusànum. Plant-body about ¼ in. high and broad, flattish on top, smooth, dull gray-green with scattered dots of dark green: fls. unknown.

kubusbergénsis: probably meant for *C. kubusanum*.

Luìsæ. Much branched: plant-body heart-shaped, about ½ in. high and not quite so wide and thick, slightly dotted: fls. yellow, ¾ in. across.

Maùghanii: *Ophthalmophyllum Maughanii*.

Meỳeri. Plant-body obovoid, ½ in. high and wide and ⅓ in. thick, only slightly notched at apex, velvety: fls. yellow, ⅗ in. across.

minutiflòrum (*M. minutiflorum*). Plant-body obconic, to ¾ in. high and wide, ½ in. thick, glaucous-green: fls. yellow, ¼ in. across.

minùtum (*M. minutum*). Plant-body to ⅓ in. wide, slightly convex at apex, light bluish-green, dotted: fls. with outer petals rosy-magenta and inner yellow, to ¾ in. across.

Névillei (*M. Nevillei*). Plant-body obconic, about ½ in. across the depressed-flattish top, green, dotted: fls. white or cream, ½ in. across.

obconéllum: *C. obcordellum*.

obcordéllum (*C. obconellum. M. obcordellum*). Forming cushion-like tufts: plant-body obconic, about ⅓ in. high, wide and thick, somewhat glaucous dotted with purplish: fls. white to straw-color, ½ in. or more across.

odoràtum (*M. odoratum*). Plant-body to 1 in. high and wide, ¾ in. thick, notched at apex, grayish-green, dotted: fls. magenta-pink, fragrant, 1 in. across.

Pèarsonii. Plant-body broad-obconic, ½–1 in. high and thick, light bluish-green: fls. bright magenta with orange-pink tube, ¾ in. across. Var. **mìnor** (*C. Braunsii*) has smaller growths.

píctum (*M. pictum*). Plant-body ⅓ in. across, convex on top, dull green with irregular brown lines: fls. whitish, to ½ in. across.

Píllansii. Plant-body not clustered, surface velvety: fls. large, rose-pink, white at base, anthers golden; petals broad, notched.

Púrpusii (*M. Purpusii*). Plant-body depressed-conical, about ½ in. high and thick, bluish-green, dark-spotted: fls. pale yellow, ½ in. across.

truncatéllum (*M. truncatellum*). Plant-body depressed, ½ in. or more thick, glaucous-green with darker dots: fls. pale yellow, ½ in. across.

uvæfórme (*C. vanrhynsdorpense*). Plant-body to ½ in. long and somewhat broader, lobed to ⅙ in., pubescent, spotted: fls. white or pale yellow, ½ in. across.

vanrhynsdorpénse: *C. uvæforme*.

Vanzíjlii. Differs from *C. breve* in the exserted calyx and petals in many series.

Wéttsteinii (*M. Wettsteinii*). Plant-body broad-obconic, to ¾ in. high and 1¼ in. thick, glaucous-green, slightly dotted: fls. bright magenta with paler tube, 1 in. across.

CONÓSTYLIS. *Hæmodoraceæ*. An Australian genus of about 40 species of herbaceous perennials whose amaryllid-like fls. have the style conical at base. One species, **C. cándicans,** is offered. Lvs. arranged in two vertical ranks or in crowded tufts on a short rhizome: fls. white or yellowish, in terminal heads or shortly dichotomous cymes. Usually treated as a warmhouse subject.

CONRADÌNA. *Labiatæ*. Shrubs of the S. U. S., with narrow clustered lvs. having entire revolute margins and bluish or purplish 2-lipped fls. in axillary cymes; of the Satureja group.

canéscens. To 1½ ft., stiffly branched: lvs. to ⅓ in. long: fls. ⅕ in. long, in spring. Fla. to Ala., in sandy soils.

CONSOLEA: *Opuntia corallicola*.

CONVALLÀRIA. Lily-of-the-Valley. *Liliaceæ*. One per. herb (or the variations considered as distinct species), having horizontal rootstocks, the upright parts called "pips." **C. majàlis.** Lvs. 2, basal, oblong-oval: fls. bell-shaped, white, fragrant, nodding, in a one-sided raceme terminating the scape. Eu., Asia, E. N. Amer. Var. **Fórtunei** has larger foliage and fls. Var. **ròsea** is listed as a pink-fld. form. *C. japonica* is a synonym of *Ophiopogon japonicum*. *C. Polygonatum* is *Polygonatum officinale*.

The lily-of-the-valley is hardy out-of-doors in shady places and persists for many years without removal. It is often forced from pips planted in benches of sand in the greenhouse and kept at a temperature of about 65°. The pips are often held in cold storage.

CONVOLVULÀCEÆ. Morning-Glory Family. Twining herbs as usually known, but often shrubs or even trees, of nearly or about 50 widely distributed genera: juice often milky: lvs. alternate, simple or compound: fls. regular and bisexual, often large and bright colored, with 5-parted calyx, funnelform gamopetalous corolla, 5 stamens, superior prevailingly 2-celled ovary: fr. a caps. or berry. Many species have medicinal properties and other kinds are grown for ornament, as Argyreia, Calonyction, Convolvulus, Dichondra, Evolvulus, Ipomœa, Jacquemontia, Lettsomia, Porana, Quamoclit.

CONVÓLVULUS. Bindweed. *Convolvulaceæ.* Herbs, mostly twining or trailing, pubescent, with simple or lobed lvs., bell-shaped or funnelform fls. something like those of morning-glory, having a plaited 5-angled limb and capsular frs. *C. arvensis* is a persistent weed in cult. grounds.

Bindweeds are of easy cultivation but should be planted with care as they are likely to become troublesome weeds. They are grown out-of-doors as covering for fences and banks and the tender kinds in the greenhouse. Propagated by seeds, cuttings of young wood, and by division.

althæoides. Per., sts. twining to 3 ft.: lower lvs. ovate-cordate, upper pinnatifid: fls. 1–2, pink, about 1 in. long. Medit. region.

arvénsis. Per. vine with deep persisting roots, glabrous or nearly so: lvs. oblong to ovate with sagittate or hastate base, to 2 in. long: fls. pink or whitish, to 1 in. across. Eu.; nat. and a troublesome weed, but has been used in hanging baskets and elsewhere.

aùreus supérbus. Per. but grown as ann., sts. twining or trailing to 5 ft.: lvs. cordate-ovate: fls. golden-yellow. Of uncertain origin and botanical position.

Cantábrica. Erect or prostrate, to 2 ft.: lvs. oblong or lanceolate: fls. in clusters, rose or pink, about ½ in. long. Medit. region.

Cneòrum. To 4 ft., erect or ascending: lvs. lanceolate or spatulate, persistent: fls. 1–6, white or pinkish. S. Eu.

Cupaniànus: *C. tricolor.*

elongàtus. Ann.: lvs. cordate-ovate: fls. solitary, white, small. Canary Isls.

farinòsus. Climbing, pubescent: lvs. cordate-ovate, irregularly toothed: fls. 1–6, white veined with brown, to ½ in. long. Afr., Mascarene Isls.

flóridus (*Rhodorhiza florida*). To 6 ft., woody: lvs. linear-lanceolate: fls. in many-fld. terminal clusters, white or pale pink, small. Canary Isls.

incànus. Finely pubescent usually gray per., trailing or decumbent, to 3 ft: lvs. ovate, lanceolate, linear, with diverging lobes at base, to 2 in. long: fls. rose to white. Neb. west and south.

japónicus (*Calystegia pubescens*). California-Rose. Per., sts. twining to 20 ft.: lvs. narrow-arrow-shaped: fls. solitary, bright pink, to 2 in. across. E. Asia; a sterile double form is nat. in E. U. S.

lutèolus. Per. somewhat woody below, climbing to 10 ft. or more: lvs. triangular to lanceolate with sagittate base, to 3 in. long, glabrous and glaucous above: fls. purplish and white, to 2 in. long. Calif.

màjor: apparently *Ipomœa purpurea.*

mauritánicus. Per., sts. prostrate, woody at base: lvs. round-ovate, small: fls. 1–6, blue or violet-purple with pale throat, to 2 in. across. Afr.—Useful in baskets and vases.

mìnor: *C. tricolor.*

Núttallii. Suffrutescent, sts. twining, to 6 ft. long: lvs. sagittate or hastate, to 3 in. long or more, lobes entire or toothed: fls. whitish, to 1½ in. across. S. Calif.

pentapetaloìdes. Ann., sts. prostrate: lvs. oblong or linear-lanceolate: fls. solitary, blue. S. Eu., W. Asia.

Scammònia. Per. trailing vine, sts. angular: lvs. cordate-sagittate: fls. white to pink, calyx without membranaceous bracts at base. Asia Minor.

sèpium. Rutland Beauty. Per., sts. trailing to 10 ft.: lvs. ovate-cordate or arrow-shaped: fls. solitary, white, rose or pink striped with white, 2 in. long. Eu., Asia, N. Amer.

sículus. Ann., sts. prostrate, to 1½ ft.: lvs. ovate-cordate: fls. solitary, pale blue, small. Medit. region.

Soldanélla. Per., sts. prostrate to 1½ ft.: lvs. kidney-shaped: fls. solitary, pink, to 2½ in. across. Seashores around the world.

spléndens: *Argyreia splendens.*

trícolor (*C. Cupanianus. C. minor*). Dwarf Morning-Glory. Ann., sts. erect or ascending to 1 ft. and often much branching: lvs. linear-oblong: fls. 3, blue with yellow throat margined white, to 1½ in. across. S. Eu.—An old flower-garden subject.

undulàtus. Ann., sts. ascending: lvs. ovate-oblong, undulate: fls. in nearly sessile clusters, blue. Medit. region.

COONTIE: *Zamia floridana.*

COOPÈRIA. Rain- or Prairie-Lily. *Amaryllidaceæ.* Bulbous night-blooming herbs with basal grass-like lvs. and fragrant white salverform fls. solitary at end of scapes, the perianth-tube long.

Sometimes planted, valuable for naturalizing in gardens of the Gulf coast country. Of easy cultivation. In colder areas the bulbs should be stored over winter in dry soil. Much like Zephyranthes; flowers in spring and summer with the narrow leaves.

Drúmmondii. Bulb large, subglobose: lvs. linear, gray-green, upright or declinate: scapes 4–10 in.; fls. white tinged with red outside, to 6 in. long, the tube to 5 in. long. Tex., New Mex., Mex.

pedunculàta. Bulb flattened-globose, deeply buried at maturity: lvs. linear, ¼ in. wide or slightly more, glaucous-green, twisted, recumbent: scapes 5–8 in.; fls. white tinged red outside, to 3 in. long, the tube to 1½ in. long. Tex., Mex.

Traùbii. Bulb globose, to ¾ in. diam.: lvs. linear, to 10 in. long, glaucous, recumbent: fls. star-like, white tinted pink outside, perianth-lobes separated, tube long, slender. Tex.

COPAÍFERA (*Copaiva*). *Leguminosæ.* Trees of trop. Amer. and Afr., yielding balsam of copaiba: lvs. pinnate, leathery: fls. small, usually white, not papilionaceous, borne in panicles.

officinàlis. To 70 ft.: lvs. of 1–5, usually 3, pairs of ovate lfts. to 3 in. long: pods ovoid-globose, slightly flattened. Trinidad, N. S. Amer.

COPAIVA: *Copaifera.*

COPERNÍCIA. *Palmaceæ.* Tall or middle-sized hermaphrodite fan-palms of many species Cuba to Argentina, unarmed except on petioles: spadices very long, much branched, borne among the lvs. and often surpassing them; fls. solitary or glomerated on the slender branches, numerous; stamens 6, inserted in tube of perianth and connate at base: fr. globose or ovoid, more or less succulent, of 1 carpel, small. One or 2 species sometimes planted in S. Calif. and S. Fla., but little known in the continental U. S. See *Palm.*

austràlis. To 70 ft. or perhaps more: lf.-blade orbicular, 2–2½ ft. long, whitish underneath, bearing many rusty dots, deeply divided into about 48 narrow acuminate bifid segms. with very small deciduous filaments; petiole strongly armed: fr. ovoid-olive-form, ¾ in. or less long. Paraguay, Argentina.

cerífera. Carnauba Palm. To 30 or 40 ft., with globose dense head, lower part of trunk long retaining the lf.-bases: lf. 4–6 ft. long, nearly orbicular, light colored with a waxy covering, divided to the middle or beyond into about 60 narrow segms. that are bifid into long very narrow points; petiole with remote spines: fr. ovoid to globose-ovoid, about 1 in. long. Brazil.

nàna: *Cryosophila nana.*

COPIAPÒA. *Cactaceæ.* Globose to subconical Chilean plants allied to Rebutia, with top of body densely woolly through which the yellow or reddish campanulate fls. arise; stigmas yellow, lobed; fr. green-scaled on top.

cineráscens. To 5 in. diam., pale green with dense pale yellowish wool on top; ribs about 20, to ¾ in. high, compressed between the areoles, the latter ¾ in. apart; spines brown becoming gray, radials 7–9, to ½ in. long; central solitary, to 1 in. long and stouter: fls. yellow, inner segms. lanceolate, dentate.

COPPERLEAF: *Acalypha Wilkesiana.*

COPPERTIP: *Crocosmia aurea.*

COPRA: see *Coconut.*

COPRÓSMA. *Rubiaceæ.* Diœcious shrubs or small trees native from Hawaii to Australia and Borneo, one in Chile, with opposite persistent lvs., small white or greenish fls. in clusters or solitary, the corolla bell-shaped or funnelform and 4–5-lobed, and fr. a fleshy drupe.

Coprosmas are grown for ornament in the open ground in California and other warm regions, for the attractive foliage and fruit, and some of them for hedges. Propagated by cuttings of ripe wood.

areolàta. To 15 ft.: lvs. orbicular-spatulate, to ⅔ in. long, acute or apiculate: fr. black, globose, ⅙ in. across. New Zeal.

Baùeri (*C. Stockii*). To 25 ft., withstanding clipping and useful in hedges: lvs. ovate or oblong, to 3 in. long, obtuse or notched, thick and shining: fr. orange-yellow, ovoid, ⅓ in. long. New Zeal. Var. **argéntea** is listed with lvs. smaller, and silver variegated. Var. **marginàta,** lvs. margined yellow. Var. **variegàta** (var. *picturata*) has lvs. blotched with yellowish-green.—The usual species in cult.

brúnnea. Low spreading shrub to about 3 ft. high, sts. twisted and contorted, rigid: lvs. narrowly-linear, to ¼ in. long: fr. oblong to globose, pale blue, to ¼ in. long. New Zeal.

cuneàta. To 10 ft., very leafy: lvs. linear- or cuneate-oblong, to ¾ in. long, usually clustered, stiff and leathery: fr. red, globose, ⅙ in. across. New Zeal.

Cúnninghamii. To 15 ft.: lvs. linear or linear-lanceolate, to 2 in. long, acute, leathery: fr. pale and translucent, oblong, ¼ in. long. New Zeal.

Kírkii. To 4 ft. or procumbent, much branched: lvs. linear or linear-oblong, to 1 in. long, obtuse: fr. oblong, ⅙ in. long. New Zeal.

lùcida. To 15 ft.: lvs. obovate, to 5 in. long, obtuse or acute, leathery and shining: fr. reddish-orange, oblong, ½ in. long. New Zeal.

macrocárpa. To 12 ft.: lvs. ovate-oblong, to 7 in. long, obtuse or acute, leathery and glossy: fr. ovoid, to 1 in. long. New Zeal.

microcárpa. To 12 ft.: lvs. linear, to ⅓ in. long: fr. globose, ⅒ in. across. New Zeal.

parviflòra. To 15 ft.: lvs. obovate, to ¾ in. long, usually clustered, leathery: fr. bluish or black, globose, ⅛ in. across. New Zeal.

Pètriei. Creeping, making mats and useful for rock-work: lvs. about ¼ in. or less long, narrow-oblong or obovate, hairy: fls. solitary on short branchlets: fr. purplish, to ½ in. diam. New Zeal.

ramulòsa. To 4 ft., prostrate or decumbent: lvs. linear-obovate, ⅓ in. long: fr. dark red, globose, ⅙ in. across. New Zeal.

rhamnoìdes. To 6 ft.: lvs. orbicular to narrow-oblong, to ¾ in. long: fr. red or rarely black, globose, ⅙ in. across. New Zeal.

rígida. To 15 ft.: lvs. obovate, to ¾ in. long: fr. yellow, oblong, to ⅓ in. long. New Zeal.

robústa. To 15 ft.: lvs. oval, to 5 in. long, acute, leathery, dark green and shining above, pale beneath: fr. orange, oblong, ½ in. long. New Zeal.

rotundifòlia. To 12 ft.: lvs. orbicular or ovate-oblong, to 1 in. long: fr. red, globose, ⅙ in. across. New Zeal.

rugòsa. To 10 ft.: lvs. narrow-linear, to ¾ in. long: fr. pale blue, oblong or nearly globose, ⅓ in. long. New Zeal.

spathulàta. To 5 ft.: lvs. orbicular, to 1½ in. long, with winged petiole, obtuse or notched: fr. black, globose, ¼ in. across. New Zeal.

Stóckii: *C. Baueri.*

tenuicaùlis. To 8 ft., much branched: lvs. orbicular, ½ in. long, obtuse: fr. black and shining, globose, ⅛ in. diam. New Zeal.

tenuifòlia. To 15 ft.: lvs. ovate to ovate-lanceolate, to 4 in. long, brownish-green above, pale beneath: fr. ovoid, ⅓ in. long. New Zeal.

CÓPTIS. Goldthread. *Ranunculaceæ.* Little per. herbs with slender rootstocks which yield a yellow dye and have medicinal properties: lvs. basal, compound: fls. white or yellow, borne on scapes, with petal-like sepals, small hood-like petals and numerous stamens; native in north temp. zone.

A few species sometimes planted in the border or rock-garden. The plants thrive in shady damp situations in peaty soil. Leaves remain green all winter if given some protection. Propagated by seeds which should be covered with leaves or paper and kept moist.

asplenifòlia. Lvs. of 5 long-petioled pinnately divided lfts.: fls. whitish, sepals and petals filiform. Alaska to B. C.

brachypétala (*Thalictrum japonicum*). Habit as in *C. asplenifolia:* lvs. biternate, segms. pinnatifid with lobes incised-serrate: fls. 3–4, erect, long-peduncled, petals shorter than the linear and acute sepals. Japan.

grœnlándica. To 6 in., the rootstocks yellow: lvs. shining, long-stalked, of 3 broadly obovate coarsely toothed petiolulate lfts.: fls. white, usually solitary, about ½ in. across, the petals broader than long. May–Aug. N. E. N. Amer., in bogs and damp mossy woods.—Until recently confused with *C. trifolia.*

laciniàta. To 6 in.: lvs. of 3 deeply cut or divided lfts.: fls. whitish, sepals linear-lanceolate, petals nearly filiform, a third shorter. Wash. to Calif.

occidentàlis (*Chrysocoptis occidentalis*). Lvs. shining, of 3 lfts. which are pinnately 3–5-lobed: fls. greenish or yellowish-white, sepals and petals subulate. Wash., Ore. to Mont.

quinquefòlia. A Japanese species differing from *C. grœnlandica* in the fr. follicle being half-round with upper surface flattened, not ellipsoid, and tip not prominently hooked.

trifòlia. Lfts. sessile or essentially so: petals rather narrow, mostly rhombic and as long as broad. N. E. Asia, Alaska.

CORAL-BELLS: *Heuchera sanguinea.* **-Berry:** *Symphoricarpos orbiculatus.* **-Blow:** *Russelia.* **-Bush:** *Templetonia retusa.* **-Drops:** *Bessera elegans.* **-Plant:** *Jatropha multifida, Russelia equisetiformis.* **-Root:** *Corallorrhiza.* **-Tree:** *Erythrina.* **-Vine:** *Antigonon leptopus.*

CORALLITA: *Antigonon leptopus.* **White:** *Porana paniculata.*

CORALLORRHÌZA. Coral-Root. *Orchidaceæ.* Terrestrial saprophytic orchids with masses of coral-like rootstocks, lvs. reduced to scales, and small fls. in terminal racemes. May be grown in rich shady places.

Bígelovii: *C. striata.*

maculàta (*C. multiflora*). To 8 in. tall, scape usually pinkish: racemes to 7½ in. long; sepals and petals brownish-purple, to about ⅓ in. long, lip always 3-lobed, white with purple spots (yellowish forms occur). Newf. to N. C. west to Calif., Ore. and Wash.

multiflòra: *C. maculata.*

striàta (*C. Bigelovii*). To 18 in. tall, scapes often brownish-purple: fls. purplish striped with dark purple (yellowish forms occur), about ½ in. long, lip simple. Que. to B. C. south to Mich., New Mex. and Calif.

CORCHO: *Microcycas calocoma.*

CORCHORÓPSIS. *Tiliaceæ.* A monotypic genus allied to Sparmannia but differing in having only 5 staminodia and 10–15 fertile stamens. **C. crenàta.** Shrub to 4 ft., sts. much branched and ascending, tips herbaceous: lvs. alternate, ovate to ovate-oblong, acute, coarsely crenate-dentate, usually stellate-hairy: fls. yellow, solitary in axils, calyx tomentose outside, glabrous within: fr. a cylindrical caps. about 1 in. long. Japan.

CÓRCHORUS. *Tiliaceæ.* Trop. herbs or subshrubs with alternate simple toothed lvs., very small yellow fls., and capsular frs.; grown for the fiber contained in the inner bark and the young shoots eaten as pot-herbs.

Jute requires a warm moist climate and loam soil. Seed may be sown broadcast in spring and the crop will be ready to harvest in about three months. The fiber is grown from Egypt to Japan.

capsulàris. Jute. Ann., to 15 ft.: lvs. oblong, to 4 in. long: fr. globose and wrinkled. India.

japónicus: *Kerria japonica.*

olitòrius. Jews-Mallow. Differs from *C. capsularis* only in its elongated and beaked fr. India.

CORDATE: heart-shaped; ovate in general outline, with a sinus and rounded lobes at base.

CÓRDIA. *Boraginaceæ.* Trop. trees and shrubs, sometimes partially climbing, in Old and New Worlds, with alternate simple lvs. and white or orange mostly 4-merous fls. in forking bractless clusters or coiled cymes, bisexual or polygamous, the corolla tubular or bell-shaped. The genus is polymorphous and is divided by certain authors; some of the species bear very small fls., others large and showy ones: fr. a drupe.

Grown in the greenhouse, and out-of-doors in warm regions, for ornament. Propagated by seeds and cuttings.

álba. Tree to 30 ft.: lvs. broad-ovate to roundish, rough, to 4 in. long: fls. papery, white, ½ in. across, in large open clusters: fr. an oblong drupe about ½ in. long. American tropics.

Boissièri. Evergreen shrub or tree to 25 ft.: lvs. ovate or oblong-ovate, to 5 in. long, velvety-tomentose, wavy: fls. white with yellow center, 1½ in. long, in terminal clusters. Tex. to Mex.

Mýxa. Deciduous tree to 40 ft.: lvs. broad-ovate, stiffish, to 5 in. long, glabrous, entire or wavy-toothed: fls. white, polygamous, ½ in. or less long, in large clusters: fr. tan-colored, ¾ in. diam., mucilaginous and used in medicine. India to Australia; planted in Calif. and American tropics.

Sebestèna (*Sebesten Sebestena*). GEIGER-TREE. Evergreen shrub or tree to 30 ft.: lvs. ovate, to 8 in. long, rough-hairy, margins entire or wavy: fls. orange or scarlet, to 2 in. long, in large terminal clusters. Fla. keys and south.

thyrsiflòra: *Ehretia thyrsiflora.*

CORDULA: *Paphiopedilum.*

CORDYLÌNE. DRACENA. *Liliaceæ.* Trees or shrubs with leathery or stiff narrow lvs. usually crowded at top of branches, often variegated, and greenish or yellowish fls. in panicles on solitary pedicels; grown under glass and out-of-doors in warm climates for the foliage; often more or less palm-like in appearance. *C. terminalis* has foliage in many color combinations. See *Dracæna.*

Propagated by seeds, cuttings and root-layering. The leaves may be removed from ripened stems, these stems cut into 2–4-inch lengths and laid in sand in propagating bed with bottom heat. When the eyes have developed growth of about six leaves, the shoots should be cut off with an eye and put in propagating-bed until rooted and then transplanted into pots.

amábilis. A form of *C. terminalis* having shining deep green lvs. becoming spotted with rose and white.

austràlis (*Dracæna australis*). To 40 ft.: lvs. to 3 ft. long and 2½ in. across: fls. white, fragrant, in large terminal panicles. New Zeal. Var. **atropurpùrea** has base of lf. and midrib beneath purple. Var. **Veìtchii** is bright crimson on midrib and base of lf.

Bánksii. To 10 ft.: lvs. to 6 ft. or more long and 3½ in. across: fls. white, in drooping much branched panicles to 5 ft. long. New Zeal.

Baptístii. A form of *C. terminalis* having deep green lvs. striped with pink and yellow.

Bruántii. A garden form of *C. rubra.*

cannæfòlia. A var. of *C. terminalis* with oblanceolate lvs. about 1 ft. long.

congésta: *C. stricta.*

Doucètii. A form of *C. australis* having lvs. edged and striped with white.

Haageàna. To 3 ft.: lvs. to 6 in. long and 2½ in. wide, abruptly contracted into long petiole: fls. white to reddish-purple, to ⅜ in. long, segms. equal, in few-branched panicles to 1 ft. long or often only to 6 in. long: fr. about ⅛ in. diam. Australia.

hýbrida. A form of *C. terminalis* having deep green lvs. margined with rose.

imperiàlis. Lvs. deep metallic green marked with crimson or pink; form of *C. terminalis.*

indivìsa (*Dracæna indivisa*). To 25 ft.: lvs. to 6 ft. long and 6 in. wide: fls. white, in drooping panicles to 4 ft. long. New Zeal. Var. **Pàrei** is listed.

marginàta (*Dracæna marginata*). Sts. slender, to 12 ft., roughened by abscission scars of old lvs. and terminated by a tuft of lvs.: lvs. narrowly ensiform, to 2 ft. long, flat or somewhat concave above toward base, gray-green with purple margins, pungently-tipped: fls. in elongated panicles. Madagascar.

metállica. A form of *C. terminalis* becoming purple-bronze in age.

nigro-rùbra. Lvs. narrow, dark brown with rosy centers; form of *C. terminalis.*

norwoodiénsis. A *terminalis* variant having lvs. striped with yellow, green and crimson.

Pumílio. Stemless or with st. to 3 ft.: lvs. to 3 ft. long and ⅔ in. across: fls. white or bluish, in slender panicles to 3 ft. long. New Zeal.

Robinsoniàna. Lvs. light green striped with bronze and brownish-crimson; form of *C. terminalis.*

rùbra. To 15 ft.: lvs. to 15 in. long and 2 in. across: fls. lilac, in nodding lateral panicles. Country unknown.

strícta (*C. congesta*). To 12 ft.: lvs. to 2 ft. long and 1¼ in. across: fls. lilac, in terminal or lateral panicles. Australia. Var. **grándis** is a large highly colored form.

terminàlis. To 10 ft.: lvs. to 2½ ft. long and 5 in. across: fls. yellowish, white or reddish, in panicles to 1 ft. long. E. Asia.—Runs into many foliage forms, and some of them have been given Latin names as if species.

trícolor: color form of *C. terminalis.*

Veìtchii: *C. australis* var.

Yoúngii. A form of *C. terminalis* with bright green lvs. streaked with red, bronze in age.

CORÈMA. *Empetraceæ.* Evergreen heath-like small shrubs with diœcious fls. in terminal heads, without sepals or petals; native in N. Amer. and Eu. Propagated by cuttings.

Cónradii. BROOM CROWBERRY. To 2 ft.: lvs. linear, to ¼ in. long: staminate fls. with long purple stamens. Newf. to N. J. in rocky and sandy places.—Useful for colonizing and for ground-cover.

COREÓPSIS (*Calliopsis. Leptosyne*). TICK-SEED. *Compositæ.* Ann. and per. herbs, seldom shrubby, with mostly opposite lvs. that are entire or variously lobed or cut: heads solitary or loosely panicled, yellow, brown or rose, blooming in summer and autumn, of ray-and disk-fls.; pappus of teeth or scales or none. Grown in the flower-garden and border.

Coreopsis grows well in any garden soil. The annuals are started from seed sown indoors in early spring or in the open when the ground is warm, the perennials from seed, or by cuttings of growing wood in summer, and by division. The annual kinds are well-known flower-garden subjects, as *C. Atkinsoniana, Drummondii, tinctoria.* See *Thelesperma.*

Atkinsoniàna. Ann. or per. to 4 ft.: lvs. 1–2-pinnate into linear lobes: heads to 1½ in. across, on long stalks, rays with brown-purple base, toothed or lobed, disk purple or brownish: achenes narrow-winged. B. C. to N. D.

atrosanguínea. A flower-garden ann., probably *Thelesperma Burridgeanum.*

auriculàta. Per. to 1½ ft.: lvs. oval, simple or with few basal lobes: heads 2 in. across, rays yellow, toothed: achenes narrow-winged. Va. to Fla.—*C. auriculata* of the trade is *C. pubescens.*

bícolor: *C. tinctoria.*

Bígelovii (*Leptosyne Bigelovii*). Ann. to 14 in.: lvs. in basal tuft, pinnate into linear lobes or sometimes entire: fls. 1½ in. across, rays yellow, pappus of scales. Calif., deserts.

calliopsídea (*Leptosyne calliopsidea*). Ann. to 2 ft. or less, sts. leafy: lower lvs. narrow or ligulate, the upper ones pinnately parted: heads to 3 in. across; pappus of scales. Calif., on moist hillsides.

cardaminefòlia. Ann. to 2 ft.: lvs. 1–2-pinnate into ovate to linear lobes: heads about 1 in. across, rays brown-purple at base, toothed, disk dark purple: achenes winged. Kans. to Ariz.

coronàta: *C. nuecensis;* see also *Bidens coronata.*

delphinifòlia. LARKSPUR C. Per. to 5 ft.: lvs. to 3 in. long, palmately 3-parted and middle segm. again cut into linear lobes: heads to 2½ in. across, disk purple-brown, rays yellow, entire: achenes narrowly winged. Va. to Ga. and Ala.

Doúglasii (*Leptosyne Douglasii. L. californica*). Ann. to about 1 ft.: lvs. all basal, filiform to linear and entire or pinnately parted: heads 1¼ in. across; pappus none or a little cup. S. Calif., Ariz.

Drúmmondii (*C. picta*). GOLDEN-WAVE. Ann. to 2 ft.: lvs. pinnate into ovate to linear lobes: heads to 2 in. across, long-stalked, rays yellow, brownish-purple at base, toothed or lobed, disk dark purple: achenes with thick margin. Tex.

élegans: *C. tinctoria.*

floribúnda: *C. grandiflora.*

gigantèa (*Leptosyne gigantea*). Succulent shrub to 6 ft., leafy only towards top: lf.-divisions nearly or quite filiform: heads to 3 in. across, on clustered peduncles 3–6 in. long; pappus none. Coasts, S. Calif.

grandiflòra (*C. floribunda. C. lanceolata* var. *grandiflora*). Per. to 2 ft.: lvs. narrow and entire but mostly 3–5-parted, petioles ciliate: heads to 2½ in. across, on long stalks, rays yellow, lobed, disk yellow: achenes with broad wings. Ga. to New Mex.

lanceolàta. Per. to 2 ft.: lvs. usually entire, mostly near the base: heads to 2½ in. across, very long-stalked, rays yellow, lobed, disk yellow: achenes broad-winged. Ont. to Fla. and La. Var. **flòre-plèno** has double fls. Var. **grandiflòra** is *C. grandiflora*.

latifòlia. Per. to 5 ft.: lvs. ovate, to 9 in. long, acuminate, sharply serrate, not divided: heads numerous, to 1½ in. across, disk- and ray-fls. yellow. N. C. to Ga.

màjor (*C. senifolia*). Per. to 3 ft.: lvs. lanceolate and entire or palmately cut into 3 lanceolate segms.: heads to 2 in. across, rays yellow, entire, disk yellow: achenes winged. Va. to Fla. and Ala.

marítima (*Leptosyne maritima*). Sea-Dahlia. Per. to 3 ft., sts. leafy and hollow: lf.-divisions linear or broader: heads to 3½ in. across, solitary on sts. to 1 ft. long; pappus none. Coasts, S. Calif.

marmoràta: *C. tinctoria.*

microphýlla: listed name.

myriophýllum: listed name.

nìgra: *C. tinctoria* var. *atropurpurea.*

nuecénsis (*C. coronata*). Ann., glabrous or sparsely pubescent, branched, to 2 ft.: lvs. obovate or spatulate-oblong, to 3 in. long, entire or lower ones 3-parted: rays yellow, dark-lined, the heads to 2 in. across. Tex.

oculàta: hort. name.

palmàta. Finger C. Per. to 3 ft.: lvs. palmately 3-cleft to below middle: heads to 2½ in. across, rays bright yellow, toothed, disk yellow: achenes narrow-winged. Ind. to Neb. and La.

pícta: *C. Drummondii.*

pubéscens. Per. to 4 ft.: lvs. oval, entire or with small lateral lobes: heads to 2½ in. across, rays yellow, lobed, disk yellow: achenes winged. Va. to Fla. and La.

radiàta: hort. name for a form with rolled-up ray-fls.

ròsea. Per. to 2 ft. with slender creeping rootstocks: lvs. linear, entire or 3-parted: heads to 1 in. across, short-stalked, rays rose-color, slightly toothed, disk yellow: achenes not winged. Mass. to Ga. Var. **nàna** is listed.

saxícola. Similar to *C. grandiflora* from which it differs only in its non-ciliate petioles, broader outer involucral bracts and achenes with fimbriately dissected wings. Ga. to Ala.

senifòlia: *C. major.*

Stíllmanii (*Leptosyne Stillmanii*). Ann. to 1 ft., slightly fleshy, sts. leafy: lvs. with long linear lobes: heads 1½ in. or more across; pappus a cup. Calif.

tenuifòlia: *C. verticillata.*

tinctòria (*C. bicolor. C. elegans. Calliopsis marmorata*). Ann. to 3 ft.: lvs. divided into lanceolate or linear segms.: heads to 2 in. across, long-stalked, rays yellow, crimson-brown at base, toothed, disk brownish-purple: achenes wingless. Minn. to Neb. and Ariz. Var. **atropurpùrea** (*C. nigra*) has rays crimson-brown throughout. Var. **flòre-plèno** has double fls. Var. **nàna** is dwarf. Var. **spléndens** is offered as an improved form.

trichospérma: *Bidens coronata.*

trípteris. Per. to 8 ft.: lvs. lanceolate and entire or lower 3-parted: heads 1½ in. across, rays yellow, entire, disk yellow: achenes narrow-winged. Ont. to Fla. and La.

verticillàta (*C. tenuifolia*). Thread-leaf C. Per. to 3 ft.: lvs. ternately divided into thread-like segms.: heads to 2 in. across, rays deep yellow, entire, disk yellow: achenes narrow-winged. Md. to Ark. and Neb.

CORETHRÓGYNE. *Compositæ.* A few per. herbs of Calif., somewhat like Aster and differing in technical characters, the herbage cottony-white when young: lvs. sessile, entire or serrate: heads with yellow disk and rays in the purple series.

califórnica. To 1½ ft. high, the sts. prostrate or decumbent at base and then ascending: lvs. linear to spatulate or obovate, the lowest few-toothed: heads solitary on peduncles, to ⅓ in. high, rays purple to lilac.

CORIACEOUS: leathery, as of leaves that are thick and stiff.

CORIANDER: *Coriandrum sativum.*

CORIÁNDRUM. *Umbelliferæ.* Ann. herbs with pinnately compound lvs., small white fls. in compound umbels, and ovoid frs.; one species grown for the frs. or seeds which are used as seasoning. It is of easy cult. in any garden soil. Propagated by seeds sown in autumn or spring, the latter time in the N.

sativum. Coriander. To 3 ft., strong-smelling: lvs. decompound, the upper divided into narrowly linear segms., the lower lvs. with ovate deeply cut segms. S. Eu.

CORIÀRIA, the only genus in the family *Coriariaceæ.* Herbs or shrubs with opposite or whorled lvs., small greenish fls. in racemes, with 5 sepals and 5 petals, 10 stamens, superior ovary, and berry-like fr.; the following species grown in S. U. S. and Calif. Propagated by seeds, cuttings of green wood, suckers and layers.

japónica. Shrub to 6 ft. or more: lvs. ovate to ovate-lanceolate, to 4 in. long, acute, 3-nerved: fls. greenish or reddish, in racemes: fr. red to blackish. Japan; hardy south of Washington.

myrtifòlia. Shrub to 10 ft.: lvs. ovate, to 2½ in. long: racemes 1 in. long: fr. black. S. Eu., N. Afr.

ruscifòlia (*C. sarmentosa*). Shrub or small tree to 25 ft.: lvs. ovate, to 3 in. long: racemes to 1 ft. long, drooping: fr. purple-black. New Zeal.

sarmentòsa: *C. ruscifolia.*

terminàlis. Herb or subshrub to 3 ft.: lvs. ovate, to 3 in. long: racemes 10 in. long: fr. black. China.

thymifòlia. Suffrutescent herb 1–4 ft. high, sts. with winged angles, much branched: lvs. oblong-ovate, ovate to lanceolate, ⅛–1 in. long, acute: fls. as in *C. ruscifolia*, but smaller. New Zeal., Peru.—Very variable as to lf. size and outline.

CORKSCREW-FLOWER: *Phaseolus Caracalla.*

CORK-TREE: *Phellodendron.*

CORKWOOD: *Leitneria floridana.*

CORM: a solid bulb-like part, usually subterranean, as the "bulb" of crocus and gladiolus.

CORMEL: a corm arising from a mother-corm.

CORN as a horticultural subject implies sweet or sugar maize (*Zea Mays* var. *rugosa*) as distinguished from the field or agricultural corns, and also certain kinds grown for the striped ornamental foliage.

Sweet corn, grown for the edible immature ear, is a tender annual, requiring warm "quick" land and full sun exposure. The first planting should be made in the home garden as soon as frost is past. It is well to plant early, intermediate and late varieties at the same time, then at intervals of two weeks until early summer, thus having a succession from the first crop until October. For late crop, corn may be started in pots and transplanted when peas and other crops are off. The soil for corn should be fertile, and the coarser manure left from the preparation of the ground for small crops may be used to good advantage. Corn for the garden is better planted in drills, the drills 3 to 4 feet apart, dropping the seed 10 to 12 inches apart in the drills. Some gardeners prefer to plant in "hills" 2–3 feet apart, of 3–5 stalks each. One quart of seed will plant 200 hills. The hybrid varieties such as Golden Cross are now in general use for home-garden, market-garden and canning-crop production.

Pop corn (*Z. Mays* var. *everta*) is grown the same as sweet corn.

CORNÀCEÆ. Dogwood Family. Shrubs and small trees, sometimes practically herbaceous, of about 10 genera most abundant in the northern hemisphere, having simple lvs., small bisexual or diœcious fls. sometimes surrounded by a showy corolla-like involucre, with 4–5-lobed calyx, 4–5 petals or none, 4–5 stamens, inferior 1–4-celled ovary, and fr. a drupe or berry. The genera Aucuba, Cornus, Corokia, Griselinia, Helwingia, are grown for ornament.

CORN, BROOM-: *Sorghum vulgare* var. *technicum.* Chicken-: *Sorghum vulgare* var. *Drummondii.* Cockle: *Agrostemma.*

CORNFLAG: *Gladiolus segetum.*

CORNFLOWER: *Centaurea Cyanus.*

CORN-SALAD: *Valerianella.*

CÓRNUS. Dogwood. *Cornaceæ.* Mostly shrubs and small trees with simple entire usually opposite and mostly deciduous lvs., small white or greenish-white fls. in a terminal infl., and little drupaceous frs., sometimes with large showy involucre like a corolla.

Dogwoods are useful for shrubberies and sometimes as single specimens. They are of easy cultivation in any usual soil. Propagated by cuttings of mature wood, layers, or varieties by budding and grafting on common stocks. The following species are hardy in the North unless otherwise stated.

álba. Tatarian D. To 10 ft., with blood-red branches: lvs. ovate or elliptic, to 5 in. long, glaucous below: fls. in cymes to 2 in. across: fr. whitish or tinted blue. Siberia, N. China. Var. **argénteo-marginàta** (*elegantissima variegata*) has lvs. edged with white. In var. **Goúchaultii** the lvs. are variegated with yellowish-white and pink. Var. **sibírica** (*C. sibirica*) has bright coral-red branches. In var. **Spaèthii** the lvs. are broadly edged with yellow.

alternifòlia. Pagoda D. To 25 ft.: lvs. alternate, oval or ovate, to 4 in. long, pale beneath: fls. in cymes about 2½ in. across: fr. dark blue, rarely yellow. N. S. to Ga. and Mo.

Amòmum (*C. sericea. C. cærulea*). Silky D. To 10 ft., with purplish branches: lvs. ovate to ovate-lanceolate, to 4 in. long, usually silky-pubescent beneath: fls. in cymes to 2½ in. across: fr. pale blue. Newf. to Fla. and Tex.

argénteo-marginàta: *C. alba* var.

Arnoldiàna. Hybrid of *C. obliqua* and *C. racemosa,* differing from *C. obliqua* in its more erect habit, slenderer and grayer sts.: fr. white or pale blue.

asperifòlia. Rough-leaved D. To 15 ft., with reddish-brown branches: lvs. ovate to oval, to 4 in. long, rough above and pale beneath: fls. in cymes to 3 in. across: fr. white. Ont. to Fla. and Tex.

australis. Branches purplish or greenish: lvs. ovate, to 3 in. long, rough and hairy beneath: fls. in small dense cymes: fr. purplish-black. W. Asia.

autumnàlis: hort. name.

Bàileyi. To 10 ft., with reddish branches: lvs. ovate to lanceolate, to 5 in. long, white beneath: fls. in cymes to 2 in. across: fr. white. Ont. and Pa. to Minn., mostly on shores.

brachýpoda: *C. macrophylla.*

cærùlea: *C. Amomum.*

califórnica. Creek D. Shrub to 15 ft., sts. glabrous, purplish-red: lvs. ovate to elliptical, to 4 in. long, acute, somewhat puberulent: fr. white. Calif.

canadénsis (*Chamæpericlymenum canadense*). Bunchberry. Woody per. herb to 9 in.: lvs. whorled, oval to obovate, to 3 in. long: fls. in dense heads subtended by an involucre of 4–6 large white petal-like bracts: fr. bright red. Newf. to Alaska, south to W. Va., and E. Asia.

candidíssima: *C. racemosa.*

capitàta (*Benthamia fragifera*). To 40 ft., partially evergreen: lvs. leathery, oval-lanceolate, to 4 in. long: fls. in dense heads subtended by 4–6 large creamy-white petal-like bracts: fr. scarlet. Himalayas; to be grown only far S.

circinàta: *C. rugosa.*

coloradénsis: *C. stolonifera* var.

controvérsa. To 60 ft.: lvs. alternate, ovate, to 5 in. long, whitish beneath: fls. in cymes to 4 in. across: fr. bluish-black. Himalayas to Japan. Var. **variegàta** has lvs. edged with white.

Dúnbari. Hybrid between *C. asperifolia* and *C. macrophylla:* lvs. ovate, to 6 in. long: fls. in corymbs to 2½ in. across: fr. blue.

elegantíssima: probably *C. alba* var. *argenteo-marginata.*

flórida (*Cynoxylon floridum*). Flowering D. To 40 ft.: lvs. ovate, to 6 in. long: fls. in dense heads subtended by 4 large white petal-like bracts: fr. scarlet. Me. to Fla. and Tex. Var. **álba** is listed. Vars. **frúcto-lùteo** and **xanthocárpa,** fr. yellow. Var. **multibracteàta,** double-fld. Var. **péndula** has drooping branches. Var. **plèna** has double fls. In var. **rùbra** (var. *rosea*) the bracts are pink or rose. Var. **salicifòlia** is listed as a small tree of "willowy" growth. Var. **Wélchii,** lvs. variegated red and yellow.

fœ́mina (*C.* and *Svida stricta*). To 15 ft., with purplish branches: lvs. ovate to ovate-lanceolate, to 3 in. long: fls. in cymes to 2½ in. across: fr. pale blue. Va. to Fla. and Tex.; not hardy far N.

Goúchaultii: *C. alba* var.

Hémsleyi. To 12 ft.: lvs. ovate, to 3 in. long, hairy and pale beneath: fr. bluish-black. China.

Koùsa (*Benthamia japonica*). Kousa. To 20 ft.: lvs. ovate, to 4 in. long, glaucous beneath: fls. in dense heads subtended by creamy-white petal-like bracts 1–2 in. long: frs. grown together into a head. Japan, China. Var. **chinénsis.** Lvs. larger and often more pubescent, infl. with bracts about 2¼ in. long. China.

lùtea: *C. stolonifera* var. *flaviramea.*

macrophýlla (*C. brachypoda*). To 50 ft.: lvs. elliptic-ovate, to 6 in. long, glaucous beneath: fls. in panicle-like cymes to 6 in. across: fr. bluish-black. Himalayas, China, Japan; to be planted in north-central regions.

más (*C. mascula*). Cornelian-Cherry. To 20 ft.: lvs. ovate, to 4½ in. long, essentially glabrous beneath: fls. yellow, before the lvs., in umbels about ¾ in. across: fr. scarlet, edible. S. Eu., Orient. In var. **aùrea** the lvs. are yellow and in **elegantíssima** (var. *aureo-elegantissima*) the lvs. are variegated with creamy-white and pink. Var. **variegàta** has lvs. bordered with white.

máscula: *C. mas.*

Núttallii. To 75 ft.: lvs. ovate to obovate, to 5 in. long, glaucous beneath: fls. in dense heads subtended by white or pinkish bracts: fr. red or orange. B. C. to S. Calif.; hardy only far S.

oblìqua. To 10 ft., the branches purple or yellowish-red: lvs. ovate to oblong, to 3 in. long, glaucous beneath: fls. in cymes 2 in. across: fr. blue to nearly white. Que. to Kans.

officinàlis. To 15 ft.: lvs. elliptic, pale and with brown axillary tufts of hair beneath: fls. yellow, before lvs., in umbels to about ¾ in. across: fr. scarlet. Japan, China.

paniculàta: *C. racemosa.*

paucinérvis. To 6 ft.: lvs. narrowly oval, to 4 in. long, more or less persistent: fls. in cymes to 3½ in. across: fr. black. China: hardy in north-central parts of U. S.

pubéscens (*Svida pubescens*). To 18 ft., the branches purple: lvs. elliptic, to 4 in. long, tomentose and glaucous beneath: fls. in cymes 2 in. across: fr. white. B. C. to Calif.; not hardy N.

racemòsa (*C. candidissima. C. paniculata*). To 15 ft.: lvs. ovate-lanceolate or lanceolate, to 4 in. long, pale beneath: fls. in panicles: fr. white. Me. to N. C. and Neb.

rugòsa (*C. circinata*). To 10 ft.: lvs. broadly ovate or orbicular, to 6 in. long, pale and pubescent beneath: fls. white, in dense cymes to 2½ in. across: fr. light blue. N. S. to Va. and N. D.

sanguínea. Bloodtwig D. To 12 ft., with purple or red branches: lvs. ovate, to 3 in. long: fls. in cymes to 2 in. across: fr. black. Eu., Orient. Var. **variegàta** has lvs. variegated with yellowish-white. In var. **viridíssima** the branches and fr. are green.

serícea: *C. Amomum.*

sibírica: *C. alba* var.

Spaèthii: *C. alba* var.

stolonífera. Red-Osier D. To 10 ft., with dark red branches, spreading by underground sts.: lvs. ovate or ovate-lanceolate, to 5 in. long: fls. in cymes to 2 in. across: frs. white or bluish. N. Amer. Var. **coloradénsis** has brownish-red branches and bluish fr. Var. **flaviràmea** (vars. *aurea* and *lutea*), Golden-twig D., has yellow branches. Var. **Kélseyi** is listed.

stricta: *C. fœmina.*

COROJO: *Acrocomia.*

CORÒKIA. *Cornaceæ.* Evergreen shrubs or trees native in New Zeal., with alternate entire small lvs., small yellow axillary fls. usually clustered, and drupaceous frs.; grown out-of-doors in Calif.

buddleoìdes. To 12 ft., much branched: lvs. lanceolate or linear-lanceolate, to 6 in. long, white-tomentose beneath: fls. in terminal panicles: fr. dark red. Var. **lineàris** has narrower lvs.

Cheèsemanii. To 12 ft.: lvs. oblanceolate to oblong-lanceolate, to 1½ in. long, silvery-white-tomentose: fls. yellow, usually 4–5 in axillary fascicles or terminal panicles: fr. red.

Cotoneáster. To 10 ft., the branches numerous and interlaced: lvs. ovate, to 1 in. long, white-tomentose beneath: fr. red.

macrocárpa. To 20 ft.: lvs. oblong, to 4 in. long, white-tomentose beneath: fls. in axillary racemes: fr. dark red.

COROLLA: inner circle of floral envelopes; if the parts are separate, they are petals; if not separate, they are teeth, lobes or divisions. The corolla is commonly the colored showy part of the flower.

CORONA: crown, coronet; any appendage or intrusion that stands between the corolla and stamens, or on the corolla, as the cup of a daffodil, or that is the outgrowth of the staminal part or circle, as in the milkweeds.

CORONARIA: *Lychnis.*

CORONÍLLA. *Leguminosæ.* Herbs and shrubs with odd-pinnate lvs., papilionaceous fls. in long-stalked axillary umbels, and cylindrical or angled pods constricted between the seeds; grown out-of-doors and in the greenhouse. Propagated by seeds and division, or by cuttings under glass.

cappadócica (*C. iberica*). Per. to 1 ft.: lfts. 9–11: fls. yellow, large. Asia Minor.

crética. Per., sts. procumbent or ascending, radiating from a single crown, slender: lfts. 5–8 pairs, oblong-obovate, to nearly ¼ in. long: fls. rose, with keel blotched purplish at apex, to ⅕ in. long, in umbels of 3–6. Greece to Balkans. —Although per. in native habitat, it is best treated as ann.

emeroìdes. Similar to *C. Emerus*, with 7 or sometimes 5 lfts., fls. ½ in. long, and pods to 3 in. long. S. E. Eu.

Émerus. SCORPION SENNA. Shrub to 9 ft.: lfts. 7–9: fls. yellow, ¾ in. long, the claw of the petals much longer than the calyx: pods 2 in. long. S. Eu.; hardy N.

glaûca. Shrub to 4 ft.: lfts. 5–7: fls. yellow, ½ in. long, the claw of the petals about length of calyx. S. Eu. Var. **variegàta** has variegated foliage.

ibérica: *C. cappadocica.*

júncea. Shrub to 3 ft., gray-green, with nearly naked branches: lfts. 3–7: fls. golden-yellow, the claw of petal about length of calyx. Medit. region.

mínima. Procumbent subshrub to 4 in., gray-green: lfts. 7–13: fls. golden-yellow, fragrant. Eu.

montàna. Tall per.: lfts. 11–13: fls. yellow. Caucasus.

Securídaca: *Securigera Securidaca.*

Valentìna. Shrub to 3 ft.: lfts. 7–13: fls. deep yellow, fragrant. S. Eu.

vària. CROWN VETCH. Straggling herb to 2 ft.: lfts. 11–25: fls. pinkish-white, ½ in. long, the claw of petals about length of calyx. Eu.; nat. in northeastern states.

CORÓNOPUS (*Senebiera*). WART-CRESS. *Cruciferæ.* A few more or less weedy diffuse or procumbent small ann. and bien. herbs with strong odor, sometimes listed, perhaps useful for ground-cover: lvs. commonly pinnatifid: fls. minute, whitish, in little racemes: fr. or silicle very small, twin. **C. procúmbens** (*Carara Coronopus*) is tufted and prostrate, glabrous, glaucous, the sts. a few in. long: foliage finely cut: pods crested. Eu.; sometimes escaped.

CORÒZO. *Palmaceæ.* One species as now named and understood, **C. oleífera**, AMERICAN OIL PALM, in Cent. Amer., Panama, Colombia and the Amazon region, supposed at one time to have been the palm meant by *Elæis melanococca*, but that name belongs to a variant of *E. guineensis.* Monœcious low tree with part of the trunk reclining or lying on the ground, the erect part reaching 5 or 6 ft.: lvs. long, pinnate, spiny on the petiole: spadix dense axillary bodies close in the crown of the tree: fr. about 1 in. long, black at maturity, sitting in a shallow cup or enlarged floral parts, oblong, somewhat tapering at apex and broad at base, the exterior flesh yielding oil and early employed in the making of candles by European colonizers. Common about city of Panama, and elsewhere on Zone, but apparently little planted. As a vernacular name, Corozo is applied to species of *Acrocomia* and other palms.

CORPUSCULÀRIA (*Schonlandia*). *Aizoaceæ.* Succulent shrubby or stemless plants with prostrate branches, thick 3-angled lvs., solitary terminal fls.; stigmas 5–6. S. African, a Mesembryanthemum segregate.

algoénse: listed name.

Lèhmannii (*M. Lehmannii*). Sts. prostrate, to 10 in. long: lvs. to 1 in. long and ¼ in. wide, gray-green: fls. pale yellow, to 2 in. across, with bracts inclosing the calyx.

CORRÈA. *Rutaceæ.* Australian shrubs or trees with opposite simple lvs., red, white or yellowish-green fls., 4-parted ovary and single style, and fr. of 4 carpels. Marked by the scurfy lvs. and branches.

Grown under glass or in the open in warm regions. Propagated by cuttings, or some species by grafting on *C. alba.* Shoots should be pinched back to induce bushy growth.

álba. To 4 ft.: lvs. orbicular to ovate, white-tomentose beneath: fls. white, bell-shaped, ½ in. long.

bícolor: *C. speciosa.*

pulchélla: *C. speciosa.*

speciòsa (*C. bicolor. C. pulchella*). To 3 ft.: lvs. ovate to lanceolate, white-tomentose beneath: fls. red or yellowish-green, tubular, 1–1½ in. long.

ventricòsa. Similar to *C. speciosa*, and by some treated as a variant of it, having bright crimson fls. with segms. tipped green.

CORRYOCÁCTUS. *Cactaceæ.* Columnar cacti branching at base, with strong ribs and very spiny areoles: fls. yellow or orange, with short tube and open throat: native Peru and Bolivia.

boliviànus: hort. name, possibly of *Trichocereus macrogonus.*

brachypétalus (*Cereus brachypetalus*). To 12 ft., much branched; ribs 7–8, areoles large, ¾ in. apart; spines about 20, the longest to 6 in.: fls. deep orange, 3 in. across. Peru.

brevístylus (*Cereus brevistylus*). To 10 ft., much branched, light green or yellowish; ribs 6–7, very prominent, areoles large, 1¼ in. apart; spines about 15, the longest to 10 in.: fls. bright yellow, 4 in. across. Peru.

melanótrichus (*Cereus melanotrichus*). To 7 ft. high, sts. slender; ribs 7–8, shallow, areoles to ¾ in. apart; radial spines about 12, to ⅝ in. long; central spines 1–3, to 2 in. long: fls. glossy pink, to 2¾ in. across. Bolivia.

procúmbens: listed name.

CORTADÈRIA. PAMPAS-GRASS. *Gramineæ.* Large per. grasses with mostly basal foliage forming great clumps: lvs. rough on edges: spikelets diœcious or sometimes bisexual, borne in panicles which are usually large, plume-like and very decorative; native in S. Amer.; not hardy N. See *Grasses.*

argéntea: *C. Selloana.*

jubàta: *C. rudiuscula.*

Quìla: *C. rudiuscula.*

ròsea is listed as having rose-colored plumes; it is probably *C. Selloana* or a var. of it.

rudiúscula (*C. Quila. C. jubata. Gynerium jubatum*). To 6 ft.: lvs. to 4 ft. long and ½ in. wide: panicle yellowish or purplish, to 2 ft. long, branches drooping. Ecuador to Chile and Argentina.

Selloàna (*C. argentea. Gynerium argenteum*). To 20 ft.: lvs. many ft. long and to ¾ in. wide: panicles white or pink, silky-hairy, to 3 ft. long. Argentina.

CORTÙSA. *Primulaceæ.* Per. hairy herbs with long-petioled orbicular lobed lvs. and rose or yellow fls. in umbels terminating the scape; a few species planted in rock-gardens. They do well in any good soil but require winter protection in the N. Propagated by division of roots.

Matthìolii. To 6 in.: fls. rosy-purple, nodding. Eu., N. Asia. Var. **pùbens** (*C. pubens*) has deeply lobed lvs., the lobes coarsely toothed. Var. **villòso-hirsùta** is hairy with deeply lobed lvs.

pùbens: *C. Matthiolii* var.

CORYANTHES. *Orchidaceæ.* Epiphytic American orchids similar to Stanhopea from which they differ in having the lateral sepals larger than the dorsal sepal and petals and the terminal lobe of lip helmet-shaped: not to be confused with the Asiatic genus Corysanthes, a relative of Pogonia and not known to be in cult. Members of the genus Coryanthes require warmhouse cult. as given for Stanhopea.

Búngerothii. Pseudobulbs ovoid-oblong, 2½ in. long: scape 1½ ft. long, 1-fld.; fls. with whitish-green sepals and petals speckled with reddish-purple, lateral sepals to 6 in. long and 2 in. wide, dorsal one to 2½ in. long, petals very narrow and about 3 in. long; terminal lobe of lip or hood yellow, spotted with brown within. Venezuela.

macrántha. Pseudobulbs to 6 in. long, narrowly subconical, usually strongly 8-ribbed, 2-lvd.: lvs. elliptic-lanceolate, to 1 ft. long, acuminate: peduncle usually 2-fld., to 6 in. long, arising from the base of the pseudobulb, pendent; sepals and petals membranaceous, pale yellowish or flesh-color dotted with red or purple; dorsal sepal oblong-lanceolate; lateral sepals lunate-semielliptic, 3–5 in. long, twisted; petals narrow, to 2½ in. long, undulate; lip fleshy, with a narrow claw about 1 in. long abruptly passing into a subglobose cup from which rises the helmet-shaped 3-lobulate terminal lobe which is orange-yellow spotted with red. Apr.–July. Trinidad, Venezuela, British Guiana.

maculàta. Pseudobulbs ovoid and somewhat conical, slender, to 6 in. long, 2-lvd.: lvs. lanceolate (often broadly so), to about 15 in. long: scapes to 1½ ft. long, arising from base of pseudobulb, pendulous; sepals and petals pale ochraceous-yellow; terminal lobe of lip lemon-yellow spotted with purple within. May–July, Dec. British Guiana, Venezuela.

speciòsa (*Gongora speciosa*). Pseudobulbs oblong-conic, to 5½ in. long, tapering slightly upward, deeply striate, 2-lvd.: lvs. linear-lanceolate, to 16 in. long, tapering at each end: scape arising from base of pseudobulb, to about 20 in. long, pendent, 2–5-fld.; fls. about 2½ in. across, fragrant; sepals and petals clear yellow; dorsal sepal ovate-lanceolate, about 1¼ in. long, laterals semielliptic-lunate, twisted or undulate, to about 2½ in. long; terminal lobe of lip reddish to tawny yellow. Brazil, Cent. Amer., Tobago, Trinidad.

CORÝDALIS (*Capnoides*). *Fumariaceæ.* Herbs with pinnately cut lvs., irregular yellow, blue, purple or rose dicentra-like fls. in terminal racemes, and capsular frs.; sometimes grown for ornament. Of easy cult. in any garden soil. Propagated by division or seed; sometimes tuberous-rooted.

aûrea. Ann. to 6 in. or more, plants many-stemmed, without basal tuber: lvs. tripinnate: fls. yellow, with short gibbous spur, ½ in. or more long, subtended by toothed ovate to ovate-oblong bracts: pods curved, spreading or pendulous, usually 1 in. long; seeds glossy. N. Amer.

bracteàta. Per. to 10 in., robust, usually 1-stemmed and only 2–3-lvd., st. arising from solid corm-like tuber: fls. sulfur-yellow, to 1 in. long, usually 10–20 in erect elongate terminal raceme, subtended by palmately-lobed bracts which are much longer than pedicel, spur straight or ascending, about ⅝ in. long. Siberia.

bulbòsa: a name here included in *C. cava.*

Capnoìdes. Bien. to 18 in., sts. erect or ascending, much branched, without basal tuber: fls. yellowish-white with yellow spot, about ⅝ in. long, spur long, bract of lowest fl. of infl. as long as corolla or longer: seeds glossy. Eu.

Caseàna. Per. to 3 ft., sts. several, without basal tuber: lfts. broadly ovate-elliptic, mucronate: fls. pale yellow to white, occasionally tinged pink, spur straight and 1½–2 times as long as corolla, pedicels shorter than subtending lanceolate bract. Calif.

càva. Differs from *C. Halleri* in tuber having deep depression on lower side and subtending floral bracts ovate and entire. Cent. Eu. Var. **albiflòra,** fls. white.

cheilanthifòlia. Nearly stemless per. to 8 in. or more high: fls. yellow, ½ in. long. China.

curvisíliqua. Per. to 2 ft., much branched, without basal tuber: lfts. linear to narrowly oblanceolate, acute or obtuse, less than ¼ in. long and 1/16 in. wide: fls. yellow to cream-colored, about ⅝ in. long, spur as long as fl. or nearly so, pedicels shorter than subtending lanceolate bracts: pods to 1 in. long, curved, somewhat quadrangular. Tex.

decípiens: *C. pumila.*

densifòlia: *C. Halleri.*

flávula. Ann. or rarely bien. to 18 in., many-stemmed, without basal tuber: lfts. narrow, acute: fls. yellow, to ½ in. long, spur short and gibbous, floral bracts ovate to ovate-oblong, toothed: fr. pedicel more than half as long as pod, latter drooping or spreading; seeds glossy. Ont. to Va. west to Minn. and La.

formòsa: *Dicentra formosa.*

glaûca: *C. sempervirens.*

Hálleri (*C. solida. C. densifolia*). To 8 in., 1-stemmed, borne from solid corm-like tuber about 1 in. diam.: lvs. usually only 2–3: fls. deep rose to purple, usually 10–20 in erect racemes, bracts broadly wedge-shaped, palmately lobed and shorter than the fruiting pedicel. Eu. Var. **álba** is listed. Var. **austràlis,** fls. larger, earlier.

lùtea. Per. to 15 in., many-stemmed, without basal tuber: fls. golden-yellow, about ¾ in. long, spur short and gibbous, floral bracts ovate to ovate-oblong, toothed: fr. pedicel more than half as long as pod; seeds glossy. S. Eu.

micrántha. Differs from *C. flavula* in its more slender habit and shorter nearly sessile pod which is stiffly ascending. Va. to Fla. west to Minn. and Mo.

montàna (*C. aurea* var. *occidentalis*). Differs from *C. aurea* in its paler more finely divided lvs. and ascending nearly terete pods.

nóbilis. Per. to 10 in., robust, 1-stemmed, arising from solid corm-like tuber, usually only 2–3-lvd.: fls. white tipped with yellow and with purple spot, to 1 in. long, usually 10–20 in much condensed raceme, floral bracts broadly wedge-shaped and usually palmately lobed, longer than fr. pedicel. Siberia.

ochoténsis. Per. to 2 ft., many-stemmed, without basal tuber: fls. pale violet striped with black at apex, long-spurred, pedicels often longer than subtending and broadly-elliptic bract. Siberia.

ochroleûca. Per. to 15 in., many-stemmed, without basal tuber: fls. to ⅝ in. long, yellowish-white with short gibbous yellow spur, bracts ovate to ovate-oblong, toothed: seeds dull, not glossy. Italy.

ophiocárpa. Ann. or bien. to 3 ft., many-stemmed, without basal tuber: fls. yellow, to ½ in. long, spur short and conspicuously constricted along basal half, bracts linear-lanceolate, entire: pods about ¾ in. long or more, strongly torulose. Himalayas.

orthocárpa. To 8 in.: fls. ¾ in. long, in racemes to 2½ in. long. Formosa.

pállida. Per. to 1½ ft., many-stemmed, without basal tuber: fls. golden-yellow with brown patch, to nearly 1 in. long, spur short, bracts linear-lanceolate, entire: pods nearly 1 in. long, strongly torulose. China, Japan.

pùmila (*C. decipiens*). Differs from *C. solida* in its smaller more delicate habit and lax 1–5-fld. infl. Eu.

ròsea. Per. to 2 ft.: fls. rose, 1 in. long. China.

rupéstris. Per. to 8 in., many-stemmed, without basal tuber: fls. yellow, spur short and swollen, bracts linear-lanceolate, entire: pods about ½ in. long, not torulose. Persia.

Scoùleri. Per. to 4 ft., many-stemmed, without basal tuber: fls. rose, to 1 in. long, spurs very long: pods ovate-oblong. Wash., Ore.

sempérvirens (*C. glauca*). ROMAN WORMWOOD. Ann. or bien. to 2 ft., much branched, without basal tuber: fls. pale pink to nearly purple, tipped yellow, to ¾ in. long, spur very short, swollen: pods narrowly linear, erect, to 1¾ in. long. N. S. to Ga. west to Alaska and Minn. Var. **ròsea** is listed.

sibírica. Ann. to 16 in., sts. branched, without basal tuber: lfts. linear-oblong: fls. reddish tan striped red, lowest bracts lobed, upper ones entire. Siberia.

sólida: *C. Halleri.*

thalictrifòlia. Per. to 18 in., with woody rootstocks but not corm-like tubers, many-stemmed: lfts. 1–3 in. long and long-petioled: fls. yellow, to 1 in. long, spur long, pedicels shorter than subtending lanceolate entire bract. China.

tuberòsa: confused name; plants so listed may be *C. cava, C. pumila* or *C. Halleri.*

Wílsonii. Per., with basal rosette of lvs.: fls. canary-yellow, 1 in. long, in branched and leafless racemes. China.

CORYLÓPSIS. WINTER HAZEL. *Hamamelidaceæ.* Asian deciduous shrubs with alternate toothed strongly veined lvs. and fragrant yellow fls. in nodding racemes before the lvs., caps. with 2 beaks; planted for ornament.

They thrive in a soil of peat and sand, and require protection in the North. Propagated by seeds, by greenwood cuttings under glass and by layers.

glabréscens (*C. Gotoana*). To 20 ft.: lvs. to 3 in. long, pubescent on veins beneath: racemes 1 in. long. Japan.

Gotoàna: *C. glabrescens.*

pauciflòra. To 6 ft.: lvs. to 3 in. long, glaucous beneath and pubescent on veins: fls. to ¾ in. long, 2–3 together. Japan.

platypétala. To 8 ft.: lvs. to 4 in. long, ovate, glabrous, toothed, petioles glandular-bristly: fls. pale, to ½ in. long, racemes to 2 in. long. Cent. China. Var. **lèvis** has glabrous petioles.

sinénsis. To 15 ft.: lvs. to 4 in. long, obovate to oblong, finely toothed, pubescent on veins, grayish-green beneath: fls. to ¾ in. long, in racemes to 2 in. long with bracts silky outside, calyx pubescent. Cent. China.

spicàta. To 6 ft.: lvs. to 4 in. long, pubescent and glaucous beneath: racemes to 1½ in. long with bracts glabrous outside, calyx pubescent. Japan.

Veitchiàna. To 6 ft.: lvs. to 5 in. long, glaucous and glabrous beneath: racemes to 2 in. long. China.

Wíllmottiæ. To 12 ft.: lvs. to 3 in. long, glaucous and pubescent on veins beneath: racemes to 3 in. long. China.

CÓRYLUS. HAZELNUT. FILBERT. *Betulaceæ.* Deciduous monœcious shrubs and small trees native in the north temp. zone, with alternate toothed generally ovate lvs., unisexual fls. before the lvs., the staminate in drooping catkins, and fr. a nut with leafy involucre borne in clusters at ends of branches; grown for ornament and the edible nuts. For cult. see *Filbert.*

americàna. AMERICAN H. To 10 ft.: lvs. to 5 in. long, pubescent beneath: frs. 2–6, the involucre about twice length of nut, with deep irregular lobes. E. N. Amer.

Avellàna. EUROPEAN H. To 15 ft.: lvs. to 4 in. long, pubescent beneath: frs. 1–4, the involucre shorter than nut or only slightly longer, with deep irregular lobes. Eu. Hort. vars. are: **aùrea,** lvs. yellow; **contórta,** branches twisted; **fúsco-rùbra** (var. *atropurpurea*, var. *purpurea*), lvs. dull purple or brownish-red; **grándis,** COBNUT, nuts large; **heterophýlla** (var. *laciniata*), lvs. pinnately lobed; **péndula,** branches drooping; **quercifòlia,** lvs. with broad lobes resembling an oak.

califórnica. Similar to *C. cornuta* but lvs. cordate at base and more pubescent beneath, and beak about length of nut. Wash. to Calif.

chinénsis. CHINESE H. To 120 ft.: lvs. to 7 in. long, pubescent: frs. 4–6, the involucre contracted above the nut into a tube, and divided into linear lobes. China.

Colúrna. TURKISH H. To 80 ft.: lvs. to 5 in. long, pubescent on veins beneath: frs. in clusters, the involucre divided into linear lobes. S. E. Eu., W. Asia.

cornùta (*C. rostrata*). BEAKED H. To 10 ft.: lvs. to 4 in. long, pubescent on nerves beneath: frs. 1–2, the tubular bristly involucre much contracted above the nut into a long beak. Que. to Ga. and Mo.

heterophýlla. Tree or shrub to 25 ft.: lvs. oval to obovate, to 4 in. long, apex acuminate to nearly mucronate, base obtuse to heart-shaped, margin somewhat serrate or partly lobed, smooth above, nerves beneath pubescent, petiole to ¾ in. long and glandular-hairy: frs. 1–3, involucre longer than nut, campanulate. hairy at base, lobes entire or dentate. N. E. Asia. Var. **japónica** is listed. Var. **sutchuenénsis,** lvs. truncate at apex, glabrous or nearly so.

máxima. FILBERT. To 30 ft.: lvs. to 5½ in. long: frs. 1–3, the tubular involucre lobed at top and about twice as long as nut. S. E. Eu. Var. **purpùrea** has dark purple lvs.

rostràta: *C. cornuta.*

Sieboldiàna. JAPANESE H. Large bush to 15 ft.: lvs. elliptic to obovate, to 4 in. long, hairy on veins underneath: frs. 1–3 in tubular-constricted setose involucre. E. Asia.

CORYMB: short and broad more or less flat-topped indeterminate flower-cluster; outer flowers opening first.

CORÝNOCÁRPUS. The only genus in *Corynocarpaceæ.* Evergreen trees with alternate simple lvs., small bisexual fls. in terminal panicles having 5 sepals and petals, 5 stamens, 5 staminodia, and drupaceous fr. The following species, with poisonous seed (unless steamed, or steeped in salt water) but the pulpy part edible, is planted in Calif. In Melanesia are two other species.

lævigàta. To 50 ft.: lvs. oblong, to 8 in. long: fls. greenish, the panicles to 8 in. long: drupe 1½ in. long, orange. New Zeal.

CORYNOPUNTIA: *Opuntia.*

CORỲPHA. *Palmaceæ.* About 8 ponderous hermaphrodite fan-palms in trop. Asia, monocarpic (flowering and fruiting once and then dying at the age of 20–80 years), unarmed except for the spiny petioles, the immense panicled spadices terminal (above the crown): lvs. very large, stiff and heavy, deeply divided into many ridged segms.; petioles long, hard and stiff with strong spines or hooks on the margins: fls. small, produced in prodigious quantity; stamens 6: fr. a globose drupe size of a cherry. The true Coryphas are little planted within the limits of the U. S., the palms generally known under this name being Livistonas (a practice so far out of date that it should be discontinued); the name was once used for other fan-palms, as Sabal. For cult. see *Palm.*

austràlis: *Livistona australis.*

elàta (*C. Gebanga*). To 60 or 70 ft., the trunk bearing strong rough spiral ridges and furrows: lvs. 8–10 ft. diam., cut to about half the depth into 80 or 100 smooth hard segms. with rather obtuse bifid apex; petiole broad, 8–12 ft. long with black margins and widely spaced strong straight or curved spines: spadix much narrower than crown: fr. about 1 in. diam., olive-colored. Bengal and Burma.—The lvs. wither and fall when the plant begins to bloom.

Gebánga: *C. elata.*

nàna: *Cryosophila nana.*

rotundifòlia: *Livistona rotundifolia.*

umbraculífera. TALIPOT PALM. To 40–80 ft., stocky, trunk ringed after lf.-bases fall: lvs. to 12 or 16 ft. broad, cleft to center into 80 or 100 linear-lanceolate stiff ridged acute or bifid segms.; petiole to 10 ft., narrowly channelled, with rather short compressed spines often in pairs: spadix equalling or exceeding crown: fr. about 1½ in. diam. Ceylon and Malabar Coast.

CORÝPHÁNTHA. *Cactaceæ.* Ball-like or cylindric solitary or cespitose small cacti, Cent. Mex. to S. Canada, covered with spine-bearing tubercles which (except when very young) are grooved on upper face: fls. mostly yellow but sometimes red or purple, showy, expanding, borne near top of plant, the perianth long-persistent. Sometimes grown as little pot specimens, mostly known in cult. as Mammillarias. See *Cacti.*

aggregàta (*Mammillaria aggregata*). Solitary or in clumps, body globular or nearly so and very spiny; radial spines many and appressed, centrals several and more erect: fls. showy, 2–3 in. across, purplish. New Mex., Ariz., Mex.—Very showy when in clumps.

Álversonii. Subcylindrical, to 5 in. high and 4 in. diam.; spines 12–14, usually ½–⅞ in. long, spreading. Lower Calif.

Ándreæ (*Mammillaria Andreæ*). Sts. globose to subcylindrical, to 3 in. diam., dark glossy green, woolly on top; tubercles rounded, to ¾ in. high, woolly in groove; spines yellowish-gray; radials about 10, to ½ in. long, spreading; centrals 5–7, to 1 in. long, darker: fls. pale yellow, to 2½ in. across, segms. linear, acute, toothed. Mex.

arizónica (*Mammillaria arizonica*). Sometimes in clumps 3 ft. across, each head or body globose or ovoid and to 4 in. diam., the tubercles deeply grooved; spines many, stiff and straight: fls. 2–3½ in. across, rose-colored. N. Ariz.

Astèrias (*Mammillaria Asterias*). St. globular to briefly cylindrical, to 5 in. tall and about 3 in. thick; tubercles thick, groove not conspicuous; spines yellow, bulbous at base, radials 9, centrals 1–2, the lower one hooked: fls. white to pink. Mex.

Bergeriàna. St. club-shaped, to 5 in. tall and 2½ in. diam.; tubercles conical, groove glandular; radials 18–20, to ⅝ in. long, gray; centrals 4, to ½ in. long, yellowish often recurved: fls. white with yellowish center, to 1½ in. long. Mex.

bumámma (*Mammillaria bumamma*). Globular, with few very large bluish-green tubercles and 5–8 radial spines ¾ in. long: fls. yellow, 2 in. across. Mex.

Cháffeyi (*Escobaria Chaffeyi*). St. short-cylindric, to 5 in. tall, to 2⅜ in. diam.; tubercles short; spines many, white, black-tipped, centrals slightly shorter than radials: fls. cream-colored, often tinged purple, to ⅝ in. long: fr. crimson, to ¾ in. long. Mex.

chlorántha (*Mammillaria chlorantha*). Cylindric, to 10 in. high and 3 in. across; tubercles hidden by densely matted spines; centrals 3–5, white with brown tip: fls yellow or greenish-yellow, 1¼ in. across. Utah, Ariz., Nev., Calif.

clàva (*Mammillaria clava*). Club-shaped, deep green, woolly in axils and red gland at base of groove; central spine 1, radials about 7: fls. 3 in. or more across, pale yellow, outer parts tinged red. Mex.

cornífera (*Mammillaria cornifera*). Body globose and pale green, with short broad tubercles; radial spines 16 or 17 and central spine 1: fls. yellow tinged red, nearly 3 in. broad. Mex. Var. **scolymoìdes** (*C. scolymoides, Mammillaria scolymoides*) has the tubercles more densely packed together and radial spines more numerous.

Delaetiàna (*Mammillaria Delaetiana*). Clump-forming, sts. club-shaped or cylindrical, spiny at top; tubercles to ⅜ in. long; radial spines about 15, to ½ in. long, base bulbous, mostly spreading, yellowish; centrals 1–2, to ¾ in. long, black: fls. clear yellow, to 1¾ in. long or more. Mex.

demonocèras. Similar to *C. cornifera*, differing in its smaller more compressed tubercles, and centrals 3–4 and longer. Mex.

déserti (*Mammillaria deserti*). Solitary or in clumps, to 8 in. high and 3 in. thick, densely covered with white spines: fls. pale pink, 1 in. across. Deserts, S. Calif. and Nev.

diffícilis (*Mammillaria difficilis*). St. globular, flattened; tubercles rhomboidal; spines bulbous at base, radials 12–14, to ¾ in. long, centrals 4, curved, to ¾ in. long: fls. yellow. Mex.

Dyckiàna (*Mammillaria Dyckiana*). St. cylindrical; tubercles conical, compact, short; radials 16–18, to ⅛ in. long, white; centrals 2, yellow tipped red: fls. red. Mex.

echinoídea (*Mammillaria echinoidea*). Nearly globular, 2 in. across, very woolly at top, with conical tubercles and 20–25 radial spines ½ in. long: fls. rose, to 3 in. across. Mex.

Echìnus (*Mammillaria Echinus*). Globose to somewhat conic, 1–2 in. diam., with many closely appressed spines, the radials white, centrals often blackish: fls. 1–2 in. long, yellow. W. Tex.

elephántidens (*Mammillaria elephantidens. Echinocactus elephantidens*). Nearly globose, to 5 in. high and somewhat broader; tubercles obtuse and to 2 in. long, densely woolly in axils; spines 8 and all radial: fls. about 4 in. across, rose-colored. Mex.

erécta (*Mammillaria erecta*). Cylindric, yellowish-green, to 12 in. long; tubercles obliquely conic; spines 8–14, awl-like: fls. large and yellow, with very narrow segms. Mex.

exsùdans (*Mammillaria exsudans*). Nearly cylindrical, 1½ in. across, with thick tubercles having pale yellow glands; radial spines 6–7, to ⅓ in. long, yellow: fls. yellow. Mex.

Geórgii. Globose, depressed and woolly at top, 2 in. high and 3 in. thick, with prominent tubercles; radial spines 8–9, spreading, ½ in. long: fls. white, 1½ in. across. Mex.

gladiispìna (*Mammillaria gladiispina*). St. ovoid to ellipsoid, to 4 in. tall and 2½ in. diam., shining dark green, less spiny towards base; radials 17–20 with the 7–8 upper ones brush-like; centrals 4, to 1 in. long: fls. yellow, to 2½ in. across. Mex.

grandiflòra: *Neolloydia grandiflora.*

jaumavénsis: listed name; the plant may be referable to *C. Palmeri.*

macromèris (*Mammillaria macromeris*). Branching at base, body more or less cylindrical, to 8 in. long; tubercles soft and several in. long, grooved two-thirds their length; radials many and white, centrals black: fls. to 3 in. broad, purple. Mex., W. Tex.

macrothèle: *C. octacantha.*

missouriénsis: *Neobesseya missouriensis.*

Muehlbaueriàna. Ovoid or cylindric, to 2 in. high and 1 in. thick, shining dark green; radial spines 15–20 and white; centrals about 6 and ½ in. long: fls. greenish-yellow striped with red, 1 in. across. Mex.

Muèhlenpfordtii (*Mammillaria Scheeri*). Body nearly globular and commonly simple, to 8 in. long and 6 in. thick; tubercles to 1 in. long and very woolly when young; radials 6–16 and straight, centrals 1–4: fls. yellow, about 2¼ in. long. W. Tex., New Mex., Mex.

Néllieæ. Cylindric, to 2 in. high; ribs 8–14, tubercles grooved; spines 13–18, all radial, mostly straight, to ⅕ in. long, white or pinkish with yellowish base, bristle-like: fls. purplish, to ⅝ in. long. W. Tex.

neo-mexicàna (*Mammillaria neo-mexicana*). Body globular or short-oblong, to about 4 in. long, covered with spines; radials needle-like and white; centrals stouter and brown or black toward apex: fls. to 2 in. broad, greenish, purplish inside. New Mex., W. Tex.

Níckelsiæ (*Mammillaria Nickelsiæ*). Globular and cespitose, to about 3 in. high, pale green and glaucous, becoming purplish; tubercles almost hidden by overlapping radial spines: fls. bright yellow with red center, 2–3 in. broad. S. Tex., Mex.

octacántha (*Mammillaria octacantha. M.* and *C. macrothele*). Cylindric, to 1 ft. high and 6 in. diam., white-woolly in axils, the long tubercles with 1 or 2 red glands; radials 8 and rigid; centrals 1 or 2 and stouter: fls. straw-colored, 2 in. or more broad. Mex.

Ottònis (*Mammillaria Ottonis*). Nearly globular, to 5 in. high and 3 in. diam., glaucous or grayish, with 8–12 radial spines ⅓ in. long: fls. white, 1½ in. long. Mex.

pállida. Solitary or clustered, globular, to 5 in. across, bluish-green; radial spines 20 or more and white: fls. lemon-yellow, greenish outside, 2½ in. across. Mex.

Pálmeri. St. globular to 4 in. diam.; tubercles conical, close; radials 11–14, spreading; central 1, hooked, to ¾ in. long: fls. pale yellow to nearly white, to 1¼ in. long. Mex.

pectinàta (*Mammillaria pectinata*). Globose, 1–2¼ in. diam.; tubercles spiral; spines 16–24 and all radial, some of them arched over apex of areole and yellowish-white with black tip: fls. yellow, 2 in. long. S. Tex., Mex.

Poselgeriàna (*C. valida. Mammillaria valida. Echinocactus Poselgerianus. E. saltillensis*). St. globular, apex often acutish; tubercles large, to ¾ in. long and 1½ in. across, grooves woolly, glandular; radials 5–7, to 2 in. long, base bulbous; central 1, to 2 in. long: fls. salmon-pink, rarely yellow, to 2 in. long. Mex.

pseudechìnus. St. to 3½ in. tall, dull green; tubercles conical; radials 18–25, stiff, about ½ in. long, grayish; central 1, to 1 in. long, base bulbous: fls. violet-pink, often yellowish-green in throat, to ¾ in. long and about 1¼ in. across. Mex.

ràdians (*Mammillaria radians*). Globose, about 3 in. diam.; tubercles ovoid, the axils glabrous; spines 16–18, all radial and white or yellowish: fls. lemon-yellow, ringed red outside, 4 in. broad. Mex.

radiòsa: *C. vivipara.*

recurvàta (*Mammillaria recurvata* and *recurvispina*). Body depressed-globose, 4–8 in. diam., often making large masses; tubercles not prominent; radial spines about 20, yellow and recurved; centrals 1 or 2: fls. about 1–1⅜ in. long, brownish outside and lemon-yellow inside. Ariz., Mex.

retùsa (*Mammillaria retusa*). St. depressed-globose, 2–4 in. diam., top woolly; tubercles large; spines all radial, 6–12, recurved or appressed: fls. yellow, to 1¼ in. across. Mex.

robustispìna (*Mammillaria robustispina* and *M. Brownii*). Solitary or clustered, body globular or nearly so, 2–6 in. high, almost hidden by spines, the radial 12–15 and 3 lower very stout, central 1: fls. salmon, about 2 in. long. Ariz., New Mex., Mex.

Rúnyonii. Forming clumps to 3 ft. across, with thick tap-root and irregular tubercles; radial spines 6 or more, 1 in. long; central spines to 2 in. long: fls. purple, 2 in. across. S. Tex., Mex.

Sálm-Dyckiàna (*Mammillaria Salm-Dyckiana*). Plants solitary or clustered; st. globular to club-shaped, to 6 in. diam.; radials usually 10–15, whitish, to ⅝ in. long; centrals 1–4, bulbous at base, to 1 in. long, black: fls. pale yellow tinged red, to 1½ in. long. Mex.

Scheèri: *C. Muehlenpfordtii.*

scolymoìdes: *C. cornifera* var.

símilis: *Neobesseya similis.*

sulcàta (*Mammillaria sulcata*). Forming clumps, to 5 in. diam., with rather large tubercles and white spines: fls. yellow with red center, 2 in. across. S. Tex.

sulcolanàta (*Mammillaria sulcolanata*). Globose or depressed, 2 in. high and 2½ in. diam., clustered; spines 9–10 and all radial and ½ in. long: fls. yellow or white, 1½ in. long. Mex.

válida: *C. Poselgeriana.*

Vaupeliàna (*Mammillaria Vaupeliana*). Globose or ovoid, to 3 in. diam.; tubercles 3-angled; radial spines about 15 and yellowish-gray and horizontally spreading; central spines 4 and to ¾ in. long: fls. yellow. Mex.

vivípara (*Mammillaria vivipara. M. radiosa*). Solitary or in mound-like clusters, body globular and to 2 in. diam.; tubercles prominent and woolly; radials about 16 and white; centrals 4–6: fls. nearly 2 in. long, purple, sepals fringed. Minn., Man., Alta. to Colo. and N. Tex.

Wérdermannii. Globose becoming elongated; radial spines 25–30 and to 1 in. long; centrals 4 and brownish-white: fls. golden-yellow, shining, to 3 in. across. Mex.

CORYTHOLÒMA. *Gesneriaceæ.* Trop. American herbs with tuberous roots, lvs. opposite or in 3's, fls. tubular and often 2-lipped, solitary or clustered in the axils, and fr. a caps.; one species grown under glass.

cardinàlis (*Gesneria cardinalis. G. macrantha*). To 1 ft., hairy: lvs. ovate-cordate, to 6 in. long, toothed: fls. red, to 3 in. long. Habitat unrecorded.

Warszewíczii (*Gesneria Warszewiczii*). Erect, stout, st. little branched: lvs. ovate, to 3 in. long, obtuse or acute, crenate, rough-hairy above, villous beneath: fls. to 1¾ in. long, tube somewhat swollen. Guatemala.

COSMIDIUM: *Thelesperma Bùrridgeanum.*

CÓSMOS. *Compositæ.* Showy late-flowering ann. or per. herbs with opposite usually pinnately cut lvs. and heads solitary or in panicles, rays variously colored; pappus of awns or crown; native in trop. Amer. Closely allied to Dahlia.

Cosmos is cultivated in the flower-garden and is easily grown from seed but in the North it may be sown indoors in early spring if bloom is desired in late summer and early forms should be chosen. Sandy soil is preferred as the plants do not bloom well in rich soil in short-season climates.

atrosanguíneus (*Bidens atrosanguinea. B. dahlioides. Dahlia Zimpanii*). Black C. Differs from *C. diversifolius* is heads smaller, with red disk and dark velvety-red rays. Mex.

bipinnàtus. Ann. to 10 ft.: lvs. 2-pinnate into linear segms.: heads to 3 in. or more across, rays white, pink, crimson, disk yellow: achenes beaked. Mex.—In the anemone- or double-fld. forms the disk is replaced by a compact crowded mass of petal-like parts the same color as the rays. Early and late flowering strains of both the single and double forms are now sold.

diversifòlius. Per. to 16 in., grown as ann., with tuberous roots: lvs. entire or pinnately parted into 5–7 lfts.: heads to 2 in. across, long-stalked, disk yellow, rays lilac to rose: achenes angled, not beaked. Mex. Var. **niger** is listed.

sulphùreus. Yellow C. Ann. to 7 ft.: lvs. 2–3-pinnate into lanceolate lobes: heads to 3 in. across, rays pale or golden-yellow, disk yellow: achenes beaked. Mex.

COSSÒNIA. *Cruciferæ.* Per. herbs of the Medit. region, with lvs. in basal rosettes and fls. in corymbs borne on solitary pedicels in axils of lvs.

africàna. Tufted: lvs. lyrate-pinnatifid, fleshy, glaucous: fls. lilac-purple or yellow, petals ¾ in. long, in dense corymbs on pedicels 1 in. long. Algeria, Morocco.

COSTMARY: *Chrysanthemum Balsamita.*

CÓSTUS. Spiral Flag. *Zingiberaceæ.* Stout trop. per. herbs, the sts. often spirally twisted, having leafy sts. and yellow, red or white fls. in dense spikes, the 1 staminode or lip petal-like.

They require tropical temperatures and rich moist soil. Propagated by cutting the stalks into about one-inch lengths and planting in sand and sifted moss or peat; also by division of the rootstocks. The plants are not often seen under glass as they require too much room. See *Zingiberaceæ.*

élegans: *C. Malortieanus.*

ígneus. To 3 ft. high: lvs. to 6 in. long, oblong-lanceolate: fls. orange-red. Brazil.

Malortieànus (*C. elegans. C. zebrinus*). To 3 ft. high: lvs. to 14 in. long and 7 in. wide, obscurely banded with green above: fls. yellow, the lip marked with red, in spikes to 2½ in. long. Cent. Amer.

speciòsus. To 10 ft.: lvs. to 8 in. long and 2½ in. wide: fls. white with yellow center, in spikes to 5 in. long. E. Indies.

zebrìnus: *C. Malortieanus.*

CÓTINUS. *Anacardiaceæ.* Two woody deciduous species, one native in N. Amer. and the other S. Eu. to Cent. Asia and China, with simple lvs., small polygamous fls. in large loose terminal panicles, the sterile pedicels of the Old World species lengthening and clothed with spreading hairs and producing the "smoky" effect that gives the plant its common name, 5 stamens, fr. a small compressed drupe.

Cotinus requires well-drained and not too rich soil. Propagated by seeds, root-cuttings and layers.

americànus (*Rhus americana* and *R. cotinoides*). Small tree to 30 ft. or more, with lvs. mostly obovate and cuneate or tapering at base: taller tree than the following and probably not as hardy, the panicles not showy but autumn lf.-color attractive. Tenn., Ala., to Tex.—Little planted.

Coggýgria (*Rhus Cotinus*). Smoke-Tree. Bushy shrub to 15 ft.: lvs. oval, to 3 in. long: panicles much branched, to 8 in. long, usually purplish. June–July. S. Eu. to Asia. Var. **purpùreus** (var. *atropurpureus*) has purplish lvs. and panicles with dark purple hairs. Var. **péndulus** has drooping branches.—Hardy N.

COTONEÁSTER. *Rosaceæ.* Shrubs or rarely small trees native in temp. regions of Old World, with alternate entire deciduous or persistent lvs., small white or pink fls. solitary or in clusters, and fr. a small red or black drupe. Some of them are more or less evergreen.

The genus has many ornamentals of first-class value in home gardens and landscape work, of attractive habit, interesting bloom and showy often persistent fruit. Most of them (unless otherwise noted) are hardy in the northern parts of the United States. Cotoneasters prefer sunny positions in well-drained soil. Propagated by seeds sown when ripe or stratified, by layers in autumn, by cuttings of young wood under glass late in summer, and rare kinds by grafting on stock of *C. integerrima* and the common quince or hawthorn.

acuminàta. To 12 ft., deciduous: lvs. to 2½ in. long, pubescent on both sides: fls. pinkish, in 2–5-fld. clusters: fr. bright red. Himalayas.

acutifòlia. To 12 ft., deciduous: lvs. to 2 in. long, pubescent on both sides when young: fls. pinkish, in 2–5-fld. clusters: fr. black. China. Var. **villósula,** lvs. densely pubescent beneath.

adpréssa. Prostrate, deciduous: lvs. to ½ in. long, usually wavy at margins: fls. pinkish, 1–2 together: fr. bright red. China. Var. **præ̀cox** (*C. præcox*) is more vigorous, with larger lvs.

affìnis. Tall deciduous shrub: lvs. to 3 in. long, pubescent beneath when young: fls. white, in many-fld. corymbs: fr. brown or nearly black. Himalayas; adapted to S. Var. **bacillàris** (*C. bacillaris*) has lvs. soon glabrous.

aldenhaménsis: *C. frigida* var.

ambígua. To 6 ft., deciduous: lvs. to 2 in. long, pubescent beneath: fls. pinkish, in 5–10-fld. clusters: fr. black. China.

amœ̀na. To 5 ft., densely branched, deciduous: lvs. about ½ in. long, densely pubescent below: fls. pinkish, in 6–10-fld. clusters: fr. orange-red. China.

angustifòlia: *Pyracantha angustifolia.*

apiculàta. To 6 ft., deciduous: lvs. to ½ in. long, pale and nearly glabrous below: fls. pink: fr. bright red. China.

applanàta: *C. Dielsiana.*

bacillàris: *C. affinis* var.

Bàkeri: listed name of plant advertised as dwarf, with gray foliage and red fr.

bullàta. To 6 ft., deciduous: lvs. to 3 in. long, rugose, slightly pubescent: fls. pinkish, in 3–7-fld. clusters: fr. red. China. Var. **floribúnda,** clusters many-fld. Var. **macrophýlla,** lvs. to 5 in. long.

buxifòlia. Low, densely branched: lvs. about ½ in. long, densely tomentose beneath, margins revolute: fls. white, in 2–6-fld. clusters: fr. red. India. Var. **vellæ̀a** has smaller lvs. and often solitary fls.—The material usually cult. under this name is *C. rotundifolia* var. *lanata.*

cineráscens: *C. Franchetii* var.

congésta (*C. microphylla* var. *glacialis*). Differs from *C. microphylla* in lvs. glabrous beneath at maturity and more ovate in outline. Himalayas.

Coòlidgei: listed as a dwarf evergreen, perhaps referable to *C. pannosa* var. *nana.*

crenulàta: *Pyracantha crenulata.*

Dámmeri (*C. humifusa*). Prostrate, the branches often rooting, evergreen: lvs. about 1 in. long, dark and shining above, pale beneath: fls. white, solitary: fr. bright red. China. Var. **radìcans** has smaller lvs. and 1–2 fls. together.

Davidiàna: *C. horizontalis.*

decòra: listed name for a low spreading evergreen form with red berries.

Dielsiàna (*C. applanata*). To 8 ft., deciduous: lvs. to 1 in. long, tomentose beneath: fls. pinkish, in 3–7-fld. clusters: fr. bright red. China. Var. **élegans** has smaller often persistent lvs. Var. **màjor** has larger and broader lvs.

dísticha (*C. rotundifolia* of hort.). To 8 ft., semi-evergreen: lvs. to ½ in. long, slightly pubescent when young: fls. white tinged pink, usually solitary: fr. bright red. Himalayas, China.

divaricàta. To 6 ft., deciduous: lvs. to ¾ in. long, dark and shining above, pale beneath: fls. pinkish, in 3-fld. clusters: fr. bright red. China.

formosàna. Lvs. 3–5 at tips of branchlets, to 1 in. long, gray-pubescent, notched at tip: fls. white, in corymbs. Formosa.

foveolàta. To 10 ft., deciduous: lvs. to 4 in. long, pubescent and with prominent veins beneath: fls. pinkish, in 3–6-fld. clusters: fr. black. China.

Franchétii. To 10 ft., evergreen or partially so: lvs. to 1¼ in. long, tomentose beneath: fls. pinkish, in 5–11-fld. clusters: fr. orange-red. China; not hardy N. Var. **cineráscens** is more vigorous.

frígida. To 25 ft., deciduous or semi-evergreen: lvs. to 5 in. long, tomentose beneath when young: fls. white, in dense tomentose clusters to 2½ in. across: fr. bright red. Himalayas; for southern states. Var. **aldenhaménsis** has oblong lanceolate lvs.

Gíbbsii: *Pyracantha Gibbsii.*

glabràta. Evergreen: lvs. to 3 in. long, glaucous and nearly glabrous beneath: fls. white, in dense corymbs 1 in. across. China; not hardy N.

glaciàlis: *C. congesta.*

glaucophýlla. Half evergreen, to 7 ft., branches arching: lvs. elliptic to elliptic-oblong, to 2¼ in. long, glaucous beneath: fls. in dense 6–20-fld. corymbs: fr. dull red, obovoid, to ⅕ in. long. W. China.

grácilis. To 10 ft., deciduous: lvs. to ¾ in. long, whitish-tomentose beneath: fls. rose, in 3–6-fld. clusters. China.

Harroviàna. To 6 ft., semi-evergreen: lvs. to 2 in. long, leathery, densely tomentose beneath when young: fls. white, in dense clusters to 1½ in. across. China.

hebephýlla. To 8 ft., deciduous: lvs. to 1 in. long, glaucous and becoming glabrous beneath: fls. white, in 6–16-fld. corymbs. China.

Henryàna. To 12 ft., semi-evergreen, the branches drooping: lvs. to 5 in. long, gray-tomentose beneath when young: fls. white, in loose clusters to 2 in. across: fr. red. China; not hardy N.

horizontàlis (*C. Davidiana*). To 3 ft., semi-evergreen, the branches spreading horizontally: lvs. to ½ in. long, slightly pubescent beneath: fls. pinkish, 1–2 together: fr. bright red. China. Var. **mìnor,** a smaller form with smaller fls. and berries. Var. **perpusílla** has lvs. ¼ in. or less long. Var. **variegàta** has lvs. marked with white.

humifùsa: *C. Dammeri.*

hupehénsis. To 6 ft., deciduous, the branches arching: lvs. to 1½ in. long, gray-tomentose beneath: fls. white, in 6–12-fld. clusters: fr. bright red. China.

hymalàica. Large vigorous shrub: lvs. deciduous, oblong-elliptic, base wedge-shaped, to 4 in. long, obtuse, entire, villous when young becoming glabrous: fls. rose: fr. purplish-black, globose. Nativity not known.

ignàva. To 7 ft., spreading, twigs pubescent when young: lvs. ovate to ovate-oblong, to 2 in. long, acute, mucronulate: fls. pinkish, in many-fld. pendulous cymes: fr. dark purple, to ⅓ in. across. Turkestan.

integérrima (*C. vulgaris. C. pyrenaica*). To 6 ft., deciduous: lvs. to 2 in. long, tomentose beneath: fls. pinkish, in nodding 2–4-fld. clusters: fr. red. Eu., N. Asia.

láctea. To 10 ft., evergreen or partially so: lvs. to 2 in. long, white- or yellow-tomentose beneath: fls. white, in corymbs 2 in. across: fr. red. China.

laxiflòra: *C. melanocarpa* var.

Lemòinei: listed name.

Líndleyi. Similar to *C. racemiflora* but with longer lvs. and black fr. Himalayas.

lùcida (*C. sinensis*). To 10 ft., deciduous: lvs. to 2 in. long, shining above, pubescent beneath when young: fls. pinkish, in 3–8-fld. clusters: fr. black. N. Asia.

macrophýlla: *C. bullata* var.

melanocárpa (*C. nigra*). To 6 ft., deciduous: lvs. to 2 in. long, dark green above, white-tomentose beneath: fls. pinkish, in nodding 3–8-fld. clusters: fr. black. Eu., Asia. Var. **laxiflòra** (*C. laxiflora*) has larger lvs. and many-fld. clusters.

Meỳeri: see *C. racemiflora.*

microphýlla. To 3 ft., evergreen, the branches spreading: lvs. to ⅓ in. long, dark and shining above, gray-pubescent beneath: fls. white, usually solitary: fr. bright red. Himalayas. Var. **cochleàta** is prostrate, with lvs. somewhat spoon-shaped. Var. **glaciàlis** is *C. congesta.* Var. **mìnor** is listed. Var. **thymifòlia** (*C. thymifolia*) has narrower lvs. and 2–4-fld. clusters.

moupinénsis. To 15 ft., deciduous: lvs. to 4 in. long, pale and pubescent beneath, the veins conspicuous: fls. pinkish, in many-fld. clusters: fr. black. China; needs protection N.

multiflòra (*C. reflexa*). To 6 ft., deciduous: lvs. to 2 in. long, becoming glabrous: fls. white, in many-fld. loose clusters: fr. red. Asia. Var. **calocárpa** has larger lvs. and fr.

nìgra: *C. melanocarpa.*

nìtens. To 4 ft., deciduous, the branches spreading: lvs. to ¾ in. long, dark green and shining above, becoming glabrous beneath: fls. pink, in 3-fld. clusters: fr. purplish-black. China.

nummulària: *C. racemiflora.*

obscùra. Deciduous, to 10 ft.: lvs. elliptic to obovate or somewhat rhombic, to 2 in. long, gray underneath: fls. pinkish, in short clusters of 3–7: fr. somewhat pyriform, dark red. China.

pannòsa. To 10 ft., semi-evergreen, the branches arching: lvs. to 1 in. long, white-tomentose beneath: fls. white, in 6–20-fld. clusters: fr. red. China; not hardy N.; common in Calif. Var. **nàna** is listed as a dwarf form.

Párneyi. Similar to *C. Harroviana* but with larger lvs. and fewer larger red berries.

prǽcox: *C. adpressa* var.

procúmbens: listed name.

prostràta: *C. rotundifolia.*

Pyracántha: *Pyracantha coccinea.*

pyrenàica: *C. integerrima,* but the plant in cult. under this name may be *C. congesta.*

racemiflòra (*C. nummularia*). To 8 ft., deciduous: lvs. to 1¼ in. long, gray-tomentose beneath, apex mucronate: fls. white, in 3–12-fld. clusters: fr. red. S. Eu., N. Afr., Asia. Var. **microcárpa** has glabrescent lvs. to ⅝ in. long. Var. **nummulària** (var. *Meyeri*), lvs. broader and obtuse. Var. **Royleàna** (var. *orbicularis*) is a low form with broad lvs. Var. **soongòrica** has less pubescent lvs. Var. **Veìtchii** has lvs. acute at ends, usually elliptic.

refléxa: *C. multiflora.*

rèpens: listed name.

rhytidophýlla. Evergreen: lvs. to 3 in. long, wrinkled above, white- or yellow-tomentose beneath: fls. white, in dense corymbs 1 in. across: fr. orange-red. China; not hardy N.

Rogersiàna: *Pyracantha crenulata* var.

ròsea. To 6 ft., deciduous: lvs. to 2 in. long, grayish-green beneath: fls. pinkish, in 3–9-fld. clusters: fr. red. W. Asia.

rotundifòlia (*C. prostrata. C. microphylla* var. *Uva-ursi*). To 12 ft., evergreen, the branches arching: lvs. to ¾ in. long, dark and shining above, slightly hairy beneath: fls. white, in 1–3-fld. clusters: fr. red. Himalayas; probably not hardy N. Var. **lanàta** (*C. Wheeleri*), lvs. tomentose beneath.—Most of the material so listed is *C. disticha.*

rùbens. Deciduous or half evergreen, to 7 ft.: lvs. orbicular to broadly elliptic, to ⅝ in. long, obscurely mucronulate, glabrous above, densely reddish-tomentose beneath: fls. red, solitary, terminal, calyx villous. Yunnan.

salicifòlia. To 15 ft., evergreen or partially so: lvs. to 3 in. long, rugose, tomentose beneath: fls. white, in tomentose clusters to 2 in. across: fr. bright red. China. Var. **floccòsa** has lvs. shining above and var. **rugòsa** dull green above.

Schneìderi: probably synonymous with *C. Dielsiana* var. *elegans.*

serótina. Small tree, young shoots silky-pubescent: lvs. to 3 in. long, becoming glabrous: fls. in clusters to 3 in. across: fr. red. China.—Perhaps a form of *C. glaucophylla.*

Sìmonsii. To 10 ft., semi-evergreen: lvs. to 1¼ in. long, pubescent beneath: fls. white, in 2–4-fld. clusters: fr. bright red. Himalayas.

sinénsis: *C. lucida.*

soongòrica: *C. racemiflora* var.

ténuipes. Shrub to 6 ft.: lvs. deciduous, elliptic-ovate, acute or obtuse, to 1 in. long, brown-pubescent beneath: fls. solitary or in pairs: fr. ovoid, to ¼ in. through. W. Szechuan.

thymifòlia: *C. microphylla* var.

tomentòsa. To 10 ft., deciduous: lvs. to 2½ in. long, gray-tomentose beneath: fls. pinkish, in nodding 3–12-fld. clusters: fr. brick-red. S. E. Eu., W. Asia.

turbinàta. To 6 ft., semi-evergreen: lvs. to 1¾ in. long, silky-pubescent beneath: corymbs many-fld., white-tomentose: fr. bright red. China.

uniflòra. Differs from *C. integerrima* in its smaller lvs. which are glabrous at maturity and solitary fls. Altai.

vulgàris: *C. integerrima.*

Wheèleri: *C. rotundifolia* var. *lanata.*

Wílsonii. To 4 ft.: lvs. pale and pubescent below: fls. white, in panicled clusters. Japan.

Zàbelii. To 6 ft., deciduous: lvs. to 1¼ in. long, gray-tomentose beneath: fls. pinkish, in nodding 3–9-fld. clusters: fr. bright red. China. Var. **miniàta** is a smaller form.

COTTON: *Gossypium.* **Lavender-:** *Santolina Chamæcyparissus.* **-Weed:** *Diotis candidissima.* **Wild:** *Thurberia thespesioides.*

COTTONWOOD: *Populus.*

CÓTULA (*Leptinella*). *Compositæ.* Ann. and per. herbs, mostly of low stature and creeping or tufted, in the southern hemisphere but a few of them nat. elsewhere and one of them listed in this country as a rock-garden foliage subject: lvs. alternate, pinnatifid or rarely entire: heads small, peduncled, without rays; pappus lacking.

anthemoìdes. Ann. to 6 in., sts. pubescent, spreading and ascending: lvs. obovate, to ¾ in. long, pinnatifid, segms. apiculate: heads to ¼ in. across. Afr., India.

aùrea: *Matricaria aurea.*

barbàta. Ann., silky-hairy, cespitose: lvs. pinnate above middle, petioled, nearly all basal, in tufts, villous: heads about ⅓ in. across. S. Afr.

coronopifòlia. Brass-Buttons. Per. somewhat decumbent, sts. to 1 ft. long: lvs. linear-oblong, to 2½ in. long, glabrous, entire or toothed: heads bright yellow, to ⅜ in. across. Afr.; nat. in S. Calif.—Prefers moist or wet habitat along stream banks.

dioìca. Sts. to 1 ft. long, creeping, tips ascending: lvs. linear-obovate, serrate to pinnatifid, to 2 in. long: heads about ¼ in. diam., yellow. New Zeal.

squálida. Per. a few in. high, the branches creeping 12 in. or more, soft-hairy: lvs. narrow, to 2 in. long, deeply pinnatifid and fern-like, the segms. also cut: heads ⅓ in. or less diam. New Zeal.

COTYLEDON: seed-leaf; the primary leaf or leaves in the embryo; in some plants the cotyledon always remains in the seed-coats and under ground and in others (as common bean) it emerges on germination.

COTYLÈDON. *Crassulaceæ.* Succulents with simple basal or st.-lvs. and yellow, red or greenish, campanulate fls. in terminal cymes, characterized by tubular corolla that is much longer than the calyx; natives of the Old World, particularly S. Afr. and Medit. region, cult. in greenhouses or rock-gardens. Cult. as for Sedum and Sempervivum; see *Succulents.*

agavoìdes: *Echeveria agavoides.*

ausàna: *C. orbiculata.*

Bárbeyi. Plant nearly stemless, hoary-white: lvs. shovel-shaped, thick: fls. olive-green and red, 1 in. long. Abyssinia, Arabia.

cæspitòsa: *Echeveria cæspitosa.*

califórnica: *Echeveria cæspitosa.*

chrysántha: *Sedum chrysanthum.*

Coòperi: *Adromischus Cooperi.*

cymòsa: *Echeveria cymosa.*

decussàta (*C. Flanaganii*). Sts. leafy below: lvs. partially cylindrical, to 5 in. long, glaucous, thick: fls. red, 1 in. long, in many-fld. corymbs on peduncles to 1½ ft. long. S. Afr.

densiflòra: *Echeveria densiflora.*

élegans: *Echeveria Harmsii.*

farinòsa: *Echeveria farinosa.*

fimbriàta: *Sedum fimbriatum.*

Flánaganii: *C. decussata.*

gibbiflòra: *Echeveria gibbiflora.*

glaùca: listed name, of doubtful status, perhaps referable to *Echeveria glauca.*

Hóveyi: *Echeveria Hoveyi.*

lanceolàta: *Echeveria lanceolata.*

láxa: *Echeveria laxa.*

lùrida: *Echeveria lanceolata* var.

macrántha. Shrub to 2½ ft.: lvs. obovate, fleshy, margined with red: fls. red, greenish-yellow inside, ¾ in. long. S. Afr.

macrophýlla: listed name.

nevadénsis: *Echeveria nevadensis.*

nudicaùlis: *Echeveria densiflora.*

oolyphýlla: listed name.

orbiculàta (*C. ausana*). To 4 ft.: lvs. opposite, oblong to roundish, to 4 in. long, entire: fls. red, drooping. S. Afr. Vars. **compácta, màjor** and **mìnor** are listed.

oregàna: listed name.

ovífera: listed name, perhaps *Pachyphytum oviferum.*

Pachýphytum: *Pachyphytum bracteosum.*

papillàris. Sts. decumbent: lvs. ovoid-oblong, to 1 in. long, fleshy: fls. ½ in. long, in few-fld. cymes on peduncles 6 in. long. S. Afr.

papillòsa. To 4 in.: lvs. obovate-spatulate, to ⅔ in. long, fleshy, papillose: fls. pink, ⅙ in. long, in many-fld. cymes. Afghanistan.

paraguayénsis: *Graptopetalum paraguayense.*

parvifòlia: listed name.

Plattiàna: *Echeveria Plattiana.*

platyphýlla: see *Sedum sempervivoides.*

pulverulénta: *Echeveria pulverulenta.*

Púrpusii: *Echeveria Purpusii.*

rotundifòlia: var. of *C. orbiculata.*

secúnda: *Echeveria secunda.*

Semenòvii: *Sedum Semenovii.*

septentrionàlis: *Echeveria septentrionalis.*

simplicifòlia. To 6 in.: lvs. roundish, irregularly and coarsely toothed: fls. yellow, drooping. S. Eu.

spinòsa: *Sedum spinosum.*

teretifòlia. Sts. woody, to 8 in.: lvs. nearly cylindrical, to 5 in. long, hairy: fls. ½ in. or more long, in many-fld. corymbs on peduncles to 1½ ft. long. S. Afr.

Umbìlicus: *Umbilicus pendulinus.*

undulàta. To 3 ft., shrubby: lvs. opposite, obovate, 3–5 in. long, 2 in. wide, undulate on margins: fls. orange or red, drooping, 1 in. long. Probably S. Afr.

Van de Héydenii: listed name.

Wíckensii. Shrub to 7 ft.: lvs. obovate or oblanceolate, thick, almost flat, 2–3 in. long, ½–1 in. wide: fls. orange-red, nodding. S. Afr.

Wìghtii: listed name.

Wínkleri: *Sedum Winkleri.*

Wítchmannii: listed name.

COULTERIA: *Cæsalpinia spinosa.*

COURANTIA: *Echeveria.*

COUROUPÌTA. *Lecythidaceæ.* A trop. American genus of trees represented by about 9 species, planted in warm climates for shade or for the curiosity aroused by the large ball-like frs. borne on the trunk. One species is cult. **C. guianénsis.** Cannon-Ball Tree. Lvs. oblong-obovate to broadly lanceolate, to 8 in. long or more, alternate, acute, entire or obscurely serrate: fls. tinged yellow or red on outside, crimson-lilac within, about 4 in. across, borne in racemes to 3 ft. long which arise from the trunk and larger branches: fr. nearly globose, to 8 in. diam., reddish and hard on outside, pulpy and ill-smelling within.

COUTÀREA. *Rubiaceæ.* Trees and shrubs, native Mex. to S. Amer., bearing opposite simple stalked lvs., and large (2–4-in. long) white or yellowish funnelform-campanulate pedicillate fls. mostly in small cymes; stamens 5–8; style filiform: fr. an ovoid or obovoid caps.

hexándra. To 15 ft. or more: lvs. ovate to oval, to about 5 in. long, sharp-pointed, entire: fls. mostly in 3's, the corolla white or yellowish and tinged purple toward base. Mex. to Argentina.

COVER-CROP. A crop grown primarily for the covering and protecting of land, particularly in orchards, after the final tillage in summer until the following spring when tillage recurs. It may be a green crop not killed by the winter as crimson clover, or a one-season crop that is killed by frost but remains on the land till spring, as peas. The crop is turned under in spring and then acts as an amendment to the soil. Many kinds of plants may be employed as cover-crops; crimson clover, vetch, rape, wheat, winter oats, soybean, cowpeas, buckwheat, beggarweed, crotalaria, peas, barley, millet are some of them. In this sense the term cover-crop was first employed in 1892 (Cornell Bulletin 59), suggested by the author's observations of "cover" for game in Ireland.

COVILLEA: *Larrea.*

COWAGE: *Stizolobium pruritum.*

COWÀNIA. *Rosaceæ.* Evergreen shrubs or small trees of Mex. and S. W. U. S., with leathery sticky lvs., solitary fls., and achenes with long feathery tails; not showy, but sometimes planted in native or similar regions.

mexicàna (*Geum dryadoides*). Shrub to 7 ft., differing from *C. Stansburiana* in its brownish bark, lobes of lvs. entire and the calyx-tube campanulate. Mex.

Stansburiàna. Shrub to 12 ft., bark grayish: lvs. to ½ in. long, 3–5-parted into toothed lobes: fls. white or pale yellow, ¼ in. long; calyx-tube funnelform. Colo. to Mex.

COWBERRY: *Vaccinium Vitis-idæa.*

COW-HERB: *Saponaria Vaccaria.*

COWITCH: *Stizolobium pruritum.*

COWPEA: *Vigna sinensis.*

COW POISON: *Delphinium trolliifolium.*

COWSLIP: *Primula veris;* also *Caltha palustris, Mertensia virginica.* **American:** *Dodecatheon.* **Cape-:** *Lachenalia.*

COYAL: *Acrocomia.*

CRAB-APPLE: *Pyrus.*

CRACCA: *Tephrosia.*

CRÁMBE. *Cruciferæ.* Herbs, sometimes woody at base, usually with large basal lvs., ann., bien. and per., mostly in Eurasia, sometimes grown for ornament and one as an esculent: lvs. mostly thick or fleshy, glaucous, often very large, lobed, cut, lyrate or pinnatifid: fls. small but numerous, in panicles: fr. a 2-pointed indehiscent pod or silicle, the upper joint 1-seeded and globular.

cordifòlia. Stout striking per. to 7 ft.: radical lvs. cordate, to 2 ft. and more across, somewhat lobed and stout-dentate, long-stalked, more or less hispid-hairy: fls. ⅓ in. across, white, in great terminal leafless panicle. Caucasus.

hispánica. Hispid much branched ann. to 3 ft.: lvs. with oval to nearly orbicular terminal part and lobed or lyrate below, to 3 in. across, margins sinuate: fls. small, white, in long open racemes. Medit. region.

marítima. SEA-KALE (which see). Stout stocky per. to 3 ft., with fleshy large glaucous-blue foliage: radical lvs. to 2 ft. or more long and nearly as broad, notched and shallowly lobed, stout-stalked: fls. white, in panicles: fr. a pea-like body. Seacoasts, W. Eu. to Asia Minor.

CRANBERRY. The trailing swamp cranberry, *Vaccinium macrocarpon,* is cultivated extensively, particularly in Massachusetts, New Jersey and Wisconsin, in artificial or developed bogs. The small or European cranberry, native in the northern parts of America, is a distinct species, *Vaccinium Oxycoccus,* not cultivated here; the mountain cranberry, brought to market from the wild in the northern parts of America and Europe is still another Vaccinium, *V. Vitis-idæa.*

The American cranberry is grown in acid peat bogs, which may be flooded. The area is kept under water during winter, largely to protect the plants from winter injury by the heaving and thawing of the bogs. Flooding may also be employed at other intervals to drown insects, mitigate drought, and protect against frost and fires. Every good cranberry bog should have facilities for flooding. The ordinary practice is to choose a bog with a creek running through it, or through which a creek or ditch may be diverted. At the lower side of the bog flood-gates are provided, so that when the gates are shut the water backs up and covers the area. It is best that the bog be comparatively flat, so that the water will be of approximately equal depth over the whole area. At the shallowest places the water should stand about a foot above the plants. The water is usually let on the bog early in December and kept on until April or early May. No flooding is provided at other times unless there is some particular occasion therefor.

Before the vines are set all the wild and turfy growth should be taken off the bog. This is accomplished either by digging it off and removing it bodily, or by drowning it out by a years flooding. The latter method is generally considered to be the better. After the turfy growth is removed, the bog is smoothed and covered 2 or 3 inches deep with clean sand. The vines are then set, the lower ends of them being shoved through the sand into the richer earth with a dibble. Covering the bog with ½–1 inch of clean sand every three to five years is standard practice in well-kept fields. This resanding induces new rooting of the plants, increases yields, and helps to control insects.

Plants for setting are merely cuttings or branches of the vines 5–10 inches long. They are usually planted at distances of 12–18 inches each way, and the vines allowed to cover the entire ground as with a mat. In three years a good crop should be obtained if the weeds and wild growth are kept down.

Important varieties are the Early Black, Howes, Centennial and McFarlin.

Berries are harvested with special rakes or scoops. An average yield to the acre is about 20 barrels with exceptional yields of 100 barrels or more. The fruit is carefully sized and graded and marketed in half-barrel boxes. The growing of cranberries is a highly specialized enterprise requiring considerable capital investment and much attention to detail.

CRANBERRY-BUSH: *Viburnum Opulus* and *trilobum.*

CRANESBILL: *Geranium.*

CRANTZIA: *Alloplectus.*

CRAPE-MYRTLE: *Lagerstrœmia.*

CRASPÈDIA. *Compositæ.* Per. herbs with alternate or basal entire lvs. and small heads of disk-fls. crowded in dense compound involucral heads; pappus of plumose hairs; native in New Zeal., Australia and Tasmania, sometimes planted in Pacific region.

uniflòra. To 1½ ft., usually tomentose: lvs. mostly basal, oblong or spatulate, to 8 in. long: compound heads to 2 in. across, solitary and terminal.

CRASSINA: *Zinnia.*

CRASSOCEPHALUM: *Gynura.*

CRÁSSULA. *Crassulaceæ.* Herbs and subshrubs, usually succulent, mostly S. African, with opposite fleshy lvs. and white, rose or yellow fls. in cymes or clusters, the petals little if at all united, sepals, petals and stamens 5 or sometimes 4. Grown in greenhouses and windows and out-of-doors in warm regions; in Calif. and similar climates other species may be found in the collections of fanciers. For cult. see *Succulents.*

acutifòlia (*C. densifolia*). Subshrub or subherbaceous, erect or decumbent, to 1 ft., branched: lvs. closely placed, awl-shaped, ½ in. long, connate: fls. white, very small, in terminal cymes on long peduncles. S. Afr.

albiflòra. Subshrub with lvs. ovate or oblong, st. erect, simple, scabrous above. S. Afr.

Álstonii. To 4 in.: lvs. deeply imbricated, round, to ¾ in. across, grayish-green: fls. white, small, in peduncled cymes. S. Afr.

arboréscens. Shrub to 10 ft.: lvs. roundish-ovate, obtuse, to 2½ in. long, covered with a grayish waxy bloom, copiously and distinctly punctate: fls. rose-red. S. Afr.

Árcheri: listed name.

argéntea (*C. portulacea*). Shrub to 10 ft. with opposite branching or forking habit: lvs. oblong-spatulate, ovate or obovate, obtuse or subacute, to 1½ in. long, distinct at base, very thick, green and shining: fls. rosy-red. S. Afr.—Known sometimes under the erroneous names *Sedum dendroideum*, *S. arboreum* and *S. spectabile;* popular as a fleshy shrub in S. Calif. where it blooms freely; frequent as a pot-plant in the N. but seldom blooms.

argyrophýlla. Succulent subshrub to 8 in.: lvs. flattish, subrosulate, obovate-cuneate, obtuse, to 1 in. long: fls. whitish. S. Afr.

barbàta. Erect herb to 1½ ft.: radical lvs. cuneate, to 2 in. long, apex truncate and fringed with long white hairs: fls. in spike-like infl. S. Afr.

Bòlusii: *C. Cooperi.*

canariénse: listed name, perhaps *Æonium canariense.*

canéscens: *C. cephalophora.*

cardiflòra: listed name.

cauléscens: listed name.

centauroìdes: plants listed under this name may be referable to *C. lineolata*, *C. marginalis*, or *C. pellucida.*

cephalóphora (*C. canescens*). Per. herb branched from the base, st. thick: lvs. canescent, obovate-cuneate, sometimes oblanceolate or sublinear, obtuse or subacute, 1–3 in. long: fls. in dense cymules, yellowish. S. Afr.

ciliàris: synonym of *C. dejecta* but plants in the trade probably are *C. obvallata.*

clavifòlia. Erect, shrubby: lvs. oblong-spatulate, obtuse, fleshy: fls. small, in terminal head-like cymes ⅛ in. across. S. Afr.

coccínea: *Rochea coccinea.*

Cóllinberi: listed name.

columbària: listed name.

columnàris. To 4 in., the st. with closely imbricated orbicular obtuse fleshy lvs. to 1 in. across: fls. white, in terminal head-like cymes. S. Afr.

Cómptonii: listed name.

congésta (*C. laticephala. C. pachyphylla*). To 2 in.: lvs. loosely imbricated, ovate-lanceolate, 1¼ in. long, strongly deflexed: fls. white spotted with red-brown at tip, in dense heads 1 in. across. S. Afr.

Coòperi (*C. Bolusii*). Tufted, to 5 in. high: lvs. opposite, elliptic-lanceolate, acute, to 1 in. or less long, with black blotches: fls. very small, in little terminal clusters, calyx red, petals pale flesh-color. S. Afr.—See also *C. rupestris.*

corállina. To 2 in., with many short decumbent branches rooting at the lower nodes: lvs. closely crowded, ⅛–$\frac{3}{16}$ in. long, compressed-subglobose or ellipsoidal: fls. 5-parted. S. Afr.

cordàta. Shrubby, to 3 ft.: lvs. opposite, petiolate, cordate-kidney-shaped and obtuse, to 1 in. across, entire: fls. white or reddish, small, in peduncled cymes. S. Afr.—See *C. spathulata.*

cornùta. Sts. short, covered with imbricated thick glaucous lvs.: fls. dull white, very small, in panicled cymes on peduncles to 2½ in. high. S. Afr.

corymbulòsa. Succulent per. herb with lvs. subdistant, lanceolate or oblong, acute: fls. with petals recurved. S. Afr.

cultràta. To 3 ft., shrubby, sts. leafy: lvs. obovate-oblong, to 2½ in. long, curved, connate: fls. green, small, in panicles. S. Afr.

decéptrix. Sts. 2 in. long: lvs. deeply imbricated, ½ in. long and wide, 3-cornered, grayish-white: fls. white, in peduncled cymes. S. Afr.

decípiens: *C. tecta.*

dejécta: see *C. obvallata* for plants in trade.

deltoídea (*C. rhomboidea*). Subshrub with st. and branches fleshy: lvs. connate, grayish-puberulent, subrhomboid, keeled on back, channelled above: fls. small, with petals ⅛ in. or less long. S. Afr.

densifòlia: *C. acutifolia.*

dentàta (*C. minima*). Weak herb, st. 3–6 in. long: lvs. kidney-shaped to round, ½–1 in. wide: fls. in cymes. S. Afr.

doméstica: listed name, perhaps *Aichryson domesticum.*

Dregeàna. Sts. weak and branching: lvs. ovate-oblong, ⅓ in. long, connate: fls. whitish, small, in few-fld. head-like sessile cymes. S. Afr.

elàta. White-pubescent, to 2 ft.: lvs. opposite, oblong to nearly lanceolate, to 1½ in. long, somewhat acute: fls. small, white or whitish, in small dense sessile clusters. S. Afr. Var. **ròsea** is listed.

falcàta (*Rochea falcata*). Shrub to 8 ft.: lvs. oblong, falcate, nearly or quite obtuse, to 4 in. long, joined at base, glaucous: fls. bright crimson, rarely white. S. Afr.

gigantèa: see *C. perfoliata.*

grácilis: *C. Schmidtii.*

grándis: hort. name.

hemisphǽrica. Lvs. closely imbricated, roundish, connate: fls. white, small, in spicate panicles. S. Afr.

heterótricha: *C. perfoliata.*

Hoffmeyeriàna: listed name.

impréssa: *C. Schmidtii.*

Jústus-Corderòyi: plants in the trade under this name are referable to *C. namaquensis.*

láctea. Shrubby, to 2 ft.: lvs. connate, narrow-obovate, to 3 in. long, more or less acute or acuminate: fls. white. S. Afr.—Belongs in group with *C. argentea* and *C. arborescens.*

laticéphala: *C. congesta.*

lineolàta. Prostrate per. with branches ascending, to 4 in.: lvs. sessile, connate, pilose at base, to ½ in. long: fls. white or reddish-tinged. S. Afr.

longifòlia: see *C. perfoliata.*

lycopodioìdes. Sts. 1–2 ft. long, lopping or spreading, lycopodium-like, with slender brittle branches covered with appressed scale-like lvs. in 4 ranks: fls. minute, greenish, 1 or few in axils. S. Afr.

marginàlis. Prostrate per. with branches rooting at nodes: lvs. sessile, glabrous, with a row of spots along the margin, ½–¾ in. long: fls. white or reddish-tinged. S. Afr.

marginàta: *C. pellucida.*

mínima: *C. dentata.*

montícola: *C. rupestris.*

multicaùlis: listed name.

multicàva (*C. quadrifida*). Low herb: lvs. oval, to 3 in. long, the bases of petioles joining: fls. white to pale pink. S. Afr.—Frequent in S. Calif. and in conservatories.

namaquénsis. Densely tufted: lvs. partially cylindrical, 1 in. long, densely covered with short thick papillæ: fls. small, pink, in loose panicles on dark red peduncles having whitish hairs. S. Afr. Var. **brevifòlia** is dwarf, with lvs. ⅜ in. long.

nudicaùlis. To 2 ft., sts. densely leafy: lvs. partially cylindrical, to 6 in. long: fls. greenish, small, in dense cymes in panicles on scape-like peduncles. S. Afr.

obovàta: probably a variation of *C. ramuliflora.*

obvallàta. St. to 6 in. long, leafy, simple: lvs. lance-oblong or knife-shaped, obtuse or nearly so, to 2½ in. long, glabrous, ciliate: peduncle scape-like, bearing a panicle of small green fls. S. Afr.—Said to be sometimes grown improperly as *C. dejecta.*

orbiculàris. Per. succulent herb with runners: lvs. rosulate: petals curved outward below the middle, white at base, reddish towards apex. S. Afr.

pachyphýlla: *C. congesta.*

pèbra: listed name.

Péglerae. Per. herb with shoots erect to 6 in.: lvs. ovate or ovate-lanceolate, with thick papillæ on margins: calyx-lobes subglabrous, nearly ⅔ length of petals. S. Afr.

pellùcida (*C. marginata*). Per. succulent herb: lvs. sessile or subsessile, quite glabrous, without spots: petals about ¼ in. long. S. Afr.

perfoliàta (*C. heterotricha*). Like *C. falcata* but lvs. longer, lanceolate and acuminate, to 6 in. long, concave above: fls. crimson or white. S. Afr.—Said to be grown as *C. gigantea* and *C. longifolia.*

perforàta. To 2 ft., shrubby: lvs. ovate, joined at base, to 1 in. long, punctate: fls. in thyrsi forming panicles to 1 ft. long. S. Afr.

perfóssa: *C. rupestris;* name also has been applied to *C. cordata.*

portulàcea: *C. argentea.*

psenolòly: listed name.

pseudolycopodioìdes. Similar to *C. lycopodioides* but with thicker stronger sts., more obtuse gray-green lvs. and numerous axillary fl.-clusters. A species of doubtful status.

pulverulénta: listed name.

pulvinàta: listed name.

punctàta: this name has been applied variously to *C. arborescens*, *C. ramuliflora* and *C. rupestris.*

purpuráscens: see *Æonium arboreum.*

pyramidàlis. Branched per. herb to 8 in.: lvs. triangular-ovate, subacute, in pairs close together and forming a dense column or pyramid: fls. whitish. S. Afr.

quadrífida: *C. multicava.*

radìcans. Subshrubby, decumbent or with branches ascending to 1 ft.: lvs. flattish, glabrous or almost so: fls. white, in dense cymules. S. Afr.

ramulifiòra (*C. obovata*). Erect per. herb: lvs. with marginal papillæ, ovate, oblong or obovate, acute or obtuse, fls. whitish or reddish, with sepals rough-edged. S. Afr.

reversisetòsa. Per. herb, decumbent or weakly ascending to ¾ in.: sts. and margins of lvs. and sepals retrorsely papillose: lvs. roundish: fls. white. S. Afr.

rhomboídea: *C. deltoidea.*

rosulàris. Herbaceous, with radical lvs. in a rosette, oblong-lanceolate to strap-shaped, to 5 in. or more long, acute, flat, ciliate: fls. small, white, in branching panicle. S. Afr.

rubicúnda. Erect per. herb to 2 ft.: lvs. lanceolate, diminishing in size from below upwards: fls. deep red with sepals ciliate. S. Afr.—See note under *C. Schmidtii.*

rupéstris (*C. monticola. C. perfossa*). To 1 ft. or more, glabrous: lvs. connate, ovate-acute, to ¾ in. long, glaucous: fls. small, pinkish, in short-peduncled terminal clusters. S. Afr.—Said to be grown sometimes under the name *C. Cooperi.*

sarcocaùlis. Subdichotomously branched subshrub with fleshy sts.: lvs. lanceolate, acute: fls. white or pink. S. Afr.

sarmentòsa. Per. weak-stemmed herb with lvs. flat, ovate, acute, and with margin rather coarsely crenate-serrate: petals white or tinged with red. Natal.

Schmídtii (*C. impressa. C. gracilis*). Dwarf, to 6 in.: lvs. opposite, linear-lanceolate, thick, convex on back, to 1¾ in. long, acute, punctate above, ciliate: fls. small, rose-colored, in little terminal clusters. S. Afr.—Much like *C. Cooperi.* Sometimes erroneously grown as *C. rubicunda* or as *Sedum perfossum.*

Schoenlándia: listed name.

spathulàta. Shrubby, with trailing sts.: lvs. broadly cordate, wavy-margined, petioled: fls. pink. S. Afr.—Sometimes erroneously called *C. cordata.*

técta (*C. decipiens*). Much branched: lvs. partially cylindrical, thick, covered with white papillæ: fls. in head-like clusters. S. Afr.

tères. Dwarf herb with lvs. very fleshy and with a hyaline margin, forming a short subcylindrical column: fls. white. S. Afr.

tetragòna. Shrub to 2 ft.: lvs. 3-sided, to 1 in. long, nearly joined at base: fls. white. S. Afr.

tomentòsa. To 2 ft., densely bristly-hairy: lvs. mostly basal, oblong or obovate, obtuse: fls. in dense clusters forming a long interrupted spike. S. Afr.

trachysántha. To 1½ ft., erect or spreading, densely hairy: lvs. awl-shaped, partially cylindrical, to ¾ in. long: fls. in flat-topped peduncled cymes; petals tipped with fleshy gland. S. Afr.

túrrita. Succulent per. herb with lvs. opposite, in 4 ranks, gradually reduced in size upwards, ciliate: fls. white or rarely pink, in sessile cymules. S. Afr.

CRASSULÀCEÆ. Orpine Family. Succulent herbs or pliable shrubs of about 25 widely distributed genera in temp. and trop. regions of both hemispheres, characterized by bisexual regular fls. having 4–5 sepals and petals which are free or united, 4–10 stamens and superior ovary of 4–5 carpels free or united below. Several genera are grown in the greenhouse or rock-garden or regularly in the open, as Æonium, Aichryson, Cotyledon, Crassula, Echeveria, Graptopetalum, Greenovia, Kalanchoë, Lenophyllum, Monanthes, Pachyphytum, Rochea, Sedum, Sempervivum, Sinocrassula, Umbilicus, Urbinia, Villadia.

CRATÆGOMÉSPILUS. Haw-Medlar. *Rosaceæ.* A group of hybrids between the genera Cratægus and Mespilus, of which a few forms are known; deciduous shrubs or small trees.

grandiflòra (*Cratægus grandiflora*). Hybrid between *C. Oxyacantha* and *M. germanica:* shrub or tree: lvs. to 3 in. long, toothed, pubescent beneath: fls. white, 1 in. across, 1–3 together, May–June: fr. about ½ in. diam., nearly globose, pubescent. Old plant of European origin. Hardy N.

CRATÆGUS. Hawthorn. Thornapple. *Rosaceæ.* Spiny deciduous shrubs or small trees, often horizontally branched, with alternate toothed or lobed lvs., white or rarely red fls. in corymbs in spring and early summer, and fr. a small pome with 5 or fewer 1-seeded nutlets; native in north temp. zone. The species of hawthorn are numerous and most of them are desirable ornamental subjects. In this account only those kinds are included that are most planted or are in trade-lists. The native American species should have greater attention from planters. Nearly all of them are hardy N. The English hawthorn, considerably planted in this country, is two species, *C. monogyna* and *C. Oxyacantha.*

Hawthorns are very ornamental and any of them are likely to be transplanted from the wild. They are attractive in habit, in bloom and in fruit. They prefer sunny locations and limestone or rich loamy soils. Propagated by seeds sown when ripe or stratified; the seeds should be separated from the pulp by allowing the fruit to decay or by soaking the fruit in water. Seeds will take two years or more to germinate, and should be sown in flats and kept in a cool cellar. Rare sorts may be budded or grafted on stock of *C. Oxyacantha* or other species.

apiifòlia: material so listed is *C. Marshallii.*

áprica. Shrub or tree to 20 ft., spines to 1½ in. long: lvs. usually broadly ovate, to 1½ in. long, serrate above middle or slightly lobed, petioles short and densely glandular: fls. ⅝ in. across: fr. orange-red, to ½ in. across. Va. to Ga. and Tenn.

arkansàna. To 20 ft., spines to ½ in. long or wanting: lvs. to 3 in. long, with shallow lobes: fls. 1 in. across: fr. bright red, to 1 in. long. Ark.

Arnoldiàna. To 20 ft., spines to 3 in. long: lvs. to 3 in. long, shallowly lobed, shining above: fls. to ¾ in. across: fr. bright red, ¾ in. long. Mass. to N. Y.

Azaròlus. Azarole. To 30 ft., spines small or wanting: lvs. to 3 in. long, deeply 3–5-lobed, pubescent beneath: fls. ½ in. across: fr. orange-red or yellow, to ¾ in. long. S. Eu., N. Afr., W. Asia.

Barryàna. Shrub to 15 ft., with slender spines: lvs. broad-ovate, slightly lobed, double-serrate, glaucous below, to 3 in. long: fls. ¾ in. across, anthers purple: fr. crimson, pale-dotted. W. N. Y.

Calpodéndron (*C. tomentosa*). Pear or Sugar H. To 20 ft., spines to 1½ in. long or wanting: lvs. to 5 in. long, sometimes slightly lobed, pubescent beneath: fls. ½ in. across: fr. dull orange-red, ½ in. long. Ont. to Ga. and Kans.

Cánbyi. Shrub or tree to 20 ft., with thick spines: lvs. oblong-obovate, to 3 in. long, coarsely toothed: fr. dark red, ½ in. long. Pa., Del., Md.

Carrièrei: *C. Lavallei.*

cerrònis (*C. erythropoda*). To 15 ft., spines 1 in. long: lvs. 2 in. long, coarsely toothed: fls. ½ in. across: fr. black or brown. Colo., Wyo.

chippewaénsis. To 25 ft., spines to 1½ in. long: lvs. to 3 in. long, shallowly lobed: fls. ¾ in. across: fr. crimson, ¾ in. long. S. Ont.

chlorosárca. Small tree: lvs. triangular-ovate, to 3½ in. long, 3–5-lobed: fls. ½ in. across: fr. black, ½ in. across. Manchuria.

chrysocárpa. Small tree with twigs villous becoming glabrous: lvs. ovoid to rhombic, obtuse, lobes 7–9, sharply glandular-serrate, dark green above: fls. in compound corymbs with 10 reddish to yellow stamens: fr. golden-yellow. Colo. Var. **phœnícea** (*C. rotundifolia*) has lvs. broad-ovate to obovate and margins doubly serrate: fr. red with yellow flesh. N. S. west, south to Va.

coccínea: *C. intricata.*

coccinioìdes. Tree to 20 ft., thorny: lvs. broad-ovate, glabrous, shallowly lobed, wavy: fls. ½–⅝ in. across: fr. subglobose and angular, bright crimson. Ill. westward.—Some of the material so listed may be *C. Putnamiana.*

coloradénsis. To 15 ft., spines to 2 in. long: lvs. to 2 in. long, toothed: fls. about ½ in. across: fr. scarlet, about ½ in. long. Colo.

coloràta: *C. macrosperma.*

cordàta: *C. Phænopyrum.*

crenulàta: *Pyracantha crenulata.*

Crús-gálli. Cockspur Thorn. To 25 ft. or more, spines several in. long: lvs. to 3 in. long, toothed: fls. ½ in. across: fr. dull red, ½ in. long. Que. to N. C. and Mich. Var. **spléndens,** lvs. elliptic-oblanceolate and glossy.

cuneàta. Shrub to 5 ft., spines about ¼ in. long, slender: lvs. obovate to oblong, short-petioled, irregularly toothed: fls. about ½ in. across, in few-fld. corymbs: fr. small, globose to pyriform. Japan, China.

diffùsa. To 30 ft., spines to 1½ in. long: lvs. to 2 in. long, shallowly lobed, pale beneath: fls. ½ in. across: fr. dull red, about ½ in. long. N. H. to N. Y.

Doúglasii. To 30 ft., spines to 1 in. long: lvs. to 3 in. long, toothed, shining above: fls. ½ in. across: fr. black, shining, ½ in. long. B. C. to Calif. and Minn.

dsungárica. Spines to ¾ in. long: lvs. to 3 in. long, 3–5-lobed: fls. ½ in. across: fr. black, shining, ½ in. long. N. Asia.

Dúnbari. To 12 ft., spiny: lvs. nearly orbicular, slightly lobed: fls. ½ in. across: fr. crimson, ½ in. across. W. N. Y.

Èganii: *C. macrosperma.*

Ellwangeriàna. To 20 ft., spines to 2 in. long: lvs. to 4 in. long, shallowly lobed: fls. 1 in. across: fr. bright red, shining, 1 in. long. Ont. to Pa. and Mich.

erythrópoda: *C. cerronis.*

flabellàta: material so listed in trade is referable to *C. Grayana.*

flàva. To 20 ft., spines about 1 in. long: lvs. 2 in. long, coarsely toothed: fls. ¾ in. across: fr. dark orange-brown, ½ in. long. Ga., Fla.

florentina: *Malus florentina.*

Fontanesiàna. Closely resembling *C. Crus-galli* but with thinner lvs. and brick-red frs. Pa.

formòsa. To 10 ft., spines to 1¼ in. long: lvs. to 2 in. long, doubly toothed, pale below: fls. 1 in. across: fr. bright red, ½ in. long. N. Y.

geneseénsis. Tree to 12 ft., spiny: lvs. obovate-oblong, prominently veined: fls. in many-fld. lax corymbs: fr. scarlet, ½ in. across. N. Y.—Allied to *C. Crus-galli.*

glàbra: *Photinia serrulata.*

grandiflòra: *Cratægomespilus grandiflora.*

Grayàna (*C. flabellata*). Shrub to 18 ft., spines to 4 in. long: lvs. ovate, to 3 in. long, toothed and lobed: fls. ½ in. across: fr. crimson, subglobose, dark, ⅓ in. across. Que. to N. Y. and Ill.

Heldreìchii. Lvs. to 1 in. long, with nearly entire lobes, pubescent beneath: fr. red. Greece.

hupehénsis. To 18 ft., spines to ⅝ in. long: lvs. ovate, to 4 in. long, petiole long and glabrous: fls. to ½ in. across, in many-fld. compact corymbs: fr. dark red, to 1 in. across, globose. W. China.

intricàta (*C. coccinea*). To 10 ft., spines few: lvs. to 3 in. long, shallowly lobed: fls. 1 in. across: fr. reddish-brown. Mass. to N. C.

iracúnda. Shrub or tree to 25 ft.: lvs. ovate, to 2½ in. long, toothed: fls. ½ in. across: fr. red, ⅓ in. across. Ga.

Lalándii: the plant advertised under this name is undoubtedly *Pyracantha coccinea* var. *Lalandii.*

Làneyi. To 10 ft., spines to 2 in. long: lvs. to 3 in. long, doubly toothed: fls. 1 in. across: fr. dark orange-red, shining. N. Y.

Lavállei (*C. Carrierei*). Hybrid probably between *C. Crus-galli* and *C. pubescens:* to 20 ft., spines 2 in. long: lvs. to 4 in. long, toothed, pubescent beneath: fls. with red disk, ¾ in. across: fr. brick-red, ½ in. long.

macracántha. Shrub to 15 ft., spines to 5 in. long: lvs. elliptic or obovate, to 3 in. long, toothed, shining above: fls. ½ in. across: fr. dark red, shining, ⅓ in. across. Vt., N. Y., Pa.

macrántha: listed name, possibly an error for *C. macracantha.*

macrospérma (*C. colorata. C. Eganii*). Shrub or small tree to 25 ft., spines to 1½ in. long: lvs. ovate, to 4 in. long, somewhat lobed, doubly serrate: fls. to ⅝ in. across, in few-fld. glabrous corymbs: fr. to nearly ¾ in. across. N. Y. to Ga. and Tenn.

Márshallii (*C. apiifolia*). To 20 ft., spines about 1 in. long: lvs. to 1½ in. long, pinnately 5–7-lobed: fls. ½ in. across: fr. scarlet, about ¼ in. long. Va. to Fla. and Tex.

Másekii: trade name for a plant with double rose-pink fls.

mexicàna: *C. pubescens.*

móllis. To 30 ft., spines to 2 in. long: lvs. to 4 in. long, doubly toothed, pubescent beneath: fls. with red disk, 1 in. across: fr. scarlet, to 1 in. long. Ohio to S. D. and Kans.

monógyna. ENGLISH H. To 30 ft., spines to 1 in. long: lvs. to 2 in. long, deeply 3–7-lobed and margins nearly or quite entire: fls. ½ in. across; style prevailingly 1: fr. bright red, ½ in. long, with 1 stone or seed. Eu., N. Afr., W. Asia.—Often confused with *C. Oxyacantha.* Var. **álba,** fls. white. Var. **péndula** has drooping branches. Var. **pteridifòlia** (*C. Oxyacantha* var. *filicifolia*), lvs. deeply lobed. Var. **ròsea,** fls. rose-pink. Var. **stricta,** habit fastigiate. Some of the vars. advertised under *C. monogyna* belong to *C. Oxyacantha.*

nítida. To 30 ft., spines to 1½ in. long: lvs. to 3 in. long, coarsely toothed, shining above: fls. ¾ in. across: fr. dull red, ½ in. long. Ill. to Ark.

Oxyacántha (*C. oxyacanthoides*). ENGLISH H. To 15 ft., spines 1 in. long: lvs. to 2 in. long, with 3–5 broad serrate lobes: fls. ½ in. across; styles prevailingly 2: fr. bright red, ½ in. long, with 2 stones. Eu., N. Afr. Var. **álba,** fls. white. Var. **coccínea,** fls. crimson. Var. **Paùlii** (var. *splendens*), fls. bright scarlet, double. Var. **plèna** (*C. monogyna* var. *albo-plena*), fls. white, double. Var. **punícea,** fls. dark red. Var. **ròsea,** fls. rose.

pedicellàta. Tree to 30 ft., spines to 2 in. long: lvs. broad-ovate, to 4 in. long, toothed: fls. ½ in. across: fr. bright scarlet, shining. Ont. to Pa.

pentándra. Tree to 15 ft., with many thorns: lvs. oval to ovate, to 2½ in. long, with many short sharp lobes: fls. to ¾ in. across, anthers red-purple: fr. short-oblong, dark crimson and shining. Vt., Conn., N. Y.

peregrìna. Tree: lvs. with 4–6 pairs of narrow lobes, pubescent beneath: fr. dull purple, about ½ in. long. Probably W. Asia.

persístens. Like *C. Crus-galli* and perhaps a hybrid, the stamens more numerous (15–20): tree to 12 ft. or more, thorny: lvs. oblong to obovate, to 3 in. long, serrate, glossy above and remaining green to winter: fls. ¾ in. across: fr. persistent.

Phænopỳrum (*C. cordata*). WASHINGTON THORN. To 30 ft., spines to 3 in. long: lvs. to 3 in. long, 3–5-lobed, shining above: fls. ½ in. across: fr. bright red, ¼ in. long. Va. to Ala.

pinnatífida. To 20 ft., spines small or lacking: lvs. to 4 in. long, pinnately 5–9-lobed, dark and shining above: fls. ½ in. across: fr. red, ¾ in. long, edible. N. E. Asia. Var. **màjor** has larger lvs. and fr.

procèra. To 20 ft., spines 1 in. long: lvs. to 2 in. long, doubly toothed: fls. to 1 in. across: fr. bright red, ½ in. across. N. Y.

pruinòsa. To 20 ft., spines to 1½ in. long: lvs. to 2 in. long, shallowly lobed: fls. 1 in. across: fr. dark purple, ½ in. long. Vt. to Va. and Ill.

prunifòlia. To 30 ft.: lvs. to 3 in. long, doubly toothed: fls. with pink anthers: fr. red. Origin unknown.

pubéscens (*C. mexicana*). To 30 ft., spines to 1½ in. long or wanting: lvs. to 3 in. long, finely toothed, pubescent beneath: fls. ¾ in. across: fr. greenish-yellow or orange, 1 in. long. Mex.

punctàta. To 30 ft., sometimes unarmed: lvs. to 4 in. long, toothed, pubescent beneath: fls. ½ in. across: fr. dull red, to ¾ in. long. Que. to Ga. and Ill. Var. **aùrea,** fr. yellow.

punícea: plants so listed are probably *C. Oxyacantha* var.

Putnamiàna (*C. coccinioides,* in part). Differs from true *C. coccinioides* in lvs. scabrous above and pubescent on veins beneath, margins sharply and unevenly serrate: fls. about ¾ in. diam.: fr. subglobose, rounded, bright red, about ⅝ in. diam. Ky. to S. Ind.

Pyracántha: *Pyracantha coccinea.*

rivulàris. To 20 ft., spines to 1½ in. long: lvs. to 3 in. long, doubly toothed, pale beneath: fls. ½ in. across: fr. dark red, becoming black and shining, to ½ in. long. Wyo., Colo., Utah.

rotundifòlia: *C. chrysocarpa* var. *phænicea.*

salígna. To 20 ft., spines to 1½ in. long: lvs. to 2 in. long, dark and shining above, pale beneath: fls. ½ in. across: fr. dark red and shining, ¼ in. long. Colo.

Sárgentii. To 20 ft., spines to 1½ in. long: lvs. to 3 in. long, shallowly lobed, pale beneath: fls. to 1 in. across: fr. yellow flushed with red, ½ in. long. Ga. to Ala.

spathulàta. To 25 ft., spines 1 in. long or wanting: lvs. to 2 in. long, often 3–5-lobed at apex: fls. ½ in. across: fr. bright red, shining, ⅛ in. across. Va. to Fla. and Tex.

stipulòsa. Tree: lvs. to 3 in. long, finely toothed, pale and pubescent beneath: fls. ½ in. across: fr. orange-red, to 1 in. long. Mex.

submóllis. Tree to 25 ft., spines to 3 in. long: lvs. ovate, to 3 in. long, doubly serrate, leathery: fls. white, to 1 in. across, stamens 10: fr. orange-red, pyriform. Que. to Mass. and E. N. Y.

succulénta. To 15 ft., spines to 2 in. long: lvs. to 3 in. long, coarsely toothed, shining above: fls. ½ in. across: fr. bright red, ½ in. across, pulpy. Que. to Ill.

tanacetifòlia. Shrub or small tree to 40 ft., branches mostly erect, tomentose when young: lvs. pinnatifid, to 2 in. long, villous-pubescent on both sides, lobes 5–7, glandular-serrate, veins to the points of the segms. and to the sinuses: fls. to 1 in. across, usually in corymbs of 5–8: fr. yellow or reddish, to 1 in. across. W. Asia.

tomentòsa: botanically rejected as an ambiguous name and the next valid name is *C. Calpodendron* which see.

venústa. Shrubby tree to 25 ft., spines branched, to 6 in. long: lvs. mostly ovate, to 2½ in. long, glabrous, dull green above, paler beneath, acute, base rounded, lobed, serrate: fls. to 1 in. across, in 4–9-fld. corymbs: fr. dull red or reddish-brown, to ¾ in. diam. Ala.

víridis. Tree to 40 ft., spines to 1½ in. long: lvs. oblong-ovate to elliptic-lanceolate, to 2½ in. long, glossy above, base cuneate, margins serrate: fls. to nearly ½ in. across, in many-fld. corymbs: fr. red, about ¼ in. across, spherical. Md. to Fla. west to Iowa and Tex.

Wattiàna. Small tree to about 20 ft., branches reddish-brown, glossy, few-spined or spineless: lvs. ovate, glabrous, glossy, to 3½ in. long, acute, base truncate to broadly cuneate, lobes serrate: infl. to 3½ in. across, fls. white, stamens whitish: fr. orange- or reddish-yellow, to ⅝ in. across. N. China west to Beluchistan.

yunnanénsis: plants cult. under this name are presumably *Pyracantha Gibbsii* var. *yunnanensis.*

CRATÓXYLON. *Hypericaceæ.* Trop. Asiatic trees or shrubs with entire papery lvs. and white or pink fls. in axillary or terminal cymes; allied to Hypericum and differing in caps. dehiscing loculicidally (midway between the partitions) and the seeds winged. One species may be cult. **C. polyánthum** (*Hypericum pulchellum*). Shrub, aromatic, branchlets compressed: lvs. elliptic-oblong, to 4 in. long but usually less, pellucid-punctate and black-dotted beneath: fls. pink, to ½ in. across, in 1–3-fld. axillary cymes: seeds 1-winged, about ¼ in. long. China to Borneo.

CRAWFÚRDIA. *Gentianaceæ.* Glabrous twining herbs native in Asia, having opposite 3-nerved lvs. and showy tubular fls. solitary in the axils; allied to Gentiana.

Blùmii: *C. trinervis.*

japónica. Climbing: lvs. cordate-lanceolate, to 3 in. long: fls. greenish-yellow, to 1¼ in. long: berry ellipsoid, red. Mts., Himalayas to Japan.—Yellow-fruited forms are known but may not be cult.

trinérvis (*C. Blumii*). Climbing to 5 ft.: lvs. ovate-lanceolate, 1½ in. long: fls. yellow striped with purple, 1½ in. long. Mts., Java, Sumatra.

CREAM-CUPS: *Platystemon californicus.*

CREEPER: a trailing plant or shoot that takes root mostly throughout its length; sometimes applied to a tight-clinging vine.

CREEPING CHARLEY: *Pilea nummulariæfolia.* **Charlie:** *Lysimachia Nummularia.* **Jennie:** *Lysimachia Nummularia.*

CREMNOPHILA: *Sedum nutans.*

CRENATE: shallowly round-toothed or obtusely toothed, scalloped.

CREOSOTE BUSH: *Larrea.*

CRÈPIS. Hawks-Beard. *Compositæ.* Herbs with pinnate toothed or lobed lvs. and solitary or panicled heads of yellow, orange or red ray-fls.; pappus of soft white hairs; native mostly in the northern hemisphere, a few grown in the flower-garden. Propagated by seeds.

aùrea. Per. to 1 ft.: lvs. black-pubescent, lower ones spatulate, toothed, glossy: fls. orange, heads usually solitary. Alps.

barbàta: *Tolpis barbata.*

Dioscorìdis. Ann., branching: basal lvs. obovate or oblong, toothed or lyrate, upper linear, entire: heads solitary, yellow. Greece.

grandiflòra. Per. to 1 ft.: lvs. linear-lanceolate, toothed, white-hairy: heads 2–5, golden-yellow, 2 in. across. Eu.

occidentàlis. Per. to 18 in., pubescent or scabrous: lvs. oblong-lanceolate, to 10 in. long, pinnatifid, acute, upper ones sessile and clasping: heads yellow, corymbose, to 1 in. across, involucre canescent. Mont. to B. C. south to Neb. and Calif.

rùbra (*Barkhousia rubra*). Branching ann. to 1½ ft.: lvs. toothed or lobed, nearly glabrous: heads solitary on long peduncles, red. Italy, Greece. Var. **álba** has white or flesh-colored fls. Var. **ròsea** has pink fls.

vìrens. Ann. to 1½ ft.: lvs. toothed or pinnate, glabrous: heads yellow, the outer florets tinged pink. Eu.

CRESCÉNTIA. *Bignoniaceæ.* Trop. American trees with simple usually clustered lvs., large tubular 5-lobed fls., and hard-shelled globose frs.; grown in the tropics for the fr. which is used for water-gourds, as well as for ornament.

Cujète. Calabash-Tree. To 40 ft., with long spreading branches and broad head: lvs. oblanceolate, to 6 in. long, nearly sessile: fls. yellowish-purple, 2 in. long, the lobes cut: fr. to 1 ft. or more across, like a hard-shelled gourd, nearly or quite globular, smooth. Trop. Amer.

CRESS. *Cruciferæ.* Several plants are known as cress, the piquant basal leaves used as salad, seasoning, or garnishing, but the usual kinds are of three very unlike genera and they should not be confused. See also *Cardamine.*

The usual or common garden cress is a pepper-grass, *Lepidium sativum.* It is a quick-growing hardy upright annual, native in western Asia but now sometimes escaped as a weed. Seeds may be sown in the open as soon as the ground can be made ready, usually in drills about 1 foot apart; leaves may be had in five to eight weeks, and new ones arise if the cutting is not too close. New sowings may be made every two or three weeks for succession, although the product is not so much prized in midsummer and the plants quickly run to seed in hot weather. In August sowings may be begun for autumn use in the North, while in mild regions plantings may be made at intervals during fall and winter. The curled variety is most prized for garnishing, like parsley. Cress thrives in any good garden soils, those retentive of moisture being preferable.

Upland-cress, sometimes called winter-cress, is a hardy biennial, *Barbarea verna* (*præcox*), native in Europe and sometimes run wild in this country. Seeds of it may be sown in very early spring in the open, and considerable tufts of leaves are formed by midsummer or a little later; if left in the ground, the plant persists the winter even in the northern states and in the spring goes to seed. A closely related plant is the common weedy yellow-rocket (*B. vulgaris*) that is conspicuous in spring in fields with its light yellow flowers. Upland-cress is a rather coarse plant, and is not largely grown.

Water-cress is a prostrate or trailing plant whose brittle soft shoots root in the water and mud. It is *Nasturtium officinale* of botanists, although it carries other Latin names, as *Roripa Nasturtium-aquaticum* and *Sisymbrium Nasturtium-aquaticum.* It is native in Europe and is extensively naturalized in other parts of the world. The plant thrives in ditches, pools and stream margins, but it can be grown readily in frames or other places where the ground can be kept wet. It is usually propagated by planting pieces of the stems, although it is readily grown from seeds. It is perennial and hardy everywhere, and takes care of itself when once established. It may be colonized in a clear clean pool or stream.

CRESS, BITTER-: *Cardamine.* **Blister-:** *Erysimum.* **Indian:** *Tropæolum.* **Mouse-ear:** *Arabidopsis.* **Penny-:** *Thlaspi.* **Rock-:** *Arabis.* **Stone-:** *Æthionema.* **Wart-:** *Coronopus.*

CRESTED: bearing elevated and irregular or toothed ridge or protuberances.

CRINKLE-BUSH: *Lomatia silaifolia.*

CRINODÉNDRON (*Tricuspidaria*). *Elæocarpaceæ.* Two Chilean trees with simple toothed alternate or opposite lvs., solitary axillary fls. and leathery capsular frs.; grown for ornament in S. Calif. and sometimes under glass.

depéndens (*C. Hookerianum*). To 30 ft.: lvs. obovate or elliptic, to 2½ in. long: fls. white, about ¾ in. long.

Hookeriànum: *C. dependens.*

Patágua (*T. lanceolata*). To 30 ft.: lvs. elliptic, to 5 in. long: fls. red, 1¼ in. long, urn-shaped, hanging.

CRINODÓNNA. Hybrids between Amaryllis and Crinum. **C. Córsii** was raised from seeds of *Amaryllis Belladonna* fertilized by *Crinum Moorei*, produced in Italy and probably not in cult. in N. Amer. but interesting as being an older name for the hybrid known here as Amarcrinum (which see): it is an evergreen autumn-blooming bulbous plant, the many attractive fls. rose-colored.

CRÌNUM. *Amaryllidaceæ.* Herbaceous plants from a large bulb, grown for the showy lily-like white, pink or red fls., native in trop. and warm-temp. regions in both hemispheres; mostly spring and summer bloomers, grown seldom indoors in the N. because they require much space but popular outdoors in the southernmost states, and two or three of them are hardy in protected ground as far north as N. Y. City. The fls. appear with the lvs. or after the foliage is well grown.

These plants are sometimes called "crinum lilies," although belonging to another family. They are of simple culture and usually remain without change for several years, often forming large clumps. Some of the species are evergreen, the leaves remaining all the year; in others the leaves perish in summer or autumn. The large showy flowers are borne in an umbel topping a strong solid scape or peduncle that arises at or near the ground. If taken up for the winter they are treated as dormant bulbs, or the evergreen species as semi-dormant in pots or boxes. In the early growing season they should have plenty of moisture and fertility. For the most part, crinums are merely planted out-of-doors in the South and allowed to remain.

Propagation is by the natural offsets from the bulbs. Sometimes the plants fruit, and seeds may then be employed although good flowering plants are not to be expected before two or three years.

The crinums bear a general resemblance to amaryllis and hippeastrum but are distinguished by the long slender flower-tube, which equals or exceeds the segments or "petals" of the flower.

amábile. Stout plant with rather small bulb with neck about 1 ft. long: lvs. many, 3–4 in. broad and 3–4 ft. long: fls. 20–30, powerfully fragrant, bright red outside and lighter within, tube 3–4 in. long, segms. nearly linear, ½ in. or so broad: scape 2–3 ft. high. Sumatra.

americànum. Southern Swamp Crinum. Scape 18–24 in., mostly preceding lvs. which are few and very narrow, bearing 2–6 white showy fls. with linear segms. Fla. to Tex.—Winter and spring.

asiáticum. Poison-Bulb. Lvs. many and broad, forming a big clump: fls. many, white with greenish tube, fragrant, the very narrow segms. drooping. Trop. Asia.—Frequent in Fla. and Gulf Coast region, Calif.

augústum. Sturdy plant with bulb sometimes 6 in. thick and neck 1 ft. long: lvs. many, 3–4 in. broad: fls. many on scape 2–3 ft. high, differing from *C. amabile* in broader lanceolate segms. and deeper wine-red color outside and milder fragrance. Mauritius, Seychelles.

campanulàtum. Lvs. linear, channelled, 3–4 ft.: fls. few, funnelform, light red, tube curved and 2 in. or less long, the bell-shaped limb of similar length and with connivent obtuse segms. S. Afr.

capénse: *C. longifolium.*

erubéscens. Lvs. many, thin, strap-shaped, slightly scabrous on edges: fls. a dozen or less, salverform, the erect tube 5–6 in. long, segms. half that length and recurving, white inside and purplish outside. Trop. Amer.

fimbriátulum. Lvs. rather narrow, 2–3 ft., ciliate on margins: fls. few, funnelform, greenish-white with red stripe in center of the broad segms., tube 4–5 in. long. Angola (Afr.).

fimbriàtum: catalogue name, probably an error for *C. fimbriatulum.*

floridànum: probably *C. americanum.*

gigantèum. Lvs. lanceolate, 3–4 in. broad at middle, 2–3 ft. long: fls. pure white, mostly 4–6, sometimes more, the slender curved tube to 7 in. long. Trop. Afr.

hýbridum: *C. asiaticum.*

Kírkii. Lvs. strap-shaped, 3–4 ft.: fls. a dozen or so, funnelform, tube somewhat curved and greenish and about 4 in. long, the segms. longer and keeled bright red. Zanzibar.

Kunthiànum. Lvs. star-shaped, 2–3 ft.: fls. few, salverform, with slender tube 5–8 in., segms. lanceolate and about 2½ in. long, white or purple. Trop. Amer.

longifòlium (*C. capense. Amaryllis longifolia*). Lvs. relatively narrow, usually less than 3 in. broad, rough to the finger and sometimes minutely denticulate on the edges: fls. a dozen or less, funnelform, white or pink, about 3 in. across, tube 3–4 in. long and curved, segms. of similar length and 1 in. or less broad. S. Afr. Vars. **álbum** and **ròseum** are listed.—Probably the commonest crinum in this country, hardy in parts of the N. and much planted S.

Moòrei. Larger plant than *C. longifolium* with much broader smooth-edged lvs.: fls. 4 in. or more across, funnelform, rose-red. S. Afr. Var. **álbum** has white and **ròseum** pink fls.

pedunculàtum. To 3 ft.: lvs. to 4 ft. long and 4 in. broad, glaucous, thick: fls. about 25, with green tube to 4 in. long and linear white segms. 2½ in. long. Australia.

podophýllum. To 1 ft.: lvs. oblanceolate, to 1 ft. long and 2 in. wide, usually 5–6: fls. white, the tube to 6 in. long, pedicels very short or absent. Trop. Afr.

Powèllii. An old hybrid between *C. longifolium* and *C. Moorei*, doubtfully in cult. in this country.

Sanderiànum. Lvs. thin, 2 ft. or less long, crisped and denticulate on edges: fls. few, funnelform, white with red keels, the curved tube 5–6 in. long, segms. less than 1 in. broad and 3–4 in. long and not spreading. Trop. Afr.

scàbrum. Lvs. narrow, 2 in. or less, with rough edges: fls. few, funnelform, white with crimson keels, the greenish curved tube 3–5 in. long and limb shorter. Trop. Afr.

virgínicum: a name for a hort. var.

zeylánicum. Lvs. broad, often 4 in., with slightly rough edges: fls. many, funnelform, fragrant, whitish with broad red keels, the curved tube 3–4 in. or more long, segms. 1 in. broad. Trop. Asia and Afr.

CRISTÀRIA. *Malvaceæ.* Herbs, often prostrate, native in Chile and Peru, with lobed or dissected lvs. and usually violet fls. solitary or in racemes; one species intro. in S. Calif.

glaucophýlla. To 2 ft. or more, glaucous: lvs. 3-lobed with middle lobe much larger than lateral ones, to 2¼ in. long, broadly toothed: fls. ¾ in. long, in panicles. Chile.

CRISTATE: crested.

CRÍTHMUM. *Umbelliferæ.* One species, native on seashores of Eu., is sparingly grown as a salad plant or for ornament. **C. marítimum.** Samphire. Per. 1–2 ft.: lvs. 2–3-ternate into linear fleshy glaucous segms. ½ in. long: fls. very small, white or yellowish, in compound umbels: fr. ovoid, ¼ in. long.—Does best in sandy or gravelly soil. Propagated by seed sown as soon as ripe, and by division of roots.

CROCÁNTHEMUM. *Cistaceæ.* About 25 species of shrubs or low suffrutescent herbs of the New World, confined mostly to N. and Cent. Amer. and by many authors formerly united with the Old World genus Helianthemum from which it differs in the fls. having short straight styles, and from the related genus Halimium in lvs. alternate and in the production of cleistogamous fls. For cult. see *Helianthemum.*

canadénse (*Helianthemum canadense*). Per. with rarely branched erect sts. to 20 in.: lvs. elliptic-lanceolate, to 1 in. long, densely pubescent beneath, margins revolute: fls. yellow, to 1 in. across, solitary. E. N. Amer.

rosmarinifòlium (*Helianthemum rosmarinifolium*). To 2 ft.: lvs. linear, to 1 in. long, white-tomentose below: fls. of two kinds, with and without petals, the former ½ in. across. S. C. to Fla. and Tex.

scopàrium (*Helianthemum scoparium*). Rush-Rose. Tufted subshrub to 1½ ft.: lvs. narrow-linear, to 1¼ in. long, soon falling: fls. yellow, ½ in. across. Calif. Var. **vulgàre**, sts. rush-like.

CROCÍDIUM. *Compositæ.* One small ann. native B. C. to Ida. and Calif., of the Arnica relationship. **C. multicaùle.** To 6 in.: lvs. in basal tuft, obovate or spatulate, to ½ in. long, woolly when young: heads solitary, golden-yellow, rays ⅙ in. long; pappus of bristles.

CROCÓSMIA. *Iridaceæ.* One African cormous herb, blooming in autumn, and grown like gladiolus. In the N. the corms should be set out after frost and stored over winter in peat or sphagnum. Propagated by offsets or seeds. **C. aùrea.** Coppertip. To 4 ft., the sts. branching and with few lvs.: fls. bright orange-yellow, to 2 in. long, in panicled spikes. See *Tritonia.*

CRÒCUS. *Iridaceæ.* Spring- and autumn-blooming cormous herbs with no evident st., basal grass-like lvs. and white, yellow or lilac fls., the expanded segms. raised above ground by the long slender perianth-tube.

Crocuses should be planted 3–4 inches deep in good well-drained soil. As new corms form on top of the old ones and so push the plants out of the soil, it is well to replant every few years. Propagated by offsets and seeds, the latter blooming in about three years. They are of simple culture and popular; most of them are hardy, but a winter mulch is desirable.

aèrius. Fls. lilac, segms. to 1 in. long, throat yellow, in winter. S. E. Eu.

Aìtchisonii: *C. speciosus* var.

astùricus. Fls. lilac, segms. 1½ in. long, in autumn. Spain.

aùreus: *C. mœsicus.*

Balánsæ. Fls. orange-yellow, segms. to 1¼ in. long, outer tinged brown on back, in spring. Smyrna.

biflòrus. Fls. tinged with purple, segms. 1½ in. long, the outer with 3 stripes of purple, throat tinged yellow, in spring. Italy to S. W. Asia. Var. **Ádamii,** fls. pale purple, outer segms. sometimes striped. Var. **argénteus** is more robust and fls. deeper purple. Var. **pusíllus** is a smaller-fld. form and var. **Wéldenii** has uniform slaty-purple segms.

Bòryi. Fls. white or tinged lilac, segms. to 1½ in. long, throat yellow, in autumn. Greece. Var. **marathoníseus** has less divided style-branches. Var. **Tournefórtii** has lilac fls.

byzantìnus (*C. iridiflorus*). Fls. purple, segms. to 2 in. long, the inner ones lilac or white, in autumn. S. E. Eu.

Cambessédesii. Fls. lilac to white, segms. to 1 in. long, outer buff lined with purple, in autumn. Majorca, Minorca.

cancellàtus. Fls. white or lilac, segms. to 1¾ in. long, throat yellow, in autumn. Asia Minor. Var. **álbus,** fls. white. Var. **cilícicus,** fls. lilac veined with purple.

cáspius. Fls. white, segms. to 1¼ in. long, throat yellow, in autumn. Near Caspian Sea.

chrysánthus. Fls. orange-yellow, segms. to 1¼ in. long, in winter. Asia Minor. Var. **fúsco-tínctus,** fls. tinged brown outside.

etrúscus. Fls. lilac or cream-colored, segms. to 1½ in. long, throat yellow, in winter. Italy.

Fleìscheri. Fls. white striped lilac, segms. to 1¼ in. long, throat yellow, in winter. Asia Minor.

hadriáticus. Fls. pure white, segms. 1½ in. long, throat white or purple, bearded, in autumn. Greece. Var. **chrysobelénicus** has yellow throat. Var. **Wílhelmii** has purple markings.

hyemàlis. Fls. white striped with purple, segms. 1½ in. long, throat yellow, in spring. Palestine.

Imperàti. Fls. lilac or white with 3 dark purple stripes on outside, segms. 1½ in. long, in very early spring. Italy. Var. **álbus** has white fls.

iridiflòrus: *C. byzantinus.*

Karduchòrum. Fls. lilac, segms. to 1¼ in. long, in autumn. S. W. Asia.

Korolkòwii. Fls. orange-yellow, segms. 1 in. long, in spring. S. E. Eu.

lævigàtus. Fls. white, segms. 1 in. long and outer striped lilac, in autumn. Greece. Var. **Fontenàyi** is tinted buff and later blooming.

longiflòrus. Fls. bright lilac, segms. 1½ in. long, throat yellow, slightly bearded, in autumn. S. Eu. Var. **meliténsis,** fls. veined yellow at base.

marathoníseus: *C. Boryi* var.

mèdius. Fls. bright lilac, segms. to 2 in. long, throat whitish, in autumn. S. France, Italy.

mínimus. Fls. violet, segms. to 1 in. long, outer buff lined with purple outside, in spring. Corsica, Sardinia.

mœ̀sicus (*C. aureus*). Fls. bright yellow, segms. 1½ in. long, in spring. S. E. Eu., Asia Minor.

nudiflòrus. Fls. lilac, segms. to 2 in. long. S. W. Eu.

obovàtus: a form of *C. vernus.*

ochroleùcus. Fls. pale cream tinged with orange, segms. 1½ in. long, throat orange, slightly bearded, in autumn. Asia Minor.

Ólivieri. Fls. orange-yellow, segms. to 1½ in. long, in spring. Greece to Asia Minor.

pulchéllus. Fls. bright lilac, indistinctly striped, segms. 1½ in. long, throat bright yellow, in autumn. Greece to Asia Minor.

purpùreus: *C. Sieberi* var.

Sálzmannii. Fls. lilac, segms. to 2 in. long, throat yellowish, bearded, in autumn. Morocco. Var. **erectophýllus,** fls. clear purple-lilac.

satìvus. Saffron C. Fls. lilac or white, segms. to 2 in. long, throat bearded, in autumn. Asia Minor. Var. **Pállasii** has a yellow throat. Var. **Cartwrightiànus** is striped. Var. **Élwesii** has lilac fls. somewhat veined with purple, stamens longer than scarlet pistil and perianth-segms. wide.

Sièberi. Fls. lilac, segms. 1½ in. long, throat yellow, in spring. Greece, Crete. Var. **purpùreus** has darker purple fls.

speciòsus. Fls. lilac tinged with purple, segms. 2 in. long, in autumn. S. E. Eu., Asia. Var. **Aìtchisonii** is larger and has pale bluish-lilac fls. Var. **álbus** has white fls. Var. **globòsus** has dark blue fls.

stellàris. Lvs. banded with white: fls. bright orange striped with brown on back, segms. to 1½ in. long, in spring. Hybrid.

susiànus. Cloth-of-Gold C. Fls. bright orange-yellow tinged with brown outside, segms. 1½ in. long, in spring. Crimea.

Taùri. Fls. pale purple, to 1¼ in. long, throat yellow, in spring. Asia Minor.

Tomasiniànus. Fls. pale reddish-blue, sometimes with dark spot at tip, segms. 1½ in. long, in spring. Dalmatia, Serbia.—Like *C. vernus,* but throat not bearded.

Toúrnefortii: *C. Boryi* var.

vérnus. Fls. lilac or white often striped with purple, segms. 1½ in. long, throat bearded, in spring. Eu. Var. **álbus,** fls. white.

versícolor. Fls. purple sometimes striped with darker purple, segms. 1½ in. long, throat whitish or yellowish, in spring. S. France. Var. **picturàtus** is listed as white outside with purple feathering.

vitellìnus. Fls. orange-yellow, segms. to 1 in. long and outer tinged brown, in winter. Asia Minor. Var. **gravèolens** has outer segms. tinged black.

zonàtus. Fls. rose-lilac veined with purple and spotted inside with orange, segms. 2 in. long, throat yellow, bearded, in autumn. Cilicia.

CROCUS, AUTUMN: *Colchicum.*

CROSNES DU JAPAN: *Stachys Sieboldii.*

CROSSÁNDRA. *Acanthaceæ.* Herbs and shrubs with opposite or whorled lvs. and white, yellow or red tubular fls. with split limb, borne in dense bracted spikes; native in tropics of Old World. Grown under glass or out-of-doors in warm countries and the tropics. Propagated by cuttings over heat.

infundibulifórmis (*C. undulæfolia*). Shrub to 3 ft.: lvs. ovate to lanceolate, to 5 in. long, somewhat wavy-margined: fls. scarlet-orange, ¾ in. long and 1 in. across, in an angled spike. India.

undulæfòlia: *C. infundibuliformis.*

CROSS-VINE: *Bignonia capreolata.*

CROSSWORT: *Crucianella.*

CROTALÀRIA. Rattle-Box. *Leguminosæ.* A very large genus of herbs and shrubs mostly native in trop. regions, a few grown as cover- or green-manure crops in the S. and sometimes for ornament under glass: lvs. simple or pinnate: fls. papilionaceous, usually in racemes: pods inflated. Propagated by seeds which should first be soaked in warm water, and the shrubby species by cuttings under glass.

agatiflòra. Shrub to 3 ft.: lvs. of 3 ovate lfts. to 2¾ in. long: fls. greenish-yellow with tip of keel brownish-purple, standard 1½ in. long, in terminal racemes to 14 in. long. E. Afr.

anagyroìdes. Shrub to 8 ft.: lvs. of 3 ovate or lanceolate lfts.: fls. yellow with darker lines, ¾ in. across: pods 1½ in. long. Trinidad, Venezuela.

argyræa. Shrub to 6 ft.: lvs. with lfts. to 1½ in. long, oblanceolate, fleshy, glaucous: fls. bright yellow, in lax elongated lateral racemes: pods ½ in. long, oblong. Trop. Afr.

cándicans. Shrub covered with silky brown hairs: lvs. ovate-oblong, acute: fls. yellow, 1 in. and more long: pods to 1¼ in. long. India.

capénsis. Shrub to 5 ft.: lvs. of 3 obovate obtuse lfts.: fls. bright yellow, 1 in. and more long. S. Afr.

júncea. Sunn Hemp. Shrub to 8 ft., branches slender, silky: lvs. simple, to 3 in. long, linear to oblong, brown-villous on each side: fls. bright yellow, in 12–20-fld. racemes to 1 ft. long: pods to 1¼ in. long, stellate-pubescent. India.

laburnifòlia. Low shrub: lvs. of 3 obovate-oblong acute lfts.: fls. bright yellow, 1 in. long: pods to 2 in. long. Trop. Asia.

lanceolàta. Herb to 3 ft.: lvs. of 3–5 narrow-lanceolate acute lfts.: fls. yellow veined with purple, ⅓ in. long: pods 1 in. or more long. S. Afr.

mucronàta (*C. striata*). Woody per. to 8 ft.: lvs. of 3 elliptical obtuse lfts.: fls. yellow striped with brown, ½ in. long: pods 1½ in. long. Tropics.—Much planted in Fla. for green-manuring.

retùsa. Ann. to 3 ft., pubescent: lvs. oblanceolate, obtuse: fls. yellow with variegated standard, to 1 in. long: pods to 1½ in. long. Asia; nat. in trop. Amer.

Rétzii: *C. spectabilis.*

serícea: *C. spectabilis.*

spectábilis (*C. Retzii. C. sericea*). Subshrub to 4 ft., branches stout: lvs. entire, oblanceolate, to 6 in. long, base cuneate, glabrous above, villous beneath: fls. purplish, in 20–40-fld. racemes to 1 ft. long, usually terminal: pods stalked, to 2 in. long. India.

striàta: *C. mucronata.*

CROTON: *Codiæum.*

CROWBERRY: *Empetrum.* **Broom:** *Corema Conradii.*

CROWFOOT: *Ranunculus.*

CROWN: corona; also, as a common-language word, that part of the stem at the surface of the ground; also a part of a rhizome with a large bud, suitable for use in propagation; sometimes used for head or top of a tree.

CROWN IMPERIAL: *Fritillaria imperialis.*

CROWN-OF-THORNS: *Euphorbia splendens.*

CRUCIANÉLLA. Crosswort. *Rubiaceæ.* Ann. and per. herbs from the Medit. region and W. Asia, with opposite or whorled lvs. and small tubular 4–5-lobed fls. having bracts at base; grown in rock-gardens where they thrive in partial shade. Propagated by division and by seeds.

angustifòlia. Ann. to 1½ ft.: lvs. all linear-subulate, in whorls of 4–6, margins recurved, very scabrous: fls. white, minute. Cent. Eu. and Medit. region.

herbàcea. Ann. to 1 ft. or more: lvs. ovate-oblong or upper linear: fls. in dense linear spikes to 2 in. long. Egypt.

latifòlia. Ann. to 1½ ft.: lower lvs. obovate to oblong, upper lvs. linear-lanceolate: fls. whitish, in slender linear spikes. Medit. region.

stylòsa. Prostrate ann. with sts. to 9 in.: lvs. lanceolate: fls. deep rose, in globose heads ½ in. across, the styles long-exserted. Persia. Var. **carmínea** is listed as a color form.

CRUCÍFERÆ. Mustard Family. A large natural assemblage of herbaceous plants, a few of them subshrubs, probably upwards of 1800 species, distributed mostly in temp. and cold regions. They are of various habit, but agree in general in the 4-sepalled and 4-petalled fls. and stamens commonly 6 of which 2 are shorter than the others, and in the characteristic dry pod (silique when elongated, silicle when short and broad): lvs. prevailingly alternate, entire, dissected or essentially compound: fls. white, yellow, orange, lilac, purple, mostly not large but abundant. The family abounds in peppery and piquant qualities. It yields useful plants to the flower-garden and the vegetable-garden, and many of the species are cosmopolitan weeds. Genera entered in this book are Æthionema, Alyssum, Anastatica, Arabidopsis, Arabis, Armoracia, Aubrieta, Barbarea, Berteroa, Biscutella, Brassica, Bunias, Cardamine, Caulanthus, Cheiranthus, Cochlearia, Coronopus, Cossonia, Crambe, Dentaria, Diplotaxis, Draba, Eruca, Erysimum, Farsetia, Goldbachia, Heliophila, Hesperis, Hutchinisia, Iberis, Ionopsidium, Isatis, Kernera, Lepidium, Lesquerella, Lobularia, Lunaria, Malcomia, Mathiola, Moricanda, Morisia, Nasturtium, Notothlaspi, Parrya, Peltaria, Petrocallis, Physaria, Raphanus, Ricotia, Schivereckia, Schizopetalon, Smelowskia, Stanleya, Stenodraba, Thelypodium, Thlaspi, Vesicaria.

CRUNOCALLIS: *Montia Chamissoi.*

CRUPÌNA. *Compositæ.* Ann. herbs with pinnately cut lvs. and long-stalked few-fld. purple heads of ray- and disk-fls.; pappus of bristles and scales; native from S. Eu. to W. Asia. Sometimes grown in flower-gardens.

vulgàris (*Centaurea Crupina*). To 2 ft.: lvs. cut into fine linear segms.: heads 3–5-fld., the fls. scarcely longer than the pale acuminate bracts of involucre. S. Eu.

CRÝÓPHYTUM. *Aizoaceæ.* One of the genera separated from the old genus Mesembryanthemum: ann. and bien., often prostrate: lvs. opposite or scattered or sometimes alternate at base of plant: fls. solitary, white, yellow, or red, the petals many and very narrow; stigmas usually 5. Several species, in S. Afr., Medit. region, S. W. Asia, Calif., one of them commonly grown. For cult. see *Mesembryanthemum.*

Aitònis (*M. Aitonis. M. angulatum. M. lanceolatum*). Decumbent: lvs. lanceolate, flat, somewhat obtuse, the peduncles and calyx with shining watery pustules: fls. white. S. Afr.

crystállinum (*M. crystallinum*). Ice-Plant. Ann., readily grown from seeds in warm sunny exposure, fleshy, sts. spreading and prostrate, plant covered with glistening watery pustules: early lvs. broad-ovate, to 6 in. long and 3 in. or more broad, eventually perishing: lvs. on flowering shoots much smaller: fls. small, whitish to rose. S. Afr., Medit. region, coasts of S. and Lower Calif.—Grown in window-gardens and elsewhere for the glistening herbage, and sometimes used as a pot-herb.

nodiflòrum (*M. nodiflorum*). Ann., somewhat crystalline: lvs. linear, nearly cylindric, to 1 in. long: fls. very small, white, axillary. S. Afr., Medit. region, S. W. Asia, S. Calif.

CRÝOSÓPHILA. *Palmaceæ.* Four species in Mex. and Cent. Amer., as at present understood, with which Acanthorrhiza is now combined: small or medium fan-lvd. palms with root-spines closely covering the trunk: fls. hermaphrodite: fr. small, globular to oblong, drupe-like. Probably none of the species is regularly planted in our area, but the following, from S. Mex., may be in lists under its various names: **C. nàna** (*Corypha nana, Copernicia nana, Chamærops Mocinii, Acanthorrhiza Mocinii* and *A. aculeata*).

CRYPTÁNTHA. *Boraginaceæ.* Ann. hispid herbs mostly in W. N. Amer., with alternate, simple and entire lvs. and inconspicuous white fls. in coiled spikes or racemes, the throat of corolla commonly closed by scales; rarely sown in the wild-garden in the regions where they grow.

barbígera (*Eritrichium barbigerum. Krynitzkia barbigera*). To 1 ft., covered with long whitish stiff hairs: lvs. broadly linear, to 1½ in. long: fls. ⅕ in. long, calyx-lobes to ⅓ in. long. Utah to Calif.—The plant cult. as *C. barbigera* may be *C. intermedia.*

intermèdia. To 1 ft., covered with spreading white hairs: lvs. lanceolate or linear, to 1 in. long: fls. ⅙ in. across, calyx-lobes 1/12 in. long. S. Calif.

CRYPTÁNTHUS. *Bromeliaceæ.* Epiphytic stoloniferous S. American herbs with flattened rosettes of stiff prickly-margined lvs. and white fls. borne in a little head amongst the foliage; grown as foliage plants under glass. Cult. as for *Bromeliaceæ*.

acaùlis (*C. undulatus. Tillandsia acaulis*). Lvs. to 6 in. long and 1½ in. wide, with wavy prickly margins, in shades of green, white-scurfy beneath; small foliage plant in many vars. Brazil. Var. **bromelioìdes** has a tall st. with elongated somewhat spinulose remotely undulate lvs.; var. **diversifòlius** has medium st., with strap-shaped lvs. deep green above and scurfy beneath; var. **genuìnus** is nearly stemless with lvs. strongly undulate, elliptic-lanceolate; var. **ròseus** has lvs. tinged rose-pink; var. **rùber** has a branching st. with lvs. short, reddish and undulate.

Beúckeri. Lvs. to 5 in. long and 2 in. wide, narrowed to a petiole about 2 in. long, brownish-green or rosy spotted or striped with light green. Brazil.

bivittàtus. Stemless or nearly so: lvs. strongly acuminate, arching, spiny, green above, brown beneath, with 2 reddish-brown longitudinal stripes above: fls. white. S. Amer.

ròseus: probably *C. acaulis* var.

terminàlis: listed name.

undulàtus: *C. acaulis.*

zonàtus. Lvs. to 9 in. long and 1½ in. wide, crinkly, with transverse bands of white, green or brown above, and white-scurfy beneath. Brazil. Var. **zebrìnus** is listed.

CRYPTOCÀRYA (*Bellota*). *Lauraceæ*. Trees and shrubs mostly of the southern hemisphere, with leathery lvs. and small bisexual fls. in panicles, and small dry fr. inclosed in the calyx; sometimes planted in S. Calif.

Mìersii. Tree to 50 ft.: lvs. opposite, oblong or oblong-ovate, entire, thin, glabrous, shining above, veins prominent beneath. Chile.

Peúmus: *C. rubra.*

rúbra (*C. Peumus*). Tree 50–60 ft.: lvs. nearly opposite or alternate, ovate, thick, glabrous, glaucous beneath. Chile.

CRYPTOCORỲNE. *Araceæ*. Aquatic Asian herbs with creeping stoloniferous rhizomes and monœcious fls. without perianth, the staminate on upper part of spadix and pistillate on lower portion, inclosed by spathe; rarely grown in aquaria.

Wìllisii. Lvs. to 6 in. long and 1 in. wide, wavy-margined, when young reddish-brown marked with greenish-black.

CRYPTOGRÁMMA. Rock-Brake. *Polypodiaceæ*. Small alpine and boreal ferns of both hemispheres, the fronds of two types, both compound, the segms. of the fertile ones pod-like due to the folding back of the edges over the fruit-dots; sometimes in rock-gardening and similar undertakings. See *Ferns*.

acrostichoìdes: *C. crispa* var.

críspa var. **acrostichoìdes.** American Parsley-Fern. Fronds clustered, many, on straw-colored stalks to 6 in. long, 2–3-pinnate, fertile with linear segms. Lake Huron and Lake Superior northward, southward in western mts.

dénsa: *Pellæa densa.*

Stélleri (*Pellæa gracilis*). Slender R. Differs from *C. crispa* var. *acrostichoides* in the creeping rootstocks, scattered foliage and fertile fronds with broader segms. N. N. Amer. and Asia.

CRYPTÓLEPIS. *Asclepiadaceæ*. Twining or erect shrubs in warm parts of Old World, one sometimes planted in Calif.: lvs. opposite: fls. in terminal or axillary umbel-like cymes or sometimes practically solitary; corolla tubular, with spreading limb, crown of 5 fleshy lobes: follicles smooth, mostly terete and spreading.

longiflòra. Erect, 3 ft.: lvs. willow-like, long-pointed, to 5 in. long, clustered toward top of st., often tinted red: fls. white, among the foliage or just above it, very slender, 1 in. or more long. Nativity in doubt.

CRYPTOMÈRIA. *Taxodiaceæ*. One Japanese evergreen tree of pyramidal habit, magnificent when mature and particularly when in avenues, the trunks and root-flanges being distinctive.

japónica. To 125 ft. or more: lvs. to 1 in. long, keeled on both sides, bluish-green: staminate fls. yellow, in short racemes: cones globose, to 1 in. across, having thick wedge-shaped scales with pointed processes at apex. Hardy at Washington and somewhat northward, in S. New England the foliage usually browning in winter but may recover following season; grown mostly in warmer climates. Some of the hort. vars. are: **araucarioìdes,** branchlets drooping, lvs. small, bright green; **compácta,** of compact habit; **cristàta** (var. *monstrosa*), branches coxcomb-like; **dacrydioìdes,** lvs. brownish, closely set; **élegans,** low tree with drooping branchlets and longer lvs.; **Lóbbii,** compact form with lighter green lvs.; **nàna,** dwarf, spreading or procumbent form; **púngens,** compact form with stiff sharp-pointed dark green lvs.; **spiràlis,** shrub with lvs. twisted spirally. Var. **Vilmoriniàna** is listed. Var. **Wóhlertii** is listed and is probably a form of var. *compacta*. A form from China is var. **sinénsis,** a tree of looser habit and longer lvs. For cult. see *Conifers*.

CRYPTOSTÈGIA. Rubber-Vine. *Asclepiadaceæ*. Three woody vines from trop. Afr. and Madagascar, with opposite large lvs. and large funnel-shaped fls. in terminal clusters, the calyx with many glands at base; follicles winged or angled; juice furnishes caoutchouc.

They are grown under glass in loamy soil, and in the open in warm countries as southern Florida. Propagated by cuttings over bottom heat.

grandiflòra. Lvs. oblong, to 4 in. long, thick and glossy: fls. purplish, about 2 in. across. Afr.; cult. in India.

madagascariénsis. Differs in its lvs. being pubescent below and the corolla-segms. of the pink or whitish fls. divided. Madagascar.

CRYPTOSTÉMMA. *Compositæ*. Tomentose herbs with toothed or pinnatifid lvs. and solitary fl.-heads, the ray-fls. yellow and disk darker; pappus scale-like. They may be grown in the flower-garden.

calendulàceum (*Arctotis calendulacea*). Ann. to 2 ft. or sometimes prostrate: lvs. pinnatifid: fl.-heads 1 in. or more across. S. Afr., Australia.

CTENÁNTHE. *Marantaceæ*. Brazilian per. herbs with basal and st.-lvs. and fls. borne under bracts in terminal spikes or racemes; greenhouse foliage plants requiring the same treatment as Calathea, and differing in technical botanical characters.

Kummeriàna. To 1½ ft., stoloniferous; lvs. 6 in. long and 2½ in. wide, green veined with white above, purple beneath.

Lubbersiàna (*Phrynium Lubbersii*). To 2 ft.: lvs. to 9 in. long and 2½ in. wide, green variegated with yellow above, pale green beneath.

Oppenheimiàna (*Calathea Oppenheimiana*). To 3 ft.: lvs. to 1½ ft. long and 5 in. wide, light green above, purple beneath. Var. **trícolor** has lvs. variegated purplish-red and yellow.

setòsa (*Phrynium setosum*). To 3 ft., stoloniferous: lvs. to 1½ ft. long and 4 in. wide, green.

CUBEB: *Piper Cubeba.*

CUCKOO-FLOWER: *Cardamine pratensis, Lychnis Flos-cuculi.*

CUCKOO-PINT: *Arum maculatum.*

CUCUMBER (*Cucumis sativus*). Fruit of an annual tendril-bearing vine, used for pickles in the young state or when small and also extensively eaten raw as a salad and in some countries from the hand without dressing. The cucumber is characteristically a warm-weather plant, being frost-tender and making rapid growth. An early crop requires a warm quick soil, with readily available fertility. The only particular difficulty in its culture out-of-doors is to control certain diseases and insects, and for the treatment of them the grower should have the latest issues of books and bulletins devoted to the subject. The striped beetle, which is most damaging when the plants are young, may be kept away in the home garden by covering the hills tightly at first with mosquito-netting; in fields the plants may be sprayed or dusted with arsenical or nicotine preparations. Some of the commoner diseases may be checked with bordeaux mixture.

Cucumbers are grown directly from seeds, and commonly planted in the field as soon as the weather is warm and reliable. They do not transplant well unless turned out of pots, berry-boxes, or started on inverted sods. Four or five plants are usually left at each stand or hill after the ravages of early pests are past; the hills are about 4 x 4 feet apart for early kinds and 4 x 6 feet for the later longer-running varieties. In commercial plantings it is more common to sow the seeds in drills and to thin to single plants 1½–2 feet apart after they have become well established. One ounce of seed plants fifty or more hills. Well-rotted manure may be worked into the hills if the garden soil is not fertile or well prepared. One hundred or more bushels of pickling cucumbers should be produced on an acre. The vines should be picked over frequently to prolong the bearing life.

The White Spine group of varieties is the main reliance for both field and garden work, but there are special small pickling kinds and also early varieties. The small pickling cucumbers are sometimes called gherkins; the West Indian or bur cucumber is another species, *Cucumis Anguria*, which is more grown in the United States for ornament than for pickles. Horned cucumber is *C. metuliferus*.

The growing of cucumbers under glass, or so-called forcing, is of two very distinct types,—the growing of a commercial crop of the ordinary or White Spine type and mostly following a winter crop of lettuce or other stock, and the raising of the long nearly or quite spineless English frame or forcing cucumber as a regular winter crop and usually for home use. The former or commercial practice usually produces the crop in spring and early summer. The plants are started in pots about a fortnight before the house is to be ready for them; they are then transplanted to the beds, and in six to eight weeks thereafter the plants should be bearing. They are set in rows about 3 feet apart, and 18–24 inches in the row. The vines are trained to cords or wires, so that the fruit hangs. Good soil and plenty of water are required. A good plant yields 100 or more cucumbers, if it is stocky and kept free of pests and diseases.

English frame cucumbers, as Telegraph, Sion House, Jasper Queen and others, may be grown for winter crop being started in autumn 80–100 days before fruit is wanted, or for spring and summer crop in frames and started in February or March. It is commonly necessary to hand-pollinate in winter when bees are not available.

CUCUMBER, BUR-: *Sicyos angulatus.* **Mock-:** *Echinocystis lobata.* **-Root, Indian:** *Medeola virginiana.* **Squirting-:** *Ecballium Elaterium.* **Star-:** *Sicyos angulatus.* **-Tree:** *Magnolia acuminata* and *macrophylla.* **Wild-:** *Echinocystis lobata.*

CÙCUMIS. *Cucurbitaceæ.* Herbs of Afr. and S. Asia, ann. tender running species of which several are grown with us for the edible or interesting frs.: mainly monœcious: lvs. angled, lobed or divided: tendrils simple: fls. yellow or whitish, of good size, solitary in the axils or somewhat clustered.

Angùria (*C. grossulariæformis. C. erinaceus*). West India or Bur Gherkin. Sts. slender, angled, rough: lvs. to 3½ in. long, with 3 main rounded lobes and open sinuses: fr. ovoid or oblong, about 2 in. long, prickly, on long sts. Fla. and Tex., far S.—Frs. curious and used for pickles; the gherkins of mixed pickles are cucumbers; sometimes called "gooseberry gourd."

Chìto: *C. Melo* var.

Cónomon: *C. Melo* var.

dipsàceus. Hedgehog or Teasel Gourd. Slender, sts. prickly: lvs. broad-ovate to reniform-ovate, not lobed: fr. a hard bristly bur 1–2 in. long. Arabia.—Grown for curiosity and ornament.

Dudàim: *C. Melo* var.

erinàceus: *C. Anguria.*

flexuòsus: *C. Melo* var.

grossulariæfórmis: *C. Anguria.*

Mèlo. Melon (which see), Muskmelon. Sts. trailing, soft-hairy: lvs. round-ovate to nearly reniform, obtuse, angled but not lobed as a rule: fls. about 1 in. across: fr. globular to oblong, pubescent or becoming glabrous, in many sizes, usually musky-flavored. Probably S. Asian, now widely cult. in many forms in N. Amer., mostly under the erroneous name "cantaloupe" which is properly applied to a race (var. **cantalupénsis**) with hard and scaly or warty rinds and seldom grown with us. Var. **Chìto,** Mango Melon, lvs. mostly smaller, fr. size and shape of lemon or orange and sometimes called "orange melon" and "lemon-cucumber," flesh white and firm and not fragrant, employed in the making of preserves and pickles, but grown mostly as an ornamental. Var. **Cónomon,** Oriental Pickling Melon, lvs. tending to be oblong and somewhat lobed on sides, fls. large, fr. globular to oblong-cylindric to club-shaped and sometimes constricted midway, turban-shaped, flesh white or green and not fragrant, used in preserving; little grown by Americans. Var. **Dudàim** (*C. odoratissimus*), Dudaim Melon, plant small, fr. size of orange and more or less flattened endwise, marbled, highly perfumed and for this purpose sometimes grown. Var. **flexuòsus,** Snake or Serpent Melon, fr. 1½–3 ft. or more long and 3 in. or less thick, mostly crooked or coiled; grown as a curiosity and perhaps used in preserves. Var. **inodòrus,** Winter or Cassaba Melon, very strong vine, lvs. large and sometimes prominently lobed, fls. large, fr. large and only mildly scented, keeping late. Var. *agrestis* is a small-fruited race run wild in S. La. and Tex.

metulíferus. Horned Cucumber. Ann. with hispid-hairy sts.: lvs. broadly cordate-ovate, more or less 3-lobed, toothed: fls. much like those of *C. Melo:* frs. 3–5 in. long, oblong, spiny, red when ripe. Trop. and S. Afr.

odoratíssimus: *C. Melo* var. *Dudaim.*

prophetàrum. Grayish vine, hairy-scabrid: lvs. small, reniform to 3–5-palmately lobed, cordate, margins either entire or toothed: fr. broad-ovoid, 1½ in. or less long, green with paler stripes, bearing slender spines. Trop. Afr.—Plant cult. under this name may be a small-fruited form of *C. Melo.*

satìvus. Cucumber (which see). Rough-hairy trailing vine: lvs. triangular-ovate, pointed, often somewhat 3-lobed: fls. 1½ in. or less across, short-stalked: fr. globular to oblong to short-cylindric, prickly. S. Asia.—Cult. in many kinds for eating raw and for pickles; some of the small kinds are known as "gherkins" (see *C. Anguria*). Var. **ánglicus,** English Forcing Cucumber, very strong grower, lvs. very large, fr. to 2 and 3 ft. long and nearly or quite spineless.

CUCÚRBITA. *Cucurbitaceæ.* Monœcious tendriliferous herbaceous plants, running and commonly rooting except in certain "bush" cultural vars., grown mostly for the great edible frs. but some of them for ornament and curiosity, with per. or ann. roots: lvs. large, simple but variously angled or lobed: fls. large, yellow, solitary or the staminate perhaps fascicled: eastern and western hemisphere. The origin of pumpkins and squashes is yet undetermined. There is a native gourd in Tex., *C. texana*, that may have some relation to prehistoric stocks; there is another *C. okeechobeensis*, in the Everglades of Florida but it is not closely related to the cult. kinds. See *Gourd* and *Pumpkin.*

argyrospérma: see under *C. ficifolia.*

ficifòlia (*C. melanosperma*). Malabar Gourd. Long-running, per. in warm countries: lvs. orbicular-ovate to nearly reniform, lobed and with obtuse sinuses or merely sinuate: corolla-lobes large and spreading: fr. oblong to nearly spherical, to 12 in. long, green with white stripes, flesh white; seeds black or nearly so. E. Asia.—Grown for ornament. C. **argyrospérma** is allied to this species and perhaps an offshoot from it, with very large white strongly bordered seeds, lighter colored fr., less lobed lvs.

fœtidíssima (*C. perennis*). Calabazilla. Per., long-running: lvs. cordate-triangular, stiff, grayish, crenate: fls. large: fr. size and shape of orange, green and yellow, not edible. Neb. to Calif. and Mex.

máxima. Autumn and Winter Squash. Ann. vine, only slightly prickly: lvs. orbicular or reniform, very obtuse, mostly not lobed: corolla-lobes soft and spreading or drooping and mostly obtuse: fr. spherical to oblong or turban-shaped, often very large, its st. spongy and not ridged nor prominently enlarged at apex. Nativity unknown.—Here belong Hubbard, Boston Marrow, Mammoth Chile, and similar squashes. Var. **turbanifórmis** comprises the turban squashes, a "squash-within-a-squash."

melanospérma: *C. ficifolia.*

Melopèpo: *C. Pepo* var.

moschàta. Cushaw, Canada and Winter Crookneck Pumpkins. Ann. vine, rather soft-hairy: lvs. broad-ovate to nearly orbicular-ovate, for the most part not lobed, often with whitish marks: corolla with wide spreading crinkly mostly acute lobes and often very large, calyx-lobes often leafy: fr. of many shapes, commonly oblong or big-crookneck, autumn and winter, its st. angled and much expanded at top. Nativity unknown.—Includes Sweet Potato, Quaker Pie, Japanese Pie pumpkins (or squashes).

ovífera: *C. Pepo* var.

Pèpo. Summer and Autumn Pumpkins. Harsh ann. with prickly sts. and petioles: lvs. triangular or ovate-triangular, often prominently lobed: corolla-lobes erect and sharp-pointed: fr. of many kinds, usually orange, furrowed, mostly not long-keeping, its st. strongly angled and enlarging upward. Nativity unknown.—Here are found the common field pumpkins, Vegetable Marrow, and others. Var. **Melopèpo** (*C. Melopepo. C. Pepo* var. *condensa*). Bush Pumpkins or Squashes. Mostly summer kinds, not running, including Pattypan, Scallop, Summer Crookneck, Cocozelle. Var. **ovífera.** Yellow-flowered Gourds (as distinguished from the white-fld. or Lagenarias). Running vines, producing many forms and colors of small hard-shelled ornamental durable frs.; wild in Tex. and Mex.

perénnis: *C. fœtidissima.*

CUCURBITÀCEÆ. Gourd Family. Cucurbits. Important hort. family including plants grown for edible frs. and as ornamental vines, as pumpkins, squashes, gourds, melons, watermelon, cucumbers and gherkins, chayote. The family includes some 90 genera and probably 700 species, mostly of trop. or subtrop. regions. The family comprises herbs and erect shrubs; but the hort. kinds are herbaceous and most of them tender annuals and all but one (Ecballium) are naturally running tendril-bearing vines. The plants of the Cucurbitaceæ are monœcious or diœcious: lvs. alternate, palmately veined, lobed or dissected: fls. prevailingly yellow or greenish, gamopetalous or the petals 5, the corolla sometimes large and showy but of short duration; stamens mostly 3: fr. a pepo, indehiscent or irregularly bursting, mostly fleshy in the cult. kinds and often large and edible. The species are of the easiest cult., but the pumpkins, gourds, melons and cucumbers are frost-tender and must make their growth rapidly in the northern parts of the country, requiring a warm quick soil. They come from seeds. The genera of Cucurbitaceæ included in this Hortus are Benincasa, Bryonia, Bryonopsis, Citrullus, Coccinea, Cucumis, Cucurbita, Cyclanthera, Ecballium, Echinocystis, Lagenaria, Luffa, Melothria, Momordica, Sechium, Sicana, Sicyos, Thladiantha, Trichosanthes.

CUDRÀNIA (*Vanieria*). *Moraceæ.* Woody plants native from China to Australia, having alternate simple lvs., unisexual fls. in axillary heads, and fr. a fleshy syncarp; planted for ornament in the S. and the lvs. fed to silkworms in China. Propagated by cuttings of young wood under glass in summer.

javanénsis. Scrambling spiny shrub: lvs. oblong-obovate or lanceolate, to 3 in. long, fleshy: fr. orange, ¾ in. across. Asia, Australia, Afr.

tricuspidàta. To 25 ft. or more, armed with slender thorns: lvs. ovate, to 3 in. long, sometimes 3-lobed at tip: fr. red, nearly globose, 1 in. across. China, Korea, Japan.

CULINARY HERBS are those employed in a secondary way in cookery, as for flavoring and seasoning, and also as garnishes for viands. They do not constitute a single cultural group. Some of the plants falling under this denomination are anise, caraway, chervil, chive, coriander, dill, fennel, parsley, as well as the sweet herbs, which are mostly of the mint family.

CULTIGEN: plant or group of apparent specific rank known only in cultivation, with no determined nativity; presumably originating (in the form in which we know it) under domestication; contrast with indigen. Examples are *Zea Mays, Cucurbita maxima, Phaseolus vulgaris, Citrus paradisi.* Not synonymous with horticultural variety. Term proposed by Bailey in Science, n. s. xlvii, 306. 1918.

CULTIVAR: a variety or race that has originated and persisted under cultivation, not necessarily referable to a botanical species, and which is of botanical or taxonomic importance.

CULVERS-ROOT: *Veronicastrum virginicum.*

CÙMINUM. *Umbelliferæ.* One ann. herb native in the Medit. region, the frs. of which are used as flavoring. C. **Cỳminum** (*C. odorum*). Cumin. To 6 in.: lvs. cut into thread-like divisions: fls. small, white or rose, in compound umbels: fr. narrowly oblong. Propagated by seeds in spring.

CUNEATE: wedge-shaped; triangular, with the narrow end at point of attachment, as of leaves or petals.

CUNÌLA. *Labiatæ.* Tufted per. herbs or small shrubs with small opposite lvs. and white or purplish 2-lipped fls. in whorls, the 2 stamens long-exserted; grown in the border and hardy.

mariàna: *C. origanoides.*

origanoìdes (*C. mariana*). Maryland Dittany. Stone-Mint. To 1 ft.: lvs. ovate, to 1½ in. long, toothed, nearly sessile: fls. purplish-pink, ¼ in. long, in terminal cymose cluster, early autumn. S. N. Y. to Fla. and Tex.

CUNNINGHÁMIA (*Belis*). China-Fir. *Taxodiaceæ.* Two evergreen trees native in E. Asia, allied to Cryptomeria, having stiff sharp-pointed flattened linear-lanceolate lvs. with broad white bands beneath, fls. in terminal clusters, and roundish cones with thick pointed scales. For cult. see *Conifers.* To be grown only in the lower S. and Calif., although in sheltered places *C. lanceolata* may persist as far north as Pa.

Kònishii. To 100 ft.: lvs. to 1 in. long: cones to 1 in. long. Formosa.

lanceolàta (*C. sinensis*). To 80 ft.: lvs. to 2½ in. long: cones to 2 in. long. China.

sinénsis: *C. lanceolata.*

CUNONIÀCEÆ. Cunonia Family. Trees and shrubs of 21 genera native in the southern hemisphere, having opposite or whorled, entire or pinnate lvs., small bisexual or unisexual fls. with 4–5 sepals and petals, 4 or more stamens, 2-celled superior ovary, and usually capsular frs. Ackama, Callicoma, Ceratopetalum and Weinmannia are occasionally planted in Calif.

CUPÀNIA. *Sapindaceæ.* Trees and shrubs bearing alternate pinnate lvs., small fls. in panicles, and capsular frs.; one species sometimes planted for ornament in warm climates. They are native in trop. and semi-trop. regions, mostly in Amer.

anacardioìdes. Tree to 40 ft.: lvs. of 6–10 leathery very obtuse entire lfts. to 4 in. long: fls. white: fr. leathery, 3-lobed, about ⅔ in. across. Australia.

Cúnninghamii: *Diploglottis Cunninghamii.*

sápida: *Blighia sapida.*

CÙPHEA (*Parsonsia*). *Lythraceæ.* American herbs or shrubs with alternate or whorled lvs., irregular mostly axillary fls. that are often showy or in abundance, with corolla-like often gibbous or spurred calyx, the petals 2 or 6 on the calyx-tube or lacking, and capsular fr.

Cupheas are greenhouse subjects, or grown out-of-doors in the South. As glasshouse plants they are mostly treated as tender annuals and are of easy cultivation. Propagated by seeds or the shrubby kinds by cuttings.

capsulàris: listed name.

compácta: *C. Llavea* var.

cyànea (*C. strigulosa*). To 6 ft.: lvs. ovate, to 3 in. long: fls. with red and yellow calyx and 2 small petals. Mex.

heterophýlla. To 2 ft.: lvs. mostly ternate, ovate to oblong-lanceolate, to 4 in. long: fls. with purplish or reddish calyx and 6 red unequal petals, in racemes. Mex.

Hookeriàna. To 2½ ft.: lvs. lanceolate or linear-lanceolate, to 4 in. long: fls. with reddish calyx, 2 large deep purple petals and 4 very small petals, in terminal racemes. Mex.

hyssopifòlia. To 2 ft.: lvs. linear to lanceolate, about ¼ in. long, crowded: fls. with green calyx and 6 purple, pink or white petals, in axils. Mex. and Guatemala.

ígnea: *C. platycentra.*

jorullénsis (*C. tricolor*). To 3 ft.: lvs. lanceolate to ovate, to 2 in. long: fls. with red and green calyx and small whitish petals, in racemes. Mex.—The plant grown under this name may be *C. micropetala.*

lanceolàta (*C. Zimapanii*). Sticky ann. to 4 ft.: lvs. lanceolate, to 3 in. long: fls. with purplish calyx and 2 large purple petals and 4 smaller ones, solitary. Mex. Var. **silenoìdes** (*C. silenoides*) is smaller; 2 large petals purple, white-margined.

Llàvea. Shrubby, sts. strigose: lvs. ovate, to 3 in. long: fls. with green and purplish calyx and 2 large bright red petals, in racemes. Mex. Var. **álba** has white fls. Var. **compácta** is a compact form. Var. **miniàta** (*C. miniata*), the usual form in cult., has sts. hirsute.

micropétala. To 2 ft.: lvs. lanceolate, to 5 in. long: fls. with yellow and red calyx and 6 small petals, in terminal leafy racemes. Mex.

miniàta: *C. Llavea* var.

petiolàta. Wax-weed. Tarweed. Ann. to 2½ ft.: lvs. ovate-lanceolate, to ⅝ in. long: fls. rose-purple, upper 2 petals larger than others. N. H. to Ga., west to Kans. and La.

platycéntra (*C. ignea*). Cigar-Flower. To 1 ft.: lvs. lanceolate or broader, to 2½ in. long: fls. with slender bright red calyx with white mouth and dark ring at end, without petals, solitary. Mex.

procúmbens. Ann. to 1 ft., sts. procumbent, viscid with purplish hairs: lvs. ovate-lanceolate, to 3 in. long: fls. purple tipped with green, upper 2 petals larger. Mex.

purpùrea. Reported as a hybrid of *C. Llavea* var. *miniata* and *C. viscosa.*

Roézlii. To 3 ft.: lvs. elliptic-lanceolate, to 3 in. long: fls. with cinnabar-red and yellowish calyx and 2 very small petals, in racemes. Mex.

silenoìdes: *C. lanceolata* var.

strigulòsa: *C. cyanea.*

trícolor: *C. jorullensis.*

viscòsa. Ann. to 1½ ft.: lvs. ovate-lanceolate, to ¾ in. long: fls. with 2 deep purple petals and 4 smaller whitish petals, in sticky-pubescent racemes. Mex.

Zimapánii: *C. lanceolata.*

CUP-FLOWER: *Nierembergia.* **-Plant:** *Silphium perfoliatum.*

CUPIDS-DART: *Catananche.*

CUPRESSÀCEÆ. Cypress Family. Less than a dozen genera of resinous usually evergreen trees and shrubs of wide distribution. This group has been treated until recently as a subfamily of Pinaceæ, but several fundamental differences warrant its recognition as a separate family. It is distinguished from the Pinaceæ and Taxodiaceæ by usually flattened and scale-like lvs. which are opposite or whorled, woody, leathery or berry-like cones in which the ovules are borne erect and not inverted, and the seedling with usually 2 cotyledons. In Juniperus the fr. is berry-like becoming blue at maturity and the lvs. are often sharply needle-like, while in Fitzroya the lvs. and cone-scales are ternate with appressed scale-like lobes. In most other genera the scale-like lvs. are opposite. The family contains several valuable timber trees and many ornamental subjects. The cult. genera include Actinostrobus, Callitris, Chamæcyparis, Cupressocyparis, Cupressus, Fitzroya, Juniperus, Libocedrus, Tetraclinis and Widdringtonia.

CUPRESSOCÝPARIS. *Cupressaceæ.* Hybrid between Cupressus and Chamæcyparis, only 1 kind known. **C. Léylandii.** Hybrid between *Cupressus macrocarpa* and *Chamæcyparis nootkatensis,* resembling the latter in habit and foliage, but differing in cones to ¾ in. across and usually 5 seeds to each scale. Of hort. origin.

CUPRÉSSUS. Cypress. *Cupressaceæ.* Evergreen trees or shrubs with small scale-like lvs. or linear in young plants, minute fls. and globular cones with woody scales; native in N. Amer., Eu. and Asia.; adaptable to mild or warm regions. For cult. see *Conifers.* These are the true cypresses, to which Chamæcyparis is closely related. Except *C. Macnabiana,* the species can be grown satisfactorily only in the lower S. and Calif.

arizónica. Tree to 40 ft. and more: lvs. pale or glaucous-green, acute: cones to 1 in. across, glaucous. Ariz., New Mex., Mex.; much planted in the S. W. Var. **bonìta** (*C. glabra*) has larger cones and is very glaucous when young. Var. **compácta** is a low roundish form. Var. **glaùca** is a juvenile silvery-gray stage.

Bénthamii: *C. lusitanica* var.

califórnica: *C. Goveniana.*

cashmeriàna. Tree with drooping branchlets: cones ½ in. across. Kashmir.

Duclouxiàna. Tree: lvs. obtuse, somewhat glaucous: cones 1 in. across. China.

excélsa: *C. lusitanica* var. *Benthamii.*

Flétcheri: *Chamæcyparis Lawsoniana* var.

Fórbesii. Slender tree to 30 ft., back smooth, reddish, exfoliating: foliage gray-green: cones to 1¼ in. long. S. Calif.—Some of the material listed as *C. guadalupensis* belongs here.

Fràseri: *Chamæcyparis Lawsoniana* var.

funèbris. Mourning C. Tree to 60 ft., with drooping branches and flattened branchlets: lvs. acute, light green: cones to ½ in. across. China.

glàbra: *C. arizonica* var. *bonita.*

glaùca: *C. lusitanica.*

Goveniàna (*C. californica. C. pygmæa*). Shrub or rarely tree to 75 ft.: lvs. acute, dark green: cones to ¾ in. across. Calif. Var. **aùrea,** foliage yellowish-green.

guadalupénsis. Tree to 40 ft. or more, the branchlets bright red: lvs. acute, light bluish-green: cones to 1¼ in. across. Guadeloupe Isl., Calif. and Lower Calif. Var. **glaùca,** foliage deeper blue.

horizontàlis: *C. sempervirens* var.

Knightiàna: *C. lusitanica* var.

Lambertiàna: *C. macrocarpa.*

Lawsoniàna: *Chamæcyparis Lawsoniana.*

Léylandii: *Cupressocyparis Leylandii.*

Líndleyi: *C. lusitanica.*

lusitánica (*C. glauca. C. Lindleyi. C. sinensis*). Portuguese C. Tree to 50 ft. with somewhat drooping branchlets: lvs. acute, glaucous-green: cones ½ in. across, glaucous. Mex. Var. **Bénthamii** (*C. Benthamii. C. excelsa*). Branchlets pinnately and regularly branched in one plane. Var. **Knightiana** (*C. Knightiana*) is more regularly branched.

Macnabiàna. Shrub or tree to 20 ft.: lvs. obtuse, fragrant, dark green or glaucous: cones 1 in. across. Calif., Ore.; hardy in parts of New England. In var. **sulphùrea** the tips of the branchlets are golden.

macrocárpa (*C. Lambertiana*). Monterey C. Tree to 40 ft. and more: lvs. obtuse, dark or bright green: cones to 1½ in. across. Calif. Var. **aùrea** is listed. Var. **Críppsii** is a juvenile form with tips of branchlets silvery-white and spreading sharp-pointed lvs. Var. **fastigiàta** has a compact fastigiate head. Var. **lùtea** has yellow lvs. when young.

nootkaténsis: *Chamæcyparis nootkatensis.*

obtùsa: *Chamæcyparis obtusa.*

pisífera: *Chamæcyparis pisifera.*

pygmæa: *C. Goveniana.*

Róylei: *C. sempervirens* var. *indica.*

Sárgentii (*C. Goveniana* var. *Sargentii*). Shrub or tree to 16 ft.: lvs. acute, dark green, fragrant: cones to 1 in. across. Calif.

sempérvirens. Italian C. Tree to 80 ft.: lvs. obtuse, dark green: cones to 1½ in. across. S. Eu., W. Asia. Var. **horizontàlis** (*C. horizontalis*) has horizontally spreading branches. Var. **índica** (*C. Roylei*). Columnar form with globose cones. Var. **Sìkesii** is listed as of very narrow habit. Var. **stríeta** (var. *pyramidalis* and *fastigiata*) is of columnar habit; var. **Worthiàna** is listed.

sinénsis: *C. lusitanica.*

thurífera. Perhaps only a variant of *C. lusitanica*, from which it differs in its non-winged seeds and lvs. not tightly appressed to the branchlets. Mex.

thyoìdes: *Chamæcyparis thyoides.*

torulòsa. Bhutan C. Tree to 150 ft., with drooping branchlets: lvs. somewhat acute, bright or bluish-green: cones to ¾ in. across. Himalayas. Var. **Corneyàna** has drooping branches. Var. **majéstica** is in the trade.

CURCAS: *Jatropha Curcas.*

CURCÙLIGO. *Amaryllidaceæ.* Stemless plants with short thick rootstocks and long plicate lvs. which conceal the small fls. borne near the ground in dense heads or spikes.

Greenhouse foliage plants, or grown out-of-doors in the South for the attractive clumps. They require abundant moisture and high temperatures. A good greenhouse soil is one of 2 parts loam to 1 of sand and rotted cow-manure. Propagated by division.

capitàta: *C. capitulata.*

capitulàta (*C. recurvata*). Lvs. to 3 ft. long and 6 in. wide, recurving: fls. yellow, ¾ in. across, in heads on brown-hairy scapes which are bent downward at end. Trop. Asia, Australia.

latifòlia. Lvs. to 2 ft. long and 5 in. wide, curving: fls. bright yellow, in heads on short erect scapes. Asia.

recurvàta: *C. capitulata.*

CÚRCUMA. *Zingiberaceæ.* Robust per. herbs with tuberous roots, short leafy sts. and bracted fls. in dense spikes topped by a tuft of colored bracts, the lateral staminodia and also filament of fertile stamen petal-like.

Grown in a warm greenhouse in rich moist soil and rested during the winter, and planted in the open in warm countries; sometimes seen in collections of economic plants, as they yield dyes and curry products. Propagated by division of tubers in spring. See *Zingiberaceæ.*

lónga. Lvs. to 1½ ft. long and 8 in. broad: fls. pale yellow, in spikes to 7 in. long tipped by pale pink bracts. India.—Root yields turmeric used as a condiment and dye.

petiolàta. Lvs. to 10 in. long and 6 in. broad: fls. yellowish-white, in spikes to 6 in. long tipped by purple bracts. E. Asia.

Zedoària. Lvs. to 2 ft. long and 6 in. broad, with very long sheaths: fls. yellow with whitish sepals and green bracts, in spikes to 4 in. long. India.

CURMERIA: *Homalomena Wallisii.*

CURRANT AND GOOSEBERRY. These fruits are so similar in cultural requirements that they may be considered together in this Hortus. They belong to the same genus, Ribes, according to former prevailing usage, but latterly the gooseberries have been segregated by some writers in the genus Grossularia. The red and white currants are *Ribes sativum,* the black currant *R. nigrum;* the gooseberries of American origin, such as Houghton, Downing, Pale Red, are forms of the native *Ribes hirtellum* (*Grossularia hirtella*) or hybrids from it; and the European gooseberries, which are much subject to mildew in this country, are *Ribes Grossularia* (or *Grossularia reclinata*). In localities where white pines are important, the growing of these fruits is restricted by law because they are an alternate host for the white pine blister-rust.

Currant and gooseberry are fruits of exceptional hardiness, their culture extending nearly to the Arctic circle. They reach their best development in a cool somewhat humid climate and, therefore, are not well adapted to the warmer or drier parts of the United States. Cool moist clay loams or silt loams of high fertility are more satisfactory for these fruits than the lighter soil types; but the land must be well drained. Because they are among the hardiest and most productive of fruits and able to live even under neglect, the currant or gooseberry patch is often allowed to become foul with grass, never thinned or trimmed, the worms eating the leaves until, in the course of time, the plants yield only a small and indifferent product; yet no fruits respond more readily to good care and sufficient fertilizing.

Propagation of currants and some gooseberries is by means of stem-cuttings. Vigorous shoots of the seasons growth are cut from the bushes late in autumn and either planted in the nursery row immediately or stored in moist sand and planted in the spring. Gooseberries are usually propagated by mound-layering. Soil is heaped about the bases of the stems, which send out roots. The rooted shoots thus formed are removed and set in the nursery row. To succeed best with this method, the plant should have been cut back to the ground so that all the shoots are but one season old.

Planting may be either in early spring or late autumn except in the colder climates where spring planting is advisable. Gooseberries and currants may be planted in hills 5 x 5 or 6 x 6 feet, or in rows 6–7 feet apart, plants 4 feet apart in the row.

Clean tillage followed by cover-crops late in the season are advisable for these fruits. A thick mulch of straw or coarse manure is very valuable especially in the home planting, provided that mice do not cause serious damage. Stable manure is the best fertilizer, but when it is not available a complete commercial fertilizer may be applied. The partial shade afforded by a young orchard suits the currant well, and if the ground is in good condition no bad results will follow to the orchard provided the currants are removed before the trees need the entire feeding space. A currant or gooseberry patch should continue in good bearing for ten to twenty years, if properly handled.

The red and white currants and the gooseberry bear mostly on two-year-old or older wood. A succession of young shoots should be allowed to grow to take the place of the old bearing wood. It is very important to keep the old weak canes cut out, and a succession of three to seven new ones coming from the root each year. This results in a low bush, very different from the tall awkward bushes with spurry parts that one sees in old yards.

The black currant makes a large and stronger plant. It bears mostly on wood of the previous year, and therefore it is important to have new wood constantly coming on. After a few years in neglected plantations that make little new growth the yield becomes small and poor.

Both currants and gooseberries are picked by hand, commonly into quart berry-boxes. Ripe gooseberries for the table are little known in the United States. Green gooseberries for the cannery are stripped from the vines with the hands protected with leather mittens; they are then cleaned in a fanning mill. For market they are picked into quart baskets and sold in berry crates. Yields of 2 to 4 tons an acre of currants and gooseberries may be expected.

Following are some of the prominent varieties, the most popular kinds being starred (*): *Varieties of currants*—*Cherry, Diploma, *Fay, *Perfection, *Wilder, *White Grape, Red Lake. *European gooseberries*—Chautauqua, *Industry, *May Duke. *American gooseberries*—Carrie, *Downing, Red Jacket, Oregon, *Poorman. Poorman is much the best of the American varieties.

Pests and diseases should receive prompt attention. Both currants and gooseberries should have a dormant spray of lime-sulfur 1–15 for the control of scale and mildew. When the fruit is well formed, bordeaux mixture, 4–4–50 with 1½ pounds arsenate of lead powder added may be applied to control mildew and currant-worms. If these pests are troublesome near harvest time, pyrethrum sprays or other non-poisonous material should be used.

CURRANT, INDIAN: *Symphoricarpos orbiculatus.*

CURTÒNUS. *Iridaceæ.* A monotypic genus of Natal, S. Afr., allied to Antholyza and differing from it in the peduncle definitely terminated by the infl., and not continuing beyond as a naked stalk bearing some barren bracts at apex; from other related genera (Chasmanthe and Anapalina) it differs in the infl. distinctly branched. The one known species is **C. paniculàtus** (*Antholyza paniculata*). To 4 ft.: lvs. to 2 ft. long and 3 in. wide: fls. red-yellow, to 1¼ in. long, curved.—Cult. as for Gladiolus.

CURUBA: *Sicana odorifera.*
CUSH-CUSH: *Dioscorea trifida.*
CUSTARD-APPLE: *Annona reticulata.*

CUTHBÉRTIA. *Commelinaceæ.* Herbs native in S. U. S., separated from Tradescantia by the cymes subtended by small bracts rather than a leaf-like involucre.

gramínea. To 8 in., tufted: lvs. filiform, half-round or canaliculate, erect: fls. pink or purplish, 1 in. across. N. C. to Fla.

ròsea. Erect, unbranched or sparingly tufted: lvs. narrowly linear, flat, loosely spreading: fls. pink, to 1¾ in. across. N. C. to Fla.

CUTTINGS: see *Propagation.*

CYANÁNTHUS. *Campanulaceæ.* Low herbs of Asian mts., with small alternate lvs. and blue fls. terminating the sts., sometimes grown in the rock-garden; related to Codonopsis, but not climbing and differing in floral characters. They are late summer and autumn bloomers, with narrow or almost tubular corollas.

Delavàyi. Per. to 8 in., decumbent: lvs. nearly orbicular, to ¼ in. long, angled or 5-lobed, white-hairy beneath: fls. to 1 in. long, throat hairy. Yunnan.

incànus. Per. to 4 in., with wiry sts.: lvs. oblong, to ⅓ in. long, hairy: fls. to 1 in. long, throat densely hairy. Himalayas.

lobàtus. Per. to 5 in. and more: lvs. obovate-oblong, to 1 in. long, lobed: fls. to 1 in. across, throat somewhat hairy. Himalayas.

longiflòrus. Per. to 10 in., much branched: lvs. lanceolate, white-hairy below, margins revolute: fls. to 2 in. long, hairy in throat. Himalayas.

CYANOCOCCUS: *Vaccinium Myrsinites.*
CYANOPHYLLUM: *Miconia magnifica.*

CȲANÒTIS. *Commelinaceæ.* Per. herbs with creeping or weak sts., sheathing lvs., and blue or reddish fls. in scorpioid cymes or clusters; native in warm parts of Old World, and grown in greenhouses. Propagated by cuttings.

cristàta. To 18 in., slender branched st. with erect or ascending branches: lvs. ovate-oblong, to 4 in. long, hairy or glabrous: fls. in cymes inclosed by imbricated lf.-sheaths. Malasia to Trop. Afr.

somaliénsis. Flowering sts. to 9 in. long; lvs. narrow-triangular, 1½ in. long, hairy: fls. in dense heads not longer than lf.-sheaths. Trop. Afr.

CYÁTHEA. Tree-Fern. *Cyatheaceæ.* Tree-ferns with trunks 50 ft. or more high: fronds evergreen, very large, usually 2–3-pinnate; sori on back of segms., the indusium bursting and persistent as a fringe: tropics and subtropics. Propagated by spores. See *Ferns.*

dealbàta. Trunk to 30 ft. high and 1½ ft. diam.: fronds spreading horizontally, to 12 ft. long and 4 ft. broad, yellowish-green above and powdery-white beneath. New Zeal., Lord Howe Isls.—Frequently cult.

Drégei. Fronds bipinnate, glabrous. Afr.

insígnis. Fronds very large, pinnæ to 8 ft. long and secondaries to 8 in. and pinnatifid, the ultimate lobes oblong-obtuse and ¼ in. long. Jamaica.

medullàris. Sago-Fern. Trunk to 50 ft. high and 2½ ft. diam.: fronds curving, to 20 ft. long and 5 ft. broad, dark green above, paler green beneath. New Zeal.

meridénsis. Fronds 3-pinnatifid into narrow-lanceolate segms. scaly on ribs beneath. Colombia.

CȲATHEÀCEÆ. Tree-Fern Family. Five genera of ferns with distinct trunks or sts. native in warm regions on both sides of the world: fronds pinnately compound, with sori on backs or margins: differs from Polypodiaceæ in technical characters of the sporangia. A few genera are grown under glass, as Alsophila and Cyathea. These are planted in protected places in the open in the warm parts of the country.

CYATHÒDES. *Epacridaceæ.* Shrubs from Australia to Pacific Isls., having imbricated or scattered lvs. and small fls. solitary in the axils; planted in Calif.

aceròsa. To 15 ft.: lvs. linear or lanceolate, to ⅔ in. long, stiff and pungent-pointed, margins recurved, glaucous beneath.

parvifòlia. To 4 ft.: lvs. linear to lanceolate-subulate, about ¼ in. long, very sharply pointed, glaucous or white beneath, margins recurved: fls. to ⅛ in. long, on short recurved pedicels, bracts few. Tasmania.

CYCADÀCEÆ. Cycads. Stiff evergreen plants of slow growth and mostly with an unbranched trunk at least when young, and stiff pinnate or bipinnate lvs. in a basal rosette or crown at top, and diœcious fls. of which the staminate are in thick cones and the pistillate usually in heads. The family is rich in fossil species. There are 9 trop. and subtrop. genera of which the following are known to hort.: Ceratozamia, Cycas, Dion, Encephalartos, Macrozamia, Microcycas, Zamia. In morphology cycads are considered to be nearest the fern-allies of any of the sporophytes or flowering-plants. The classification is with the gymnosperms. They are of slow growth and maturity, and are grown for their interest as well as for ornament. They are more or less palm-like. In Cycas the seeds are mostly 4 or more to each carpophyll whereas in the other genera they are 2. Virgin plants in cult. may be difficult to determine.

CỲCAS. *Cycadaceæ.* About 16 species in the Old World tropics, two of them well known in cult. for the stiff glossy evergreen long foliage which is pinnately divided and more or less fern-like; pinnæ with strong midrib. The lvs. are often cut for house decoration. See *Cycadaceæ.*

Cycads are grown in greenhouses or as specimen plants out-of-doors in warm regions. They should be given abundant moisture and partial shade. Propagated by suckers which are taken when dormant and the leaves removed; also by seeds sown in shallow boxes or benches and covered with sand and potted off after germination. Slanting sections of the trunk 2–3 inches thick may be used for propagation; they should be dried a few days, then planted, and when new plants form they should be repotted separately.

circinàlis. Trunk to 12 ft. high: lvs. to 8 ft. long; lfts. to 1 ft. long, flat on edges: fr. about size of walnut. Old World tropics.

mèdia. Australian Nut-Palm. Trunk to 18 ft.: lvs. to 4 ft. long; lfts. very many, to 8 in. long, straight or somewhat curved, obtuse or pointed, keeled beneath or margins flat: staminate infl. scales tapering into long spine. Australia.

Micholítzii. Trunk subterranean: lvs. to 10 ft. long, pinnæ 8–10 in., plane, twice forked. Cochin-China.—Has been grown as *Pseudocycas Micholitzii.*

Normanbyàna. Trunk to 10 ft. or more: lfts. to 8 in. long, flat on edges. Australia.

revolùta. Trunk to 10 ft. high: lfts. revolute or rolled on edges: fr. about 1½ in. long, somewhat flattened, red. Japan.—Sometimes called "sago-palm," but it is not a palm.

Rúmphii. Trunk to 20 ft.: lvs. similar to *C. media* but shorter and with fewer lfts.: staminate infl. scales truncate or shortly acuminate. N. Australia, Malasia.—Differs from *C. circinalis* in its paler and thinner lanceolate lfts. and rarely attains maximum height in cult.

CÝCLAMEN. *Primulaceæ.* Low herbs with large hard tuberous roots, heart-shaped basal lvs., solitary nodding fls. borne on scapes, with purple, rose or white corolla-lobes strongly reflexed; native in the Medit. region and Cent. Eu., one a popular florists plant and a few others sometimes grown out-of-doors.

Cyclamens respond best in a soil composed of 2 parts leaf-mold, 1 part sand, and 1 part loam. They are very sensitive to moisture conditions and will not thrive if allowed to dry out or if water stands around the roots. A moist atmosphere is beneficial. Red-spider may be eliminated by syringing the leaves on both sides several times a week.

Tubers large enough to flower the first year may be purchased from seedsmen. Seeds may be sown in September, wintered in a cool house, repotted in May, and in July transferred into 5- or 6-inch pots in a shaded frame. Before frost they should be taken indoors and grown in a cool house through the flowering period.

africànum. Lvs. mottled above, pale beneath: fls. white tinged rose or purple, purple at base, 1 in. long. Algeria.

Átkinsii. Hybrid between *C. coum* and *C. ibericum:* lvs. spotted with silvery-white: fls. pink or white marked with red.

cilícicum. Similar to *C. europæum* but with larger pale rose fls. purple in the throat. Sicily.

còum. Fls. purple with spotted throat, the corolla-lobes ovate, small, odorless, in autumn. S. Eu. to Persia.

europæ̀um. Fls. bright red, the corolla-lobes oblong or ovate, very fragrant, on scapes 4–5 in. high, blooming in summer and autumn. Cent. and S. Eu. Var. **ròseum** has pinkish fls.

græ̀cum. Lvs. obcordate, somewhat dentate: fls. rose, deep purple at center, autumn-flowering, corolla-lobes oblong-lanceolate. S. E. Eu.

hederæfòlium: *C. indicum.*

ibéricum. Lvs. sometimes marked with white above: fls. purple with darker throat, the corolla-lobes ovate. Caucasus.

índicum (*C. persicum. C. hederæfolium. C. macrophyllum*). Florists C. Lvs. usually variegated with white: fls. large, odorless, white or in shades of purple and rose, dark purple at the mouth, the corolla-lobes oblong-lanceolate, on scapes 6–8 in. high. Greece to Syria. Var. **gigantèum** has larger fls. and many named forms are in the trade.

macrophýllum: *C. indicum.*

magníficum: a form of *C. indicum* with large white fls. spotted red.

neapolitànum. Fls. red or white (var. **álbum**), appearing mostly before the lvs. in summer or autumn, the corolla-lobes ovate and eared at the base. Cent. and S. Eu.

pérsicum: *C. indicum.*

purpùreum: a var. of *C. indicum* having large purple fls. marked with bluish.

repándum. Fls. purple with darker throat, the corolla-lobes oblong or linear-oblong. Medit. region.

CYCLANTHÀCEÆ. Cyclanthus Family. Six trop. American genera comprise the family: more or less herbaceous palm-like plants, acaulescent or nearly so, with long-stalked lvs., unisexual fls. in dense spadices subtended by bract-like spathes resembling an aroid infl., and fr. composed of cohering carpels. Carludovica and Cyclanthus are grown in greenhouses in cold countries; the genera differ in technical botanical characters.

CYCLANTHÈRA. *Cucurbitaceæ.* Herbaceous vines, ann. or per., above 30 species in the warm parts of Amer. and extending north as far as Kans., two of which are sometimes grown for ornament and as screens, both ann. or grown as such: monœcious: lvs. lobed or compound: fls. very small, yellow, white or greenish, the pistillate solitary in axils and staminate racemose or paniculate: fr. small, scarcely fleshy, mostly spiny or setose. Grown from seeds, as for gourds.

explòdens. To 10 ft. or so, nearly glabrous: lvs. ovate-triangular to broad-oblong, 2–3 in. long, 3-angled or -lobed: fr. 1 in. or more long, usually curved, stout-spiny on one side, bursting forcibly. N. S. Amer.

pedàta. Glabrous, to 10 ft. and more: lvs. with 5–7 narrow crenate-dentate lfts.: fr. about 2 in. long, oblong, with scattering prickles. Mex. south.

CYCLÁNTHUS. *Cyclanthaceæ.* Stemless milky-juiced herbs resembling palms, the fls. fragrant; 4 species in trop. Amer. Cult. as for *Carludovica.*

bipartìtus. Lvs. entire or 2-lobed to base, the stalks to 6 ft. long: spathes of 4 yellow lvs. Guiana.

CYCLOBOTHRA: *Calochortus barbatus.*

CYCLÓPHORUS. Felt-Fern. *Polypodiaceæ.* Asian and Malayan ferns with usually simple and entire fronds tomentose on back, leathery; sori naked, covering back of fronds; much like Polypodium and often so listed; for cult. see *Ferns.*

Língua (*Niphobolus Lingua. Polypodium Lingua*). Tongue-Fern. Japanese F. Fronds, including stipes, to 15 in. long, entire, lanceolate or ovate-lanceolate, rusty beneath. China, Japan and south. Var. **corymbíferus,** Crested F., has fronds forked at the apex. Var. **variegàtus** is variegated.

CYCNÒCHES. Swan Orchid. *Orchidaceæ.* Trop. American epiphytes with elongated pseudobulbs bearing plaited lvs., and lateral racemes: fls. of two sexes, sometimes similar, often very different, the male fls. often with a clawed lip having finger-like projections. Grown in warm greenhouse; see *Orchids.*

chlorochìlon. Lvs. elliptic-lanceolate, about 12 in. or more long: racemes usually about 3-fld.; fls. large, about 5–6 in. across, yellow-green; lip ovate, convex, green or whitish with dark green spot at base. July–Dec. Cent. Amer., Colombia, Venezuela, British Guiana.

CYDÍSTA. *Bignoniaceæ.* One woody climber native from W. Indies to Brazil and grown in subtrop. regions. **C. æquinoctiàlis** (*Bignonia æquinoctialis*). Lvs. of 2 ovate leathery wavy-margined lfts. to 6 in. long, and often a terminal tendril: fls. showy, white or purplish, to 3 in. long, funnelform with rounded lobes, in racemes: fr. linear, to 1 ft. long.

CYDÒNIA. Quince. *Rosaceæ.* One deciduous small much branching tree from Persia and Turkestan grown for its edible fr. For cult. see *Quince.* **C. oblónga** (*C. vulgaris. Pyrus Cydonia*). To 20 ft.: lvs. ovate to oblong, to 4 in. long, densely tomentose beneath: fls. white or pale pink, to 2 in. across, solitary at the end of leafy shoots of the season: fr. a pear-shaped or apple-shaped tomentose pome to 3 in. or more across, fragrant. For other names listed as Cydonia see *Chænomeles,* the Japanese or Flowering quince.

CYLINDROPHÝLLUM. *Aizoaceæ.* Very succulent S. African plants separated from Mesembryanthemum, having long nearly round lvs. and solitary terminal short-stalked yellow or red fls.; stigmas 6–8.

Bàinii: listed name.

calamifórme (*M. calamiforme*). Sts. to 2 in., branched: lvs. to 3 in. long and ⅓ in. wide, curved and spreading, grayish-green, finely punctate: fls. pale pink, yellowish-white at base, to 3 in. across.

Cómptonii. Plants compact, often 10 in. through and 5 in. high: lvs. to 3½ in. long and ½ in. thick, erect: fls. yellowish-white.

CYLINDROPUNTIA: see *Opuntia.*

CYMBALÀRIA. *Scrophulariaceæ.* Creeping herbaceous perennials, native in the Old World, often united with Linaria but differing in the fls. axillary and solitary and the lvs. palmately veined; a few are grown as ground-cover in the greenhouse or in the open, or in vases and hanging-baskets.

These plants are tender in the North but seed themselves freely; they thrive in moist and partially shaded positions, as in greenhouses and about yards. Propagated by division of the long stems, and by seeds.

æquitríloba (*Linaria æquitriloba*). Lvs. mostly opposite, entire or slightly 3–5-lobed: fls. pale mauve with reddish-purple throat. S. Eu.

hepaticæfòlia (*Linaria hepaticæfolia*). Lvs. mostly opposite, with 3–5 short or indistinct lobes: fls. lilac-blue with yellowish throat, about ½ in. long: caps. shorter than sepals. Corsica.

muràlis (*Linaria Cymbalaria*). Kenilworth Ivy. Sts. trailing and rooting at the nodes: lvs. mostly alternate, irregularly 3–7-lobed, glabrous: fls. lilac-blue, throat yellowish, ⅓ in. long: caps. longer than sepals. Eu., nat. Ont. to Pa.—Common about greenhouses. Var. **álba,** fls. white; **globòsa** is not stoloniferous; **máxima,** fls. large; **ròsea,** fls. pale pink.

pállida (*Linaria pallida*). Sts. trailing or erect only at first, to 4 in. high: lvs. opposite, reniform or rotund, entire or shallowly 3–5-palmately lobed, to ⅝ in. across, short-pilose beneath and on petioles: fls. blue-violet with golden-yellow palate, about ½ in. long: caps. as long as or shorter than calyx. Italy.—Some of the material in cult. may be *C. muralis* var. *maxima.*

pilòsa (*Linaria pilosa*). Pubescent: lvs. opposite and alternate, 3–11-lobed: fls. lavender with yellow throat: caps. longer than sepals. Italy.

CYMBÍDIUM. *Orchidaceæ.* Mostly epiphytes with short pseudobulbous sts. and fls. in lateral racemes, the sepals and petals similar, the lip entire or 3-lobed and commonly with 2 keels. Cult. in greenhouse mostly with intermediate and often with cool temperature; sometimes planted out. See *Orchids.*

albanénse. Hybrid between *C. erythrostylum* and *C. insigne.*

Alexánderi. Hybrid between *C. Veitchii* and *C. insigne.* Vars. **aùreum, ròseum** and **spléndens** are hybrids of similar parentage.

aloifòlium. Lvs. linear, broadly obtuse, to 1½ ft. long: fls. in many-fld. pendulous racemes to 23 in. long; sepals and petals brownish-yellow with purple median stripe; lip 3-lobed, brownish-red with yellow center. July–Aug. India, Indo-China, Malaya.

brugénse. Hybrid between *C. insigne* and *C. Cooperi.*

Coningsbyànum. Hybrid between *C. grandiflorum* and *C. insigne.*

Coòperi. Hybrid between *C. insigne* and *Cyperorchis Schroederi.*

cyperifòlium. Lvs. very narrowly linear-lanceolate, to 30 in. or more long and ⅓–½ in. wide, somewhat canaliculate, acute: racemes shorter than lvs., 3–7-fld.; fls. to 1½ in. across, fragrant; sepals and petals green becoming yellow, lanceolate, spreading; lip green, streaked and blotched with reddish-purple. Sikkim-Himalayas.

Devoniànum. St. 2–5-lvd.: lvs. oblanceolate, acute, long-petioled, the blade to 14 in. long: infl. pendent, about as long as the lvs., many-fld.; sepals oblong-lanceolate, to nearly 1 in. long, green or buff-yellow streaked with brownish-purple; petals little shorter, lanceolate-elliptic, similarly colored; lip obscurely 3-lobed, deep or light rose-purple with a pair of darker spots near each margin. Mar.–July. Himalayas.

ebúrneo-Lowiànum: *C. Veitchii.*

ebúrneum. Lvs. linear, to 2 ft. long and ¾ in. wide: fls. to 4 or 5 in. across, in 1–3-fld. racemes to 8 in. long, fragrant, ivory-white, the lip with yellow center and 3–4 hairy keels. Mar.–June. Himalayas, Indo-China.

ensifòlium. Lvs. linear, acute, to almost 3 ft. long: fls. in 3–12-fld. racemes to 20 in. long, greenish-yellow veined with red-brown lines (rarely whitish), the lip with red-brown spots. Oct.–Feb., May, Aug. India, Indo-China, China, Japan, Malaya.

erythrostỳlum. Pseudobulbs ovate-oblong, about 1 in. long, several-lvd.: lvs. linear, acute, to 15 in. long, arching: scape to 1½ ft. long, 4–7-fld., suberect; sepals white, about 1¾ in. long; petals a little shorter, white; lip yellowish-white, lined or dotted with red-purple; column about 1 in. long, crimson. Nov. Indo-China (Annam).

Finlaysoniànum. Lvs. strap-shaped, to 40 in. long and almost 2 in. wide, obtuse: fls. in many-fld. pendent racemes to 40 in. long; sepals and petals brownish-yellow sometimes with a median red stripe; lip 3-lobed, spotted and marked with brownish-red and with white and yellow on the disk. Mar.–July, Sept.–Nov. Malaya, Indo-China, Philippines. Var. **atropurpùreum** has longer narrower lvs. and purplish sepals and petals.

gattonénse. Hybrid between *C. Lowianum* and *C. Tracyanum.*

gigantèum. Lvs. linear, acute, to 30 in. long: fls. to 4 in. across, fragrant, in 7–13-fld. arching racemes somewhat longer than lvs.; sepals and petals green- or brownish-yellow lined with dark red-brown; lip 3-lobed, yellow marked with red, the middle lobe wavy-margined. Sept.–Oct., also winter months. Himalayas, Indo-China, China.

Gottiànum. Hybrid between *C. eburneum* and *C. insigne.*

grandiflòrum (*C. Hookerianum*). Lvs. ligulate, acute, to 25 in. long: fls. to 5 in. across, in racemes 2–4 ft. long; sepals and petals olive-green; lip 3-lobed, bright yellow dotted with purple-brown. Sept.–Dec. Himalayas, China.

Hanburyànum. Hybrid between *C. erythrostylum* and *C. Tracyanum.*

Holfordiànum. Hybrid between *C. eburneum* and *C. grandiflorum.*

Hookeriànum: *C. grandiflorum.*

I'Ánsonii. Hybrid between *C. Lowianum* and *C. Tracyanum.*

insígne (*C. Sanderi*). Lvs. oblong-linear, acute, to 3½ ft. long and about ¾ in. wide: fls. about 3½ in. across, in 10–15-fld. racemes to 5 ft. high; sepals and petals pale rose; lip 3-lobed, light rose spotted with purple-red and with 2 yellow thickened lines. Feb.–Mar. Indo-China.

Lowgrìnum. Hybrid between *C. Lowianum* and *C. tigrinum.*

Lowiànum. Lvs. linear, acuminate, to 2 ft. long: fls. about 4 in. across, in 10–25-fld. arching racemes; sepals and petals greenish-yellow with red-brown lines; lip 3-lobed, yellow with crimson mid-lobe edged with pale yellow. Feb.–July. Burma. Var. **cóncolor** lacks the crimson on the mid-lobe of the lip. Var. **Mandaiànum** has yellow fls.

Lòwi-Schroèderæ. Hybrid between *C. Lowianum* and *Cyperorchis Schroederi.*

Mástersii: *Cyperorchis Mastersii.*

Paúwelsii. Hybrid between *C. Lowianum* var. *concolor* and *C. insigne.*

rosefieldénse. Hybrid between *C. grandiflorum* and *C. Tracyanum.*

ròseum. Habit of *C. insigne:* lvs. ligulate, about 16 in. long: fls. about 2 in. across; sepals and petals white dotted with soft rose arranged in longitudinal lines; lip 3-lobed, white with violet streaks and spots, to about 1 in. long, blunt and tomentose. Java.—A confused name, another *C. roseum* being described from Annam.

Sánderi: *C. insigne.*

Schlègelii. Hybrid between *C. insigne* and *C. Wiganianum.*

Schroèderi: *Cyperorchis Schroederi.*

tigrìnum. Lvs. elliptic-lanceolate, acute, to 6 in. long and ¾ in. wide: fls. in 3–6-fld. racemes longer than the lvs.; sepals and petals olive-green; lip 3-lobed, the side lobes yellow marked with red, the mid-lobe white spotted with red. Burma, Indo-China.

Tracyànum Very similar to *C. giganteum* and *C. grandiflorum* but with fls. to about 6 in. across and darker colored than either. Oct.–Nov. Burma, Indo-China. Var. **supérbum** is listed.

Veìtchii. Hybrid between *C. eburneum* and *C. Lowianum.*

Wiganiànum. Hybrid between *C. eburneum* and *C. Tracyanum.*

Winniànum. Hybrid between *C. giganteum* and *Cyperorchis Mastersii.*

Woodhamsiànum. Hybrid between *C. Lowianum* and *C. Veitchii.*

CYMBOPÒGON. *Gramineæ.* Mostly per. grasses of tropics of Old World grown for the oil from herbage and roots and sometimes for ornament, differing from Andropogon in technical characters. See *Grasses.*

citràtus. Lemon-Grass. Differs from *C. Nardus* in the sterile spikelets linear rather than lanceolate. Known only in cult.

Nárdus. Citronella-Grass. Per. to 6 ft.: lvs. fragrant, to 3 ft. long and ¾ in. wide, glaucous: infl. to 2½ ft. long. Trop. Asia; nat. in trop. Amer.

Schœnánthus. Camel-Hay. Per. to 2 ft.: differs from *C. Nardus* in the joints of the raceme hairy and concealing the spikelets. N. Afr., S. Asia.

CYME: a broad more or less flat-topped determinate flower-cluster; with central flowers opening first.

CYMOPHYLLUS: *Carex Fraseri.*

CYNÁNCHUM. *Asclepiadaceæ.* Per. herbs, often shrubby and twining, with opposite lvs., wheel- or bell-shaped fls. in clusters, and milkweed-like frs.; native in Eu., Asia and Afr. Propagated in spring by division of roots. Grown in any good garden soil.

acuminatifòlium (*Vincetoxicum acuminatum. V. japonicum*). Mosquito-Trap. Erect, the tips of the sts. perhaps with a viney habit: lvs. arrow-shaped, gray-pubescent beneath: fls. white, in summer. Japan. Var. **violàceum** is a dwarfer form.

acùtum. Per. vine, or erect when young, to 4 ft.: lvs. ovate-acuminate, deeply cordate-lobed at base, to 1½ in. long: fls. white, fragrant, ¼ in. across. Eu., W. Asia, N. Afr.

eréctum: *Marsdenia erecta.*

fuscàtum (*Vincetoxicum fuscatum*). Similar to *C. nigrum*, but of much smaller habit, briefly pubescent throughout except on corolla and fr. Portugal to Asia Minor.

nìgrum (*Vincetoxicum nigrum*). Black Swallow-wort. Per. twining or at first erect, to 4 ft.: lvs. ovate to ovate-lanceolate, entire, pubescent on veins: fls. reddish-brown, to nearly ¼ in. across, pubescent within. Eu., escaped from cult. in N. E. U. S.

Vincetóxicum (*Vincetoxicum officinale*). Differs from *C. nigrum* chiefly in its greenish-white and glabrous fls. Eu.

CÝNARA. *Compositæ.* Coarse herbaceous thistle-like per. or bien. herbs with large lobed or pinnately cut lvs. and large terminal heads of violet, blue or white disk-fls.; pappus plumose; native in Medit. region and Canary Isls.

Two species are grown as garden vegetables. They need rich soil and abundant moisture. The cardoon is blanched in much the same way as celery or endive. It is increased by seeds and by suckers. The artichoke is propagated also by division in early spring. Seeds give more variable results; if sown early enough edible heads may be obtained the same year, but usually not until the second year.

Cardúnculus. Cardoon. To 6 ft. or more, cult. for its edible root and thickened lf.-stalks: lvs. grayish-green above, white-tomentose beneath, spiny: heads purple, the bracts of involucre spine-tipped. S. Eu.

Scólymus. Artichoke. To 5 ft.: lvs. white-tomentose beneath, scarcely spiny: heads purple, the receptacle enlarged and fleshy and edible as are the thickened bases of the unarmed involucral bracts. Probably derivative of *C. Cardunculus.*

CÝNODON (*Capriola*). *Gramineæ.* Per. grasses, creeping and stoloniferous, and valuable for pastures and lawns in warm regions: lvs. short: spikelets one-sided, in slender spikes borne in digitate clusters at ends of sts.: native in Eu., Asia and Australia but now widely spread and nat. See *Grasses.*

Dáctylon. Bermuda-Grass. To 1 ft.: lvs. to 2 in. long and ⅙ in. wide, rough above: spikes to 2 in. long, spreading, in clusters of 3–5.—Much used for lawns in southern states.

CYNOGLÓSSUM. Hounds-Tongue. *Boraginaceæ.* Rather weedy mostly stiff-hairy herbs, ann., bien. and per., mostly in the temp. zones, with alternate simple lvs. and blue, purple or white small fls. in terminal one-sided racemes: fr. a bur or "stick-tight": sometimes grown in the flower-garden. Propagated by seeds.

amábile. Bien. to 2 ft.: lvs. lanceolate-oblong: fls. blue, ¼ in. long. E. Asia.

apennìnum: *Solenanthus apenninus.*

cheirifòlium. Bien. to 1½ ft.; white-woolly: lvs. oblong-spatulate, white-woolly on both sides: fls. reddish-violet to whitish. S. W. Eu. and Medit. region.

cœlestìnum: *Adelocaryum cœlestinum.*

furcàtum: *C. zeylanicum.*

glochidiàtum: *C. Wallichii.*

gránde. Per. to 3 ft.: lvs. mostly basal, ovate or oval: fls. blue or purple with white center, ½ in. long. Wash. to Calif.

linifòlium: *Omphalodes linifolia.*

nervòsum. To 3 ft.: lvs. lanceolate or oblong: fls. blue, ⅔ in. across. Himalayas.

nóbile: *Myosotidium Hortensia.*

virginiànum. Per. to 2½ ft.: lvs. oval or oblong: fls. blue, about ½ in. across. N. J. to Fla. and La.

Wállichii (*C. glochidiatum*). Ann. to 2 ft.: lvs. oblong or lanceolate: fls. blue, ⅛ in. long. Asia.

zeylánicum (*C. furcatum*). To 3 ft.: lvs. oblong, silky-hairy: fls. blue, ⅛ in. long. India.

CYNOSÙRUS. *Gramineæ.* Old World ann. and per. tufted grasses with flat lvs. and spikelets in clusters forming a dense spike-like infl.; one species sometimes grown in pastures. See *Grasses.*

cristàtus. Crested Dogs-Tail. Per. to 2½ ft.: lvs. to 5 in. long and ⅙ in. wide: spikes to 4 in. long, appearing crested because of the ciliate lemmas. Eu.; escaped in E. N. Amer.

CYNTHIA: *Krigia virginica.*

CYNOXLYON: *Cornus florida.*

CYPÉLLA. *Iridaceæ.* Bulbous herbs with both basal and st.-lvs. and yellow, orange or blue fls. in clusters, the perianth-segms. free; native of S. Amer. Differs from Iris and Moræa in characters of stigma and anthers.

These bulbs may be grown in the greenhouse or set out in spring and stored indoors over winter. Propagated by offsets or seed.

Hérbertii. To 3 ft.: lvs. linear, 1 ft. long, plaited: fls. yellow, 3 in. across, style appendages spur-like. Brazil, Uruguay, Argentina.

peruviàna. To 3 ft.: basal lvs. disappearing before blossoming, st.-lvs. 2–3, linear, to 9 in. long and ¾ in. wide at middle: fls. yellow spotted red-brown at base in narrow transverse bands, to 3½ in. across, style appendages petal-like and flat. Peru.

platénsis: name of no known botanical standing; the material so listed is usually referable to *C. plumbea.*

plúmbea. To 4 ft.: lvs. sword-shaped, plaited, glaucous: fls. bluish tinged with yellow, lasting only few hours. Trop. S. Amer.

CYPERÀCEÆ. Sedge Family. Grass-like herbs with slender solid usually 3-angled sts., lvs. with closed sheaths, small green fls. borne in spikes, perianth when present represented by bristles or scales, 2–3 stamens, 1-celled ovary, and fr. an achene. Fls. not showy, but many of the plants are attractive in form and habit. The family comprises about 75 genera, many of them inhabiting swamps and low places. Only a few are cult., as Carex, Cyperus, Eriophorum, Scirpus.

CYPERÓRCHIS. *Orchidaceæ.* A small genus of epiphytes formerly included in Cymbidium, but differing in having numerous distichously imbricated lvs., narrow perianth-segms. which are very little spreading, small terminal lobe of lip, elongate column somewhat grown to the lip and pyriform pollinia.

Mástersii (*Cymbidium Mastersii*). Lvs. linear, acute, to 30 in. long: fls. in 6–10-fld. short racemes; sepals and petals linear-oblong, ivory-white, about 2 in. long; lip 3-lobed, white with few rose-purple spots and orange-yellow central part of disk which bears 2 longitudinal ridges. Oct.–Dec. Himalayas.

Schroèderi (*Cymbidium Schroederi*). Lvs. linear, obtuse, to 24 in. long: fls. about 5, in racemes to about 1 ft. long; sepals and petals green sometimes marked with red-brown; lip 3-lobed, bright yellow striped with red-brown. Indo-China.

CYPÈRUS. Galingale. *Cyperaceæ.* Ann. and per. herbs with grass-like lvs. and bisexual fls. borne in spikelets which are assembled in heads or racemes and these in turn often in large terminal umbels; about 600 species of wide distribution.

Grown in ponds, as pot-plants and the chufa for its edible tubers. Propagated by division or by seeds sown in spring or early fall. In *C. alternifolius* the crown of leaves may be cut off and set in sand or moss, and new plants will form from the leaf-axils. The species in cultivation are perennial.

adenóphorus. Sts. to 2 ft., leafy below: spikelets stalked, on secondary or tertiary rays in the umbel. Brazil.

alternifòlius. Umbrella-Plant. Sts. to 4 ft., lvs. reduced to sheaths: spikelets sessile, on primary rays to 5 in. long, the umbels subtended by long lvs. giving an umbrella-like effect. Afr.; nat. in trop. Amer.—Requires much moisture at the root. Var. **grácilis** is a smaller plant with shorter involucral lvs. Var. **nànus** is advertised. Var. **variegàtus** has lvs. and sts. lined with white.

esculéntus. Chufa. Earth-Almond. To 3 ft.: spikelets sessile, the large umbels subtended by long broad involucral lvs. N. Amer., Eu., Asia.—Propagated in spring by planting the little tubers or chufas; the tubers are eaten when dry and are food for chickens and pigs.

grácilis: *C. alternifolius* var.

Háspan. Sts. to 3 ft., slender and tufted: basal lvs. much reduced, involucral lvs. usually 2, to 3½ in. long and ¾ in. wide. Atlantic coast from Va. southward, trop. Amer., Medit. region, S. Asia and Australia, usually in swamps.

nataléensis. Sts. to 2 ft., often nearly leafless: spikelets on rays to 7 in. long, the involucral lvs. short. Natal.

Papỳrus (*Papyrus antiquorum*). Papyrus. Sts. to 8 ft., lvs. reduced to sheaths: spikelets sessile, with many drooping thread-like rays to 1½ ft. long which are longer than the involucral lvs. S. Eu., Syria, Afr.—This is the paper plant of the Egyptians; a stately plant for ponds, growing in shallow water.

végetus. Sts. to 3 ft., branching: lvs. long, keeled beneath, rough: fls. in umbels subtended by 4–7 lvs. Spain, Portugal.

vìrens. Sts. to 3 ft., with long lvs. to ½ in. wide: spikelets sessile, the rays from ½–8 in. long. S. U. S. to S. Amer.

CYPHOMÁNDRA. *Solanaceæ.* Big herbs, shrubs or small trees with large entire 3-lobed or pinnately cut lvs., wheel- or bell-shaped fls. in racemes or cymes, and fr. a 2-celled many-seeded berry; native in S. Amer.

One species is grown for its edible fruit in the open in subtropical parts and occasionally in conservatories in the North. Propagated by seeds sown under glass and the plants treated as eggplants; also by cuttings of growing shoots.

betàcea. Tree-Tomato. Somewhat woody tree-like shrub to 10 ft., mostly soft-hairy: lvs. cordate-ovate, to 1 ft. long: fls. pinkish, ½ in. across, fragrant: fr. egg-shaped, dull red, to 3 in. long, smooth, with slightly acid tomato-like flavor. S. Amer.

fràgrans: *Solanum inæquale.*

CYPRESS: *Cupressus, Taxodium.* **False-:** *Chamæcyparis.* **Standing-:** *Gilia rubra.* **Summer-:** *Kochia scoparia.* **-Vine:** *Quamoclit pennata.*

CYPRIPÈDIUM. Lady-Slipper. Moccasin-Flower. *Orchidaceæ.* Terrestrial orchids native in the north temp. zone, with broad plicate lvs., fls. solitary or in few-fld. terminal racemes, with an inflated sac-like lip, column with 2 fertile anthers, and 1-celled ovary. Grown in rock-gardens or moist borders; see *Orchids* for cult. The greenhouse "Cypripediums" belong to other genera, as *Paphiopedilum* and *Selenipedium*, which see.

acaùle (*Fissipes acaulis*). Pink L. To 10 (rarely to 17) in. high, having 2 basal lvs. to 8 in. long and 3 in. wide (rarely to 11 in. long and 4½ in. wide): fls. solitary, to 5 in. across; sepals and petals greenish-brown; lip rose veined with darker crimson. May–July. Newf. to N. C. and Minn. Var. **álbum** has lip white, usually veined with pink.

arietìnum. Rams-head L. To 1 ft. high, with leafy sts.: lvs. 3–5, to 3½ in. long and about 1¼ in. wide: fls. solitary, with greenish-brown sepals and petals and crimson and white lip which is inverted-conical in shape. May–June. Que. to Mass., N. Y. and Minn.; also China.

Calcèolus (the yellow Lady-Slipper of Eurasia) var. **pubéscens** (*C. parviflorum. C. parviflorum* var. *pubescens. C. pubescens*). To about 22 in. high, sts. leafy: lvs. to 8 in. long, oval to elliptic-lanceolate: fls. 1–2; sepals and petals purplish-brown to green, petals more or less twisted; lip yellow veined with madder-purple. Apr. (in S.)–Aug. (in extreme N.). N. Amer.—The form called *C. parviflorum* is characterized by being usually smaller with smaller fls., deeper madder-purple sepals and petals, more twisted petals. The form called *C. parviflorum* var. *pubescens* or *C. pubescens* is usually larger and more hairy than *C. parviflorum*, with larger fls., greener sepals and petals and less twisted petals.

califórnicum. To 28 in. high, with leafy sts.: lvs. to 6 in. long, elliptic-ovate to ovate-lanceolate: fls. to 1¼ in. across, 3–7 in the axils of leaf-like bracts, with brownish-yellow sepals and petals and white or rose lip spotted with brown. May–July. Ore., Calif.

cándidum. Small White L. To 1 ft. high, with leafy sts.: lvs. 3 or 4, to 5¼ in. long and 1½ in. wide: fls. solitary, sepals and petals greenish veined with brown-purple, lip white with purple spots round the mouth and within. May–June. N. Y. and N. J. to Minn., Mo. and Ky.

fasciculàtum. Brownie or Clustered L. To 16 in. high: lvs. 2 to a st., opposite, to 4¼ in. long and 3 (rarely) in. wide: fls. about 1½ in. across, in 1–5-fld. congested racemes; sepals and petals greenish veined with brown; lip greenish-yellow veined with brown-purple. Apr.–Aug. Mont., Colo., west to Calif., Ore., Wash.

hirsùtum: *C. Reginæ.*

japónicum. To 18 in. tall: lvs. 2 to a st., transversely rhombic-ovate, to 6 in. long, commonly broader than long: fls. solitary, about 2½ in. across; sepals and petals greenish spotted with red at base; lip whitish or rose spotted with red. May–June. Japan, China.

macránthum. To 16 in. high, the sts. with 3–4 elliptical lvs.: fls. solitary; dorsal sepal, petals and lip pink to purple; lateral (united) sepals greenish-brown. May–July. Siberia, China, Japan, Formosa.

montànum. Mountain L. To 21 in. high, sts. leafy: lvs. to 6½ in. long and about 3 in. wide: fls. 4 in. across, in 1–3-fld. racemes; sepals and petals reddish-brown; lip white veined with purple. May–July. W. N. Amer.

parviflòrum: *C. Calceolus* var. *pubescens.*

passerìnum. Small White L. To 13½ in. tall, st. leafy and hairy: lvs. 4–6, lanceolate-elliptic, sticky-hairy, to 6 in. long: fls. solitary; sepals greenish, shorter than lip; lip white, spotted with purple within, about ½ in. long. June–July. Canada and Alaska.

pubéscens: *C. Calceolus* var.

Regìnæ (*C. spectabile. C. hirsutum*). Showy L. To about 30 in. tall, densely hairy, sts. leafy: lvs. to 8¾ in. long and 4¾ in. wide: fls. about 3 in. across, 1–2 together; sepals and petals white; lip white striped with rose or purplish. June–(rarely) Aug. E. N. Amer. west to Minn. and Mo.

speciòsum. To 16 in. tall: lvs. about 4–6 in. long and 2–3 in. wide, pubescent: fls. whitish or pink veined with rose; sepals and petals 1¾–2¼ in. long. Japan.

spectábile: *C. Reginæ.*

CYRÍLLA. *Cyrillaceæ.* One shrub or tree to 30 ft., native from Va. to W. Indies and S. Amer. and planted for ornament in the S. Propagated by seeds and cuttings under glass. **C. racemiflòra.** Southern Leatherwood. Deciduous or more or less evergreen: lvs. oblong, to 3 in. long, shining above: fls. small, white, in narrow axillary racemes to 6 in. long. June–July.

CYRILLÀCEÆ. Cyrilla Family. Three American genera of shrubs and trees bearing alternate entire lvs. and small bisexual fls. with 5 sepals and petals, 5 or 10 stamens, superior 2–4-celled ovary, and angled or winged frs. Cliftonia and Cyrilla are planted.

CYRTÁNTHUS. *Amaryllidaceæ.* S. African bulbous herbs with red or white fls. borne in umbels, the perianth-tube two or three times as long as segms.; may be grown out-of-doors in S. U. S.

flámmeus: listed name of form said to have fiery-red fls., but not known botanically.

lutéscens: *C. ochroleucus.*

Máckenii. Lvs. to 1 ft. long and ⅓ in. wide: fls. pure white, 2 in. long, the umbels on stalks 1 ft. high. Var. **Coòperi** (*C. lutescens* var.) has umbels of 5–10 yellow or cream-colored fls.

O'Brìenii. Lvs. to 1 ft. long and ⅓ in. wide: fls. bright scarlet, 1½ in. long, tube curved, the umbels on stalks longer than lvs.

ochroleùcus (*C. lutescens*). To 15 in.: lvs. linear, to ¼ in. wide and 1 ft. long: fls. yellow, to 2 in. long, in umbels of 2–3, on pedicels to ¾ in. long.

parviflòrus. Lvs. 1 ft. long, linear: fls. bright red, to 1¼ in. long, the umbels on stalks to 1 ft. long.

CYRTÒMIUM. *Polypodiaceæ.* Half hardy or greenhouse ferns with simply pinnate fronds; sori large, scattered; native in Asia, Afr., Pacific Isls.; differs from Polystichum in venation. They are known with us mostly as glasshouse ferns of simple cult. See *Ferns.*

Bútterfieldii: a form of *C. falcatum* with cut segms.

caryotídeum (*Aspidium falcatum* var. *caryotideum*). Differs from *C. falcatum* in the drooping habit and larger toothed segms. Japan, India.

falcàtum (*Aspidium falcatum. Polystichum falcatum*). Holly-Fern. Stiff, erect: fronds dark green, glossy, to 2½ ft. long and 8 in. wide, segms. to 4 in. long, ovate, edges entire or slightly wavy. Asia, S. Afr., Polynesia; frequent in conservatories. Var. **compáctum** is dwarf.

Fórtunei (*Aspidium falcatum* var. *Fortunei*). Similar to *C. falcatum* but fronds dull and with smaller lanceolate segms. Japan.

Rochefordiànum: a form of *C. falcatum* with deeply cut segms.

CYRTOPÒDIUM. *Orchidaceæ.* Epiphytic or terrestrial orchids with long plaited lvs. and fls. in lateral racemes or panicles, the sepals and petals nearly equal, the lip 3-lobed. For cult. see *Orchids.*

punctàtum. Epiphyte with fusiform pseudobulbs up to 3 ft. long: lvs. to about 2 ft. long and almost 2 in. wide: sepals and petals greenish-yellow or bright yellow, strongly undulate, irregularly spotted with madder-brown; lip with narrow claw, yellow edged with red or madder-purple. Feb –May. Fla. and trop. Amer.

CYRTOSIA: *Galeola.*

CYRTÓSTACHYS. *Palmaceæ.* Cespitose unarmed monœcious ringed feather-palms mostly with showy red petioles, sometimes grown under glass and to be expected in S. Fla.; species about 5, Malaya and Pacific Isls.: spadices below the lvs., or with the lower ones, paniculately branched, the stout branches 1–2 ft. long; fls. in 3's, the 2 staminate at the sides; stamens 6–12–15: fr. small and ovoid or long-ovoid. Attractive as young specimens, making good clumps, in trop. regions. See *Palm.*

Lákka. Trunks to 15 ft., slender, smooth: lvs. 4–5 ft. long, grayish or glaucescent underneath; pinnæ about 50, to 1½ ft. or more long, 1½ in. or less broad, gradually long-pointed, with strong midrib and secondary veins prominent; petiole and rachis red: drupe narrowly ovate-conic, attenuate, about ⅖ in. long, black with scarlet base; seed ovoid. Borneo.

Rénda. To 30 ft.: fr. ovoid or scarcely elongate, ⅖ in. long; seed round; otherwise much like *C. Lakka.* Var. **Duvivieriànum** has bright red rather than dark brownish-red petiole and rachis. Sumatra.

CYSTÓPTERIS (*Filix*). Bladder-Fern. *Polypodiaceæ.* Rock-ferns with delicate foliage useful for rockeries and damp rocky protected banks: fronds 2–4-pinnate; sori on back on veins, the indusia disappearing with age: native of the north temp. zone. See *Ferns.*

bulbífera. Berry B. Bulblet B. Fronds to 2½ ft. long and 5 in. wide, dark green, 2–3-pinnate, long tapering, segms. deeply incised, bearing bulb-like bodies on under surface from which new plants may be propagated. Newf. to Ga. and Ariz.

frágilis. Brittle-Fern. Fronds gray-green, to 10 in. long, short-pointed, 2–3-pinnate, segms. deeply cut. Widely distributed and variable; Greenland to Ga. and Ala. and westward, and elsewhere.

CYTHEREA: *Calypso.*

CÝTISUS. Broom. *Leguminosæ.* Shrubs with simple or trifoliolate deciduous or persistent lvs., sometimes the branches almost leafless, papilionaceous mostly yellow but sometimes purple and white fls. usually in terminal racemes, and flattened pods; they differ from Genista in the presence of an appendage or slight protruberance on one side of the seed base. Grown out-of-doors where hardy and some forced in the greenhouse for early spring bloom; many of them are very showy.

Brooms succeed in sunny positions in soil not too rich. In the greenhouse they should be kept cool until ready for forcing in January. Propagated by seeds, greenwood cuttings under glass, layers or grafting.

acutángulus. To 6 in., gray-pubescent, with many stiff sharp-angled branches: lvs. simple, clustered, small: fls. white, solitary or twin, before the lvs. Asia Minor.

álbus (*C. leucanthus. C. schipkaensis. C. lusitanicus*). To 1 ft.: lfts. to ¾ in. long: fls. yellowish-white to white, in terminal heads, in summer. S. E. Eu. Var. **pállidus** has pale yellow fls.—Some of the material in the trade under this name is *C. multiflorus* or *C. præcox.*

alpìnus: *Laburnum alpinum.*

Andreànus: *C. scoparius* var.

Ardoìnii. Prostrate shrub to 1 ft.: lfts. 3, linear-oblong, to ⅓ in. long, pubescent: fls. golden-yellow, to ½ in. long, usually 1–3 at ends of lateral branchlets: pod to ¾ in. long, very pubescent. S. France.—Not hardy N.

Attleyànus: *C. canariensis* var. *ramosissimus.*

austrìacus. To 3 ft.: lfts. to 1 in. long: fls. bright yellow, in terminal heads. July–Aug. S. E. Eu. Var. **Héuffelii,** a more slender shrub with smaller lfts.

Battandièri. Spineless shrub, branchlets appressed silvery-pilose becoming glabrous: lvs. on petioles 1 in. long, densely silvery-hairy; lfts. broadly obovate, to 1¼ in. long, obtuse, often mucronulate: fls. yellow, about ⅝ in. long, in dense elongated racemes: pod ascending, linear-lanceolate, laterally compressed, to nearly 2 in. long, silvery-villous. Algiers.

Beànii. Hybrid between *C. Ardoinii* and *C. purgans,* partly prostrate, to 16 in. high, lvs. simple, linear, to ½ in. long, hairy.

Búrkwoodii. Listed as growing to 4–5 ft., fls. deep garnet-red, in long sprays. Probably a hort. hybrid.

canariénsis (*Genista canariensis*). Genista of florists. Evergreen, much branched, to 6 ft.: lfts. to ½ in. long: fls. bright yellow, fragrant, in terminal short racemes, spring and summer. Canary Isls. Var. **ramosíssimus** (*C. ramosissimus. C. Attleyanus*) has very small lfts.

capitàtus: *C. supinus.*

Carlièri: *C. nigricans* var. *elongatus.*

ciliàtus. Similar to *C. hirsutus* but less pubescent on lvs. and pods. S. E. Eu. Var. **Grìsebachii** (*C. ponticus*) is more pubescent than type.

Dállimorei. Hybrid between *C. multiflorus* and *C. scoparius* var. *Andreanus:* fls. yellow, tinted with pink, wings crimson.

dalmáticus: *Genista silvestris* var. *pungens.*

decúmbens (*C. humifusa. Genista prostrata*). Prostrate, to 8 in.: lfts. to ¾ in. long: fls. yellow, axillary along branches. May–June. S. Eu.

diffùsus. Similar to *C. decumbens* but nearly glabrous throughout and taller. S. Eu.

elongàtus. To 5 ft.: lfts. to 1 in. long: fls. yellow marked with reddish-brown, axillary. Cent. and S. E. Eu.

emeriflòrus (*C. glabrescens*). Shrub to 2 ft., rarely 3½: lfts. to ⅝ in. long, elliptical-oblong: fls. golden-yellow: pod to 1¾ in. long. Alps.

fílipes (*C. palmensis*). Branches thread-like: fls. white, fragrant, axillary along the branches, in spring. Teneriffe.

fràgrans (*Genista fragrans. Spartocytisus nubigenus*). Lfts. densely pubescent: fls. white, fragrant, axillary, in spring. Teneriffe.

fúlgens: probably *C. scoparius* var.

glabréscens: the true *C. glabrescens* is probably not in cult.; see *C. emeriflorus.*

Grìsebachii: *C. ciliatus* var.

hirsùtus (*C. leucotrichus*). To 2 ft.: lfts. to ¾ in. long, hairy above: fls. yellow, axillary, May–June: pod villous. S. E. Eu.

humifùsa: *C. decumbens.*

kewénsis. Hybrid between *C. Ardoinii* and *C. multiflorus:* procumbent to 1 ft. high: lvs. sometimes simple but usually of 3 linear-oblong soft-pubescent lfts.: fls. creamy-white or pale yellow, ½ in. long, on slender branches. May. Var. **púrgans** is *C. purgans.*

Labúrnum: *Laburnum anagyroides.*

leucánthus: *C. albus.*

leucótrichus: *C. hirsutus.*

linifòlius. To 3 ft.: lfts. to 1 in. long, silvery-pubescent beneath: fls. bright yellow, in racemes, in spring. Spain, N. Afr., Canary Isls.

lusitánicus: *C. albus.*

maderénsis. Evergreen, to 20 ft.: lfts. to ¾ in. long: fls. bright yellow, slightly fragrant, in terminal and lateral racemes, spring. Madeira. Var. **magnifoliòsus** (*C. stenopetalus*) has larger lvs. and racemes.

monspessulànus. Evergreen, to 10 ft.: lfts. to ¾ in. long: fls. bright yellow, fragrant, in short racemes at the tips of lateral branchlets, in spring. S. Eu.

multiflòrus (*Spartium multiflorum*). White Spanish B. To 3 ft.: lfts. to ½ in. long: fls. white, axillary, in spring. Spain, N. Afr. Var. **álbus** is listed. Var. **incarnàtus** has fls. slightly blushed.

newreyénsis: listed name of a form with creamy-yellow and mahogany-red fls., probably a hort. hybrid whose generic position is in doubt as it may be a Genista.

nígricans. To 4 ft.: lfts. to 1 in. long: fls. yellow, in long slender terminal racemes. July–Aug. Cent. and S. E. Eu. Var. **elongàtus** (var. *longespicatus, C. Carlieri*) blooms again in fall.

palménsis: *C. filipes.*

pilòsa: *Genista pilosa.*

pónticus: *C. ciliatus* var. *Grisebachii.*

prǽcox. Hybrid between *C. multiflorus* and *C. purgans:* to 10 ft.: lfts. to ¾ in. long: fls. yellow, numerous along the branches, in May. Var. **álbus,** fls. white. Var. **lùteus,** fls. yellow.

prénticus: listed name.

procúmbens. Differs from *C. decumbens* in being more pubescent and growing to 2½ ft. high. S. Eu.

prolíferus. To 12 ft.: lfts. to 1¾ in. long: fls. white, axillary, spring and early summer. Canary Isls.

púrgans. To 3 ft., much branched: lvs. simple, to ½ in. long: fls. yellow, fragrant, axillary. May–July. S. Eu., N. Afr.

purpùreus. To 2 ft., procumbent: lfts. to 1 in. long: fls. purple, white or pink in some forms, axillary along the branches, in May. S. Austria. Var. **elongàtus** (var. *pendulus*), branchlets long and slender. Var. **eréctus,** upright habit. Var. **incarnàtus** is listed as semi-trailing with purple fls.

racemòsus (*Genista racemosa*). Evergreen, to 6 ft.: lfts. to ¾ in. long: fls. yellow, in long racemes, late spring. Probably hybrid.

radiàtus: *Genista radiata.*

ramosíssimus: *C. canariensis* var.

ratisbonénsis. To 6 ft.: lfts. to 1½ in. long: fls. bright yellow, axillary along the branches. May–June. Eu., W. Asia.

ruthénicus of lists is probably *C. hirsutus.*

sagittàlis: *Genista sagittalis.*

schipkaénsis: *C. albus.*

scopàrius (*Genista scoparia. Spartium scoparium*). Scotch B. To 10 ft.: lfts. to ½ in. long: fls. yellow, solitary or in pairs in the axils, spring and summer. Eu.; nat. in N. Amer. Var. **Andreànus** (*Genista Andreana*) has yellow fls. with dark crimson wings. Var. **fúlgens,** fls. bright copper-orange. Var. **prostràtus** (var. *pendulus*) branches prostrate. Var. **stríctus** is of more columnar habit. Var. **suécicus** is listed as more hardy than type.

sessilifòlius. To 6 ft.: lfts. to ¾ in. long: fls. bright yellow, in short racemes at tip of lateral branchlets, in June. S. Eu., N. Afr.

Spachiànus (*Genista Spachiana*). Differs from *C. canariensis* in its taller habit, obovate-acuminate lfts., and somewhat more elongated racemes. Canary Isls.

spinòsus: confused name.

stenopétalus: *C. maderensis* var. *magnifoliosus.*

supìnus (*C. capitatus. C. uralensis*). To 3 ft., twigs villous, sometimes procumbent: lfts. to 1 in. long: fls. yellow fading brownish, in terminal heads, in summer. Eu.

triflòrus (*C. villosus*). To 8 ft., sts. striate-angular becoming terete: lfts. elliptic to obovate, mucronate, villous beneath, stipules absent: fls. axillary, nodding in clusters of 1–3, spring: pod to 1 in. long. W. Medit. region.

uralénsis: *C. supinus.*

versícolor. Hybrid between *C. purpureus* and *C. hirsutus:* to 3 ft.: fls. with light purple keel, yellowish wings and whitish standard.

villòsus: *C. triflorus.*

Wátereri: *Laburnum Watereri.*

Wéldenii: *Petteria ramentacea.*

D

DABOËCIA. *Ericaceæ.* One evergreen heath-like little shrub suitable for rock-gardens but requiring winter protection in the N. It does best in a peaty soil. Propagated by seeds and by cuttings of half-ripened wood under glass. **D. cantábrica** (*D.* and *Menziesia polifolia*). IRISH-HEATH. To 2 ft.: lvs. elliptic, to ½ in. long, shining above, white-tomentose beneath: fls. purple, ½ in. long, nodding, in terminal racemes from June–Oct. W. Eu. In var. **álba** the fls. are white, **atropurpùrea** deep purple, **bícolor** (var. *versicolor*) striped with white and purple, **pállida** (var. *rosea*) rose-pink. Var. **nàna** is dwarf with smaller lvs.

DACRÝDIUM. *Podocarpaceæ.* Evergreen trees or shrubs with scale-like lvs. or linear on young specimens, diœcious fls., and nut-like seeds surrounded by an aril; about 16 species in the southern hemisphere; grown in Calif. For cult. see *Conifers.*

cupréssinum. RIMU. Tree to 100 ft., with long graceful drooping branches when young: lvs. ¼ in. and less long and decurrent in young state, about ⅛ in. long on mature parts: nutlet about ⅛ in. long, in an aril. New Zeal.

Fránklinii. HUON-PINE. Tree to 100 ft., with short horizontal branches and drooping branchlets: lvs. scale-like and imbricated, about 1/24 in. long: cones very small, with 4–8 scales. Tasmania.

DÁCTYLIS. *Gramineæ.* Tall per. grasses with flat lvs. and spikelets in dense clusters borne in open branched panicles; native of Eu. and Asia and one grown as hay, forage and pasture grass. See *Grasses.*

glomeràta. ORCHARD-GRASS. COCKS-FOOT. To 4 ft., tufted: lvs. to 9 in. long and ¼ in. wide: panicles to 8 in. long. Widely nat. in N. Amer. Var. **variegàta** has lvs. striped with silver and may be grown for ornament.

DACTYLÓPSIS. *Aizoaceæ.* One succulent plant from S. Afr. **D. digitàta** (*Mesembryanthemum digitatum*). Stemless, forming clumps: lvs. alternate and sheathing at base, cylindrical, to 3 in. long and ¾ in. thick, soft and pulpy: fls. solitary, terminal, white, to ¾ in. across, the petals stiff and filiform; stigmas 5.

DÆDALACANTHUS: *Eranthemum.*

DÆMÓNOROPS. *Palmaceæ.* Many palms of trop. Asia and beyond, most of them climbing, probably not successfully grown within our territory. They differ from Calamus in technical characters of spathes and fls.; very spiny.

DAFFODIL: *Narcissus.*

DÁHLIA (*Georgina*). *Compositæ.* Strong tender per. herbs, sometimes tall and tree-like in form, much branched, with large underground tubers, from mts. of Mex. and Guatemala, popular for the showy heads in red, purple, yellow and white, characteristic ornamentals of autumn and late summer: lvs. pinnate to 3-pinnate, differing on the same plant: rays large and showy, pistillate or neutral, now developed into narrow, rolled and quilled forms; heads often full double, compact and ball-like.

Dahlias require a full seasons growth, and if the soil is very rich they may not give much bloom before frost in northern regions; rather open "quick" soil, as a light loam suitable for corn or general garden purposes, produces good results, and any fertilizer that may be employed in the year of cultivation should be quickly available. Water must be supplied freely.

The customary propagation by the home gardener is by planting separately each tuber in the cluster. Care must be taken not to injure the crown. Only one stalk or trunk should be allowed, after danger from cutworms and early accidents is past. The cluster of tubers is carefully lifted in autumn as soon as the bloom is past, dried in the sun after the tops are removed, and stored in the cellar as are potatoes. The tubers are laid on the side when planted and covered about 6 inches deep. Plants are commonly set about 3 or 4 feet apart. The tall varieties may need staking, as they are likely to be tipped over and broken by wind; but if the tip or center of the plant is pinched out after two or three joints have grown, it may stand alone.

Some of the races of dahlia are grown readily from seeds, which, in the North, may well be started under glass. The single dahlias come well by this method and give good bloom the same year in late summer and autumn. The plants produce tubers, and these may be employed for further propagation, or a new lot may be grown each year from seed.

For more rapid propagation and particularly for the perpetuation of named varieties, cuttings may be employed. These cuttings may be made of strong stems, cut just below a joint, or by the sprouting of tubers; in either method, the work should be carried under glass and the young plants kept growing until time for setting out in spring. The stem-cutting produces shoots, which should be severed from the cutting when 4 or 5 inches high and treated as independent plants. If roots are employed, they may be placed whole in heat and the shoots taken off and grown independently.

The named varieties are now very many, and there is a special literature about them. Fanciers may be associated with the American Dahlia Society.

arbòrea: *D. excelsa.*

coccínea. Rather slender, 3–4 ft., st. glaucous: pinnæ or ultimate lfts. ovate-acuminate and sharp-serrate, the rachis narrowly bordered or wingless: rays typically 8 (single), short, broad and nearly or quite obtuse (about 1⅓ in. or less long), scarlet on upper surface and lighter underneath. Mex.

excélsa (*D. arborea*). FLAT TREE D. To 20 ft. or more, st. somewhat woody and glaucous: ultimate lfts. ovate-acuminate, coarsely few-toothed or practically entire: heads erect, opening flat, 4–5 in. across, rays about 8, purplish or crimson-pink. Mex.—Little known within our limits.

glabràta: *D. Merckii.*

imperiàlis. BELL TREE D. CANDELABRA D. Sts. few, often single and not greatly branched, to 20 ft., more or less woody: ultimate lfts. ovate, rather sharply and finely serrate or toothed: heads nodding, 4–7 in. across, bright lilac or light reddish, rays about 8 and forming a bell-shaped corolla-like bloom. Mex.—Thrives in S. Calif., and can be fld. in the N. if tubbed and taken inside in autumn.

Juarézii. CACTUS D. To 4 ft. or so: double or semi-double, most or all the long rays with recurved margins, irregular in length and overlapping, usually brilliant scarlet. Intro. from Mex.; commonly said to be a hybrid, but this origin is undetermined; see *D. Popenovii.*

Máxonii. Tree dahlia, to 18 ft., becoming more or less woody: ultimate lfts. lanceolate and conspicuously long-acuminate, dentate: heads erect, rays 8, opening flat, lavender-pinkish or lilac, ovate, to 2 in. long. S. Mex., Guatemala, where it is used for hedges.—Runs into white and also double; has bloomed in S. Calif.

Mérckii (*D. glabrata*). BEDDING D. Slender and glabrous, 2–3 ft., with finely cut foliage: ultimate lfts. or segms. 1–2 in. long and nearly as broad, mostly few-toothed or -serrate, more or less blunt: heads erect, 1–2 in. across, rays (single) lilac, short and nearly or quite obtuse. Mex.

pinnàta (*D. rosea. D. variabilis*). COMMON OR GARDEN D. Bush dahlia to 4 or 5 ft.: ultimate pinnæ ovate, crenate-dentate, grayish underneath, rachis more or less winged: heads horizontal or somewhat nodding, 2–4 in. or more across, much doubled and modified and various in color; rays probably originally 8 and rose-color or lilac. Mex.—Now runs into numerous forms in several classes.

Popenòvii. A single-fld. bush dahlia, 3–4 ft.: ultimate lfts. or segms. ovate to oblong-ovate, sparsely hairy, dentate: heads erect or at length recurved or nodding, to 3½ in. across; rays 8, single and of the cactus type, long and narrow-revolute, scarlet or cardinal. Guatemala.—Supposed ancestor of the cactus dahlias (*D. Juarezii*); it has been raised in this country.

rôsea: *D. pinnata.*

variábilis: *D. pinnata.*

Zimapánii: *Cosmos atrosanguineus.*

DAHLIA, CLIMBING-: *Hidalgoa Wercklei.* **Sea-:** *Coreopsis (Leptosyne) maritima.*

DAHOON: *Ilex Cassine.*

DÀIS. *Thymelæaceæ.* Deciduous shrubs with simple lvs. and bisexual fls. in terminal heads, the tubular calyx corolla-like; one species is grown out-of-doors in S. Calif. and S. Fla. Propagated by cuttings of half-ripened wood.

cotinifòlia. To 18 ft.: lvs. obovate or oblong, 2½ in. long: fls. pink, fragrant, ¾ in. long, hairy outside, the heads long-stalked. S. Afr.

DAISY: *Chrysanthemum.* **African:** *Arctotis stæchadifolia, Lonas inodora.* **Barbeton:** *Gerberia Jamesonii.* **Blue:** *Felicia amelloides.* **Carmel:** *Scabiosa prolifera.* **Dahlberg:** *Thymophylla tenuiloba.* **English:** *Bellis perennis.* **Globe-:** *Globularia trichosantha.* **Michælmas:** *Aster.* **Orange:** *Erigeron aurantiacus.* **Seaside:** *Erigeron glaucus.* **Swan River:** *Brachycome iberidifolia.* **Tàhoka:** *Machæranthera tanacetifolia.* **Transvaal:** *Gerberia Jamesonii.* **True:** *Bellis perennis.* **Turfing:** *Matricaria Tchihatchewii.* **White:** *Layia glandulosa.* **Yellow:** *Rudbeckia hirta.*

DAISY-TREE: *Olearia.*

DALBÉRGIA. *Leguminosæ.* Trop. trees or climbing shrubs with alternate pinnate lvs., small papilionaceous fls. in terminal or axillary panicles, and flattened pods; many species furnish valuable timber. Only one intro. into the subtrop. parts of the U. S. Propagated by seeds or cuttings.

Síssoo. Sissoo. Deciduous tree to 80 ft.: lvs. of 5 nearly orbicular abruptly acuminate lfts.: fls. yellowish-white, in short axillary panicles: pods to 4 in. long. India.

DÀLEA (*Parosela*). *Leguminosæ.* Herbs or shrubs native to N. and S. Amer., mostly in dry and sometimes desert locations: lvs. pinnate or simple, glandular-dotted: fls. papilionaceous, purple, white or yellow, in spikes or racemes. Sometimes transferred to grounds.

aùrea. Per. to 1½ ft., pubescent: lfts. 5–9, to ¾ in. long, silvery, the upper reduced: fls. yellow, in spikes to 3 in. long. S. D. to Tex.

enneándra. Per. to 3½ ft.: lfts. 5–11, ⅓ in. long, glabrous: fls. white, in spikes to 4 in. long. N. D. to Tex.

frutéscens. To 2 ft., shrubby: lfts. 13–17: fls. violet, in spikes to ¾ in. long. Tex. to Mex.

Schóttii. To 8 ft., shrubby, somewhat spiny: lvs. simple, linear, to 1¼ in. long: fls. dark blue to purplish, in racemes to 4 in. long. Colorado desert, Calif. to Lower Calif.

spinòsa. Smoke-Tree. Characteristic ash-gray shrub or small tree of the Colorado desert, to 25 ft., with few lvs. that soon fall leaving a bare very stiff-spiny effect: fls. violet-purple.

DALECHÁMPIA. *Euphorbiaceæ.* Trop. monœcious shrubs, usually climbing, with alternate simple lvs. and small fls. without petals borne in dense clusters with 2 colored involucral bracts; one species grown in the greenhouse. Propagated by cuttings.

Roezliàna. To 4 ft., erect, much branched: lvs. oblanceolate, 6 in. or more long, entire or with coarse teeth above middle: fls. yellow; bracts rose, to 2½ in. long, toothed. Mex. Var. **álba** has white bracts.

DALIBÁRDA. *Rosaceæ.* One simple-lvd. per. herb native in N. E. N. Amer., with stature of a violet, sometimes transplanted to the rock-garden or border where it grows well in sheltered positions in rich or woodsy soil. **D. rèpens** (*Rubus Dalibarda*). Tufted and creeping, pubescent: lvs. heart-shaped, to 2 in. across, wavy-toothed: fls. white, to ½ in. across, 1–2 at tip of scape. June–Sept.

DAMNACÁNTHUS. *Rubiaceæ.* A small genus of Asiatic shrubs with rigid much branched spiny sts., small subsessile lvs., and white funnel-shaped 4–5-lobed fls. solitary or in pairs in axils of lvs. **D. índicus.** To 5 ft.: lvs. ovate, ½–¾ in. long, acuminate, nerves obscure: fls. to ⅜ in. long, on short pedicels: fr. a small globose drupe to ⅛ in. diam. E. India to Japan.

DÀNAË. *Liliaceæ.* One evergreen shrub native in S. W. Asia and sometimes planted as an ornamental. **D. racemòsa** (*Ruscus racemosus*). Alexandrian-Laurel. To 3 ft.: lvs. scale-like, the apparent lvs. being modified branches to 4 in. long and 1 in. wide: fls. white, small, in short terminal racemes: fr. a red berry. For *D. androgyna*, see *Semele.*

DANDELION (*Taraxacum officinale*). The common dandelion is often gathered for greens. Improved large-leaved horticultural forms are grown as an autumn and spring vegetable, the plants attaining a large size and the leaves more tender. The seed may be selected from the best field-growing plants, but it is better to purchase the French seed of seedsmen. Sow in spring in well-manured soil, either in drills or in hills 1 foot apart. A cutting of leaves may be had in September or October, and some of the stools may stand until spring. The delicacy of the leaves may be improved by blanching them, either by the use of boards or earth. The plant is usually not left the second year.

DANGLEBERRY: *Gaylussacia frondosa.*

DÁPHNE. *Thymelæaceæ.* European and Asian shrubs, sometimes evergreen, with alternate (unless noted opposite) simple and entire lvs., white, purple or lilac bisexual fls. in short racemes or clusters, often preceding the lvs., and fr. a little drupe; grown out-of-doors or under glass; some of them are very low and good for borders or rockeries. Most of them are hardy to N. Y. and New England.

A well-drained light soil is best or for forced plants a compost of peat and loam. Propagated by seeds sown at once or stratified; by softwood cuttings or the evergreen species by hardwood cuttings taken in fall and carried till spring in a cool greenhouse; or by grafting in winter on seedling stocks or roots. Layers may also be employed; compost should be used in place of soil for 2 or 3 inches about the plant, removed the following spring and the small white buds planted in pots of fine soil.

alpìna. From 6 in. to 1½ ft., deciduous: lvs. to 1½ in. long, pubescent: fls. white or pinkish, fragrant, in terminal clusters. May–June. Eu.

altàica. Small deciduous shrub: lvs. oblanceolate to oblong, to 2½ in. long, glabrous: fls. white, little scented, few in terminal clusters. May and June. Siberia.

arbúscula. Shrub to 6 in., differing from *D. petræa* in its redder branchlets, lvs. to 1 in. long, margins revolute, and fls. to ⅝ in. across. Hungary.

Blagayàna. To 1 ft., evergreen: lvs. to 1¾ in. long: fls. creamy-white, fragrant, in terminal clusters in early spring. Mts. of Eu.

Búrkwoodii (*D. Burkwoodii Somerset*). Hybrid of *D. caucasica* and *D. Cneorum*, a compact bush with oblanceolate or narrowly oblong lvs. and profusion of blush-white fragrant fls. in spring; hardy.

cannábina. To 8 ft., branchlets soon becoming glabrous: lvs. oblanceolate to linear-lanceolate, short-petioled, glabrous: fls. white, purple or yellowish, in terminal and lateral bracted heads, fragrant: fr. red or orange. Himalayas.

caucásica. To 5 ft. or more, deciduous: lvs. oblanceolate to lanceolate, to nearly 2 in. long: fls. white, pubescent outside, fragrant, in terminal heads. Caucasus.

Cneòrum. To 1 ft., with trailing branches, evergreen: lvs. to 1 in. long: fls. pink, fragrant, in terminal clusters in early spring. Mts. of Eu. Var. **álba,** fls. white. Var. **màjor** has larger fls. Var. **variegàta,** foliage variegated.

collìna. Erect shrub to 3½ ft., evergreen: lvs. obovate to oblanceolate, to nearly 2 in. long, smooth above, pubescent beneath: fls. deep rose, to ⅜ in. across, in 10–15-fld. heads. Italy, Asia Minor. Var. **neapolitàna** (*D. neapolitana*) lvs. glaucous beneath, fls. fragrant: considered by some as a hybrid of *D. collina* and *D. Cneorum*, but found throughout the range of the typical form.

Dauphínii: *D. hybrida.*

Fionìana: *D. hybrida.*

Fórtunei: *D. Genkwa.*

Génkwa (*D. Fortunei*). To 3 ft., deciduous: lvs. opposite, to 2 in. long: fls. lilac, in clusters along branches of previous year, before the lvs.: fr. white and attractive. China.

Gnídium. To 6 ft., evergreen: lvs. linear-lanceolate: fls. yellowish-white, fragrant, in terminal panicles. S. Eu.

hýbrida (*D. Dauphinii. D. Fioniana*). Hort. hybrid of *D. odora* and *D. collina:* lvs. to 3½ in. long, elliptic-oblong, usually glabrous beneath: fls. very fragrant.

índica rùbra: *D. odora* var. *rubra.*

Laurèola. Spurge-Laurel. To 3 ft., evergreen: lvs. oblanceolate, to 3 in. long: fls. yellowish-green, in almost sessile racemes, in early spring. S. Eu., W. Asia. Var. **Phílippii** (*D. Philippii*) has obovate lvs. to 2 in. long; fls. violet on outside, fragrant. Pyrenees.

Mezèreum. To 4 ft., deciduous: lvs. to 3 in. long: fls. lilac-purple, fragrant, in clusters along branches of previous year, in early spring before the lvs.: fr. scarlet. Eu., W. Asia. Var. **álba** has white fls. and yellow fr. Var. **grandiflòra** has larger fls. Var. **rùbra**, fls. reddish-purple.

neapolitàna: *D. collina* var.

odòra. To 4 ft., evergreen: lvs. to 3 in. long: fls. white to purple, very fragrant, in dense terminal clusters, very early. China, Japan. In var. **marginàta** the lvs. are bordered with yellow. Var. **álba,** fls. white. Var. **rùbra** has wine-red fls. Var. **variegàta,** lvs. edged yellow, fls. pale pink.

oleoìdes. To 3 ft., pubescent, evergreen: lvs. elliptic, obovate to lanceolate, to 1½ in. long, becoming glabrous above: fls. white or pale lilac, pubescent outside, about ½ in. long. Medit. region; not hardy N.

petræa. To 6 in., much branched, evergreen: lvs. ½ in. long, margins entire and not revolute: fls. rose, fragrant, to ⅜ in. across, in terminal clusters, in June. S. Tyrol. Var. **grandiflòra** has larger fls.

Phílippii: *D. Laureola* var.

retùsa. Shrub to 3 ft., evergreen: lvs. oblanceolate, obtuse or more often emarginate, glabrous, to 3 in. long: fls. white, tinged rose or violet, to ¾ in. long, fragrant, in many-fld. terminal heads: fr. red. W. China.

serícea. Shrub to 2 ft., evergreen: lvs. lanceolate to oblanceolate, to ¾ in. long, glabrous above, usually pubescent beneath, crowded at branchlet ends: fls. rose, to ¾ in. long, in 3–8-fld. heads. Sicily, Crete, Asia Minor.—Plants cult. under this name are usually *D. collina*, from which this species is distinguished by its shorter lvs. and heads of fewer fls.

striàta. Shrub to 9 in.: lvs. oblanceolate, at ends of branchlets: fls. rose-pink, usually 8–12 in terminal heads. Eu.

sureil. To 9 ft. or more, sts. ascending, twigs white-tomentose becoming glabrous: lvs. lanceolate to oblong-lanceolate, to 5 in. long, acute, base wedge-shaped, margins somewhat wavy, petiole nearly ½ in. long: fls. ivory-white, to 1 in. long, usually 12–20 in lax head, lobes triangular with revolute margins: fr. orange-red, to ⅝ in. long. India.

DAPHNIPHÝLLUM. *Euphorbiaceæ.* Smooth evergreen small trees or shrubs with simple leathery lvs., diœcious fls. without petals borne in axillary racemes, and fr. a 1-seeded drupe.

The one species mostly planted in this country (*D. macropodum*) withstands several degrees of frost but requires winter protection; it is a small tree or shrub for the southern states and California. Propagated by cuttings or seeds if procurable.

hùmile. To 5 ft.: lvs. elliptic to oblong, to 5 in. long: fr. dark blue. Japan.

macrópodum. To 30 ft. and more: twigs red: lvs. oblong, to 8 in. long: racemes to 4 in. long: fr. black, with a bloom. China, Japan.

DARLINGTÒNIA. *Sarraceniaceæ.* One per. insectivorous herb native in Calif. and Ore., sometimes grown as a curiosity. It requires a moist cool atmosphere and abundant water at the roots. It may be grown out-of-doors in the N. with winter protection. Propagated by division of roots or by seeds. **D. califórnica** (*Chrysamphora californica*). California Pitcher-Plant. To 3 ft.: lvs. or pitchers in basal rosettes, tubular, with an arched white-spotted hood and a 2-forked appendage: fls. yellowish to dark purple, 1¼ in. long, solitary.

DARNEL: *Lolium temulentum.*

DARWÍNIA. *Myrtaceæ.* Evergreen shrubs native in Australia and sometimes planted in Calif.: lvs. opposite or scattered, small and entire: fls. red or white, small, sometimes subtended by showy bracts. Propagated by cuttings taken from tips of side shoots, in spring or fall.

citriodòra. To 2 ft., diffuse: lvs. nearly opposite, oblong to ovate-lanceolate, to ½ in. long: fls. in terminal heads with involucre of bracts slightly colored.

Scheúrmannii. Much branched procumbent shrub: lvs. opposite, linear, ½ in. or less long: fls. solitary on very short pedicels in axils.

thymoìdes. Diffuse and much branched low shrub: lvs. commonly opposite, lanceolate or narrower, margins revolute, ⅓ in. or less long: fls. in terminal heads of 4–8, the bracts shorter than fls. and soon falling.

DASHEEN: *Colocasia esculenta.*

DASIPHORA: *Potentilla fruticosa.*

DASISTOMA: forms known to be in cult. belong to *Aureolaria.*

DASYLÍRION. Sotol. *Liliaceæ.* Stiff desert tree-like plants having linear usually spiny-margined lvs. and small whitish fls. in dense panicled racemes; useful in desert work, or in formal plantings in dry warm regions; sometimes seen under glass as curiosities. The lvs. are utilized for thatching and baskets, the fiber is made into cordage, the heads are eaten, and an alcoholic beverage is extracted from the trunks. Of easy cult. as for yucca, to which they are related; propagated by seeds and cuttings.

acrótriche. Trunk 3 ft. or more: lvs. to 3 ft. long, ½ in. wide: infl. to 15 ft. high. Mex.

glaucophýllum. Trunk short: lvs. 3 ft. or more long, ½ in. wide, glaucous: infl. to 18 ft. high. Mex.

graminifòlium. Lvs. about 3 ft. long and ½ in. broad, green and glossy, prickles very short and yellowish-white. Mex.

longifòlium: *Nolina longifolia.*

longíssimum (*D. quadrangulatum*). Trunk to 6 ft.: lvs. 6 ft. long and ¼ in. wide: infl. to 20 ft. high. Mex.

quadrangulàtum: *D. longissimum.*

serratifòlium. Stemless or nearly so: lvs. to 3 ft. long and 1½ in. wide, glaucous. Mex.

texànum. Trunk short or underground: lvs. 2–3 ft. long and ½ in. broad, glossy-green, the prickles yellow turning brown: infl. to 15 ft. high. Tex., Mex.

Wheèleri. Trunk to 3 ft.: lvs. to 3 ft. long and 1 in. wide: infl. to 16 ft. high. Tex., Ariz., Mex.

DASYSTEPHANA: *Gentiana.*

DATE (*Phœnix dactylifera*). A fruit of very ancient cultivation by the Arabs and others in the arid regions of the Old World, principally northern Africa, where moisture is supplied by spring or underground water or by irrigation. High temperatures are required in the growing and ripening season and rain at harvest time is a decided detriment. The date of commerce is the naturally dried drupe of the palm, borne in heavy clusters. Dates are now grown in considerable plantations in southern California and Arizona, and possibly adapted to some parts of Texas and other regions. The date palm is also widely planted as an ornamental tree in semi-arid tropics and subtropics. When well established the tree withstands several degrees of frost.

The date is diœcious,—the male or staminate flowers on one tree and the females or pistillates on another tree. Seedless dates may be produced without pollination but they are inferior. Although adapted to wind pollination by nature, hand pollination has been practiced for centuries. One male tree to about 100 females is sufficient. This process consists in tying a piece of staminate inflorescence a few inches long, bearing 30 or more flowers, to the female cluster; as not all the female flowers in a cluster open at the same time, this operation needs to be repeated. The time of ripening and characteristics of the fruit can be considerably influenced by the choice of pollen varieties.

Propagation is by seeds and suckers, the latter being the prevailing method for the multiplication of particular or named varieties; and without as careful attention to varieties as with oranges or apples the rewards of date culture are small or negligible. The suckers arise about the base of the tree mostly before it reaches full bearing age. The sex of the sucker will of course be that of the tree from which it arises. The suckers are moved when three to six years old, mostly in spring when the ground is warm, the tops being headed back. Experience is required to assure uniform successful results. The cutting of offshoots extends through the first five to ten years of the mother palms life. If many suckers are removed at one time, it may require two years for the parent to recover, with consequent loss of fruit; and leaving the suckers on the tree also retards fruiting.

Trees grown from suckers should bear first crops in five or six years, depending on soil, location and treatment. At ten to fifteen years the tree should be in full bearing and continue indefinitely, yielding 100 to 200 pounds annually. Trees may be planted about 30 feet apart.

Certain dates under good conditions ripen naturally on the tree, but the fruits are likely to cure unevenly and for the most part the bunches are cut intact and matured in a warm place, not unlike the handling of bananas. Special ripening processes have been developed for superior results.

Many types and varieties, mostly of foreign origin, are grown. In the United States the kinds most commonly planted are Deglet Nur, Saidy, Khadrawi, Hayany and Fard.

DATE, JERUSALEM: *Bauhinia monandra.*

DATÍSCA. *Datiscaceæ.* Per. herbs resembling hemp in habit, one sometimes planted for ornament: lvs. alternate, compound: fls. diœcious, in clusters or the pistillate in racemes. Propagated by seeds and division

cannábina. To 7 ft.: lvs. pinnate, lfts. 7–11, linear-lanceolate, to 4 in. long, toothed: fls. yellow, small. Asia Minor to India.

DATISCÀCEÆ. Datisca Family. Three genera of trees or herbs in Asia, Eu. and W. N. Amer.: lvs. simple or compound: fls. mostly diœcious, of 4–9 sepals, no petals, 4–25 stamens, 1-celled ovary: fr. a caps. Placed near the Begonia family in the systematic schemes, although the plants lack such external resemblances. Datisca is rarely cult.

DATÙRA (incl. *Brugmansia*). *Solanaceæ.* Big bushy coarse erect annuals, or shrubs or small trees, mostly strong-smelling, sometimes grown for ornament, also medicinal: lvs. large, simple, entire or coarsely toothed: fls. large, trumpet-shaped, erect or drooping, red, white, yellow, violet: fr. a mostly prickly or spiny caps. There are two groups: one with the calyx breaking apart near base and left as cup or crown on the fr. (circumscissile); the other with calyx splitting lengthwise down one side (spathe-like).

The annual daturas are propagated by seeds usually sown indoors in the spring in the North; the perennials from seed and from cuttings, the latter preferably taken with a heel.

ægyptìaca: *D. Metel.*

arbòrea. Angels-Trumpet. Small tree; lvs. ovate-lanceolate, to 8 in. long, soft-hairy, in pairs: fls. white nerved with green, to 9 in. long, hanging, solitary, with musk-like odor; calyx spathe-like: fr. unarmed, 2½ in. long. Peruvian Andes.

ceratocaùla. Fleshy, with thick st. and horn-like branches: lvs. pinnately lobed, mealy beneath: fls. large, erect, white stained blue; calyx spathe-like: fr. more or less pendent, smooth. Aquatic plant of Mex. and Cent. Amer.

chlorántha. Shrub: lvs. broad-ovate: fls. yellow, drooping: fr. prickly. Habitat unknown.—Probably a form of *D. Metel.*

coccínea: *D. De Noteri.*

cornígera (*D. Knightii*). To 4 ft., branches downy: lvs. ovate: fls. drooping, very fragrant at night, white or creamy-white; calyx with a long spur. Mex.

cornucòpia: *D. Metel.*

De Nòteri (*D. coccinea*). Probably ann., 3 ft.: fls. fragrant, bright red, freely produced. S. Afr.—Of uncertain botanical identity.

fastuòsa: *D. Metel.*

fèrox. Sts. red at base: lvs. ovate, angled: fls. light blue. S. Eu.

grandiflòra: hort. name probably for form of *D. Metel.*

hùmilis: *D. Metel.*

inérmis: a form of *D. Stramonium* with spineless pods.

Knìghtii: *D. cornigera.*

Mètel (*D. fastuosa. D. cornucopia. D. ægyptiaca*). Ann. to 5 ft.: lvs. ovate-lanceolate, to 8 in. long, solitary or upper ones paired: fls. to 7 in. long, whitish within, violet outside to yellowish, often double; calyx purple, circumscissile: fr. spiny, nearly globose, 1¼ in. diam. India; nat. in tropics of both hemispheres. Var. **álba,** fls. white; **cærùlea,** fls. blue; **Huberiàna,** fls. blue, yellow and red. *D. humilis flava fl.-pl.* also belongs here.

meteloìdes (*D. Wrightii*). Per. cult. as ann., to 3 ft., grayish-pubescent: lvs. ovate, to 7 in. long: fls. erect, to 8 in. long, white tinged with rose or violet, fragrant; calyx circumscissile: fr. nearly globose, 2 in. across, with sharp spines. Tex. to Calif. and N. Mex.

quercifòlia. Ann. to 5 ft., sts. green, somewhat pubescent when young: lvs. deeply sinuate-pinnatifid, becoming glabrous at maturity: fls. as in *D. Stramonium*: caps. with prickles to ½ in. long. Mex.

règia: listed name of unknown botanical standing.

sanguínea. Tree-like shrub to 12 ft.: lvs. narrow-oblong, clustered, 7 in. long, soft-hairy, shining green above: fls. drooping, to 10 in. long, brilliant orange-red with yellow nerves, not fragrant; calyx spathe-like: fr. unarmed, 3½ in. long, top-shaped; seeds with narcotic properties. Peru.

Stramònium. Jimson-Weed (Jamestown-weed). Ann. to 5 ft.: lvs. ovate, to 8 in. long, lobed: fls. erect, white or violet, 4 in. long; calyx circumscissile: fr. 2 in. long, very prickly. Tropics; nat. in N. Amer.

suavèolens. Tree-like shrub to 15 ft.: lvs. ovate-oblong, to 1 ft. long: fls. nodding, white, to 1 ft. long; calyx spathe-like: fr. unarmed, spindle-shaped, 5 in. long. Brazil.—Usually cult. as *D. arborea.*

Tátula: the purple-fld. form of *D. Stramonium.*

Wrìghtii: *D. meteloides.*

DAUBENTÒNIA. *Leguminosæ.* Shrubs or trees with pinnate lvs., yellow or rose papilionaceous fls. in axillary racemes, and 4-winged or -angled pods; grown out-of-doors in warm climates.

grandiflòra: see *Agati grandiflora.*

puníceа (*Sesbania punicea*). To 6 ft. or more: lfts. 12–14, to 1 in. long: fls. red-purple, to ¾ in. long, in showy racemes to 4 in. long: pods to 4 in. long, 4-winged. Fla. to Miss., intro. from S. Amer.

Tripètii (*Sesbania Tripetii*). To 6 ft.: fls. orange-red with scarlet standard yellow-spotted at base, in drooping racemes. Argentina.

DAUCOPHYLLUM: *Musineon.*

DAÙCUS. *Umbelliferæ.* Herbs with pinnately decompound lvs., small white or yellowish fls. in compound umbels, and ovate or oblong frs.; one grown for the edible root.

Caròta var. satìva. CULTIVATED CARROT. Ann. or bien., to 3 ft., with thick fleshy orange-colored roots: lvs. finely cut into many narrow segms.: umbels usually globose, thus differing from the flatter umbels of the common wild form, subtended by leaf-like bracts which are pinnately cut into fine divisions. See *Carrot.*

DAVÁLLIA. *Polypodiaceæ.* Mostly small trop. ferns of the Old World, with finely divided foliage, chaffy creeping rhizomes that often spread on the surface of the soil or cling over the side of the pot; sori at or near margins of segms. Often grown in hanging-baskets or as fern-balls. Old plants may be divided; ordinarily grown in shallow pans in temperature 60–65°; it is often necessary to fasten the rhizomes down. See *Ferns.*

affìnis: the plant grown in gardens under this name is *D. dissecta.*

bullàta. SQUIRRELS-FOOT-FERN. BALL-FERN. Creeping brown-hairy rhizomes: fronds to 10 in. long and 6 in. wide, deciduous, 4-pinnatifid, segms. sharp-toothed, often sold as fern-balls. Malaya, India, Japan.

canariénsis. Rhizomes pale brown, crooked: fronds to 1½ ft. long and 1 ft. wide, 4-pinnatifid, segms. not sharp-toothed at apex. Canary Isls. to Spain and N. Afr.

denticulàta. Fronds to 2 ft. long and 15 in. wide, 3–4-pinnatifid, leathery and shining. Trop. Asia and Afr.

dissécta. Rhizomes extensively creeping: fronds to 1½ ft. long and 1 ft. wide, 4-pinnatifid, segms. sharp-toothed. Java.

élegans: the plant known to hort. under this name is *D. dissecta.*

fejeénsis. Fronds evergreen, to 1 ft. long, triangular, 4-pinnatifid into linear segms., drooping with age. Fiji Isls. Var. **plumòsa** is feathery and more gracefully drooping.

Griffithiàna. Rhizome creeping, covered with white or yellowish scales: fronds to 1 ft. long and 8 in. wide, 3–4-pinnatifid, segms. toothed or cut. India, S. China.

lùcida: *D. solida.*

Mooreàna: *D. pallida.*

pállida (*D. Mooreana*). Fronds to 3 ft. long, on straw-colored stalks to 1½ ft. long, 4-pinnatifid, segms. triangular. Aneiteum and Borneo.

pentaphýlla. Fronds 1-pinnate into 5 or more wavy-toothed segms. to 6 in. long and ½ in. wide. Java, Polynesia.

pyxidàta. Fronds about 1 ft. long and 9 in. wide, 3–4-pinnatifid, leathery and shining. Australia.

sólida (*D. lucida*). Fronds to 2 ft. long and 1½ ft. across, 3-pinnatifid. Malaya.

tenuifòlia: *Odontosoria chinensis.*

DAVÍDIA. *Nyssaceæ.* One Chinese deciduous pyramidal tree to 50 or 60 ft., hardy as far north as Mass. **D. involucràta.** DOVE-TREE. Lvs. alternate, broad-ovate, to 6 in. long, toothed: fls. monœcious or essentially so, without petals, in dense heads ¾ in. across subtended by 2 unequal creamy-white drooping showy bracts, the larger to 6 in. long, in May or June: fr. a green bloomy drupe to 1½ in. long. Var. **Vilmoriniàna** differs in having lvs. glabrous instead of silky-pubescent beneath.—Propagated by seeds, cuttings of half-ripened wood, and by layers.

DAVIÈSIA. *Leguminosæ.* Australian shrubs of the Chorizema group with alternate entire stiff lvs. and yellowish or red fls. having conspicuous bracts.

latifòlia. Large shrub: lvs. orbicular or ovate-lanceolate, to 3 in. long, reticulated: fls. in long axillary racemes.

DAWN-FLOWER, BLUE: *Ipomœa Leari.*

DAY-FLOWER: *Commelina.*

DAY-LILY: *Hemerocallis.*

DÈAMIA. *Cactaceæ.* A small genus of Cent. and S. Amer., once believed to be monotypic but now divided into 2 or more species, allied to Mediocactus and differing in fls. diurnal with areoles of ovary and fl.-tube hairy.

testùdo (*Cereus testudo*). Elongated st.-rooting clambering jointed plant hanging from rocks or ascending living trees; joints 1 ft. or more long and to 4 in. diam., wings usually 3, sometimes ribs 5–8; spines 10–25, bristly when young becoming stiffer, to ¾ in. long: fls. white, to 11 in. long: fr. red, spiny.

DEBREGEÀSIA. *Urticaceæ.* Shrubs and trees native in Asia and Afr., with alternate toothed lvs., unisexual fls. in clusters and fr. a syncarp composed of small fleshy drupes; one species is sometimes grown as an ornamental in the S. Propagated by seeds or by cuttings of young wood under glass.

longifòlia (*D. velutina*). To 20 ft.: lvs. lanceolate, to 6 in. long, rough and dark green above, white-tomentose beneath: fr. orange or red, about ⅛ in. across. S. Asia.

velùtina: *D. longifolia.*

DECAÌSNEA. *Lardizabalaceæ.* Two Asian shrubs with odd-pinnate lvs., polygamous fls. in panicled racemes, and fr. of 3 fleshy follicles; one species is grown in U. S., being hardy to N. Y.

Fargèsii. To 16 ft.: lvs. of 6–12 pairs of ovate entire lfts. to 6 in. long, glaucous beneath: fls. greenish, 1 in. long, drooping: fr. blue and bloomy, to 4 in. long. China.

DECIDUOUS: falling, shedding as the leaves of non-evergreen trees.

DECKÈNIA. *Palmaceæ.* A single feather-lvd. unarmed palm, **D. nóbilis,** probably not regularly grown in the U. S., allied to Dictyosperma. It grows to a great size; native in the Seychelles.

DÉCODON. *Lythraceæ.* One per. somewhat woody herb, native in swamps and about ponds from Me. to Fla. and La., and sometimes planted in wet locations and borders of ponds. **D. verticillàtus** (*Nesæa verticillata*). WATER-WILLOW. SWAMP LOOSESTRIFE. Sts. recurved, to 8 ft. long: lvs. to 5 in. long and ½ in. wide: fls. rose-purple, 1 in. across, in axillary cymes. July–Sept.

DECOMPOUND: more than once compound.

DECUMÀRIA. *Saxifragaceæ.* Shrubs climbing by aërial rootlets, having opposite lvs. that are deciduous or partially persisting, and small white fls. in terminal corymbs.; hardy in the N. only with protection. Propagated by cuttings of young wood under glass or rarely by seeds.

bárbara. Tall climber: lvs. ovate, to 4 in. long, glabrous and shining above: corymbs to 4 in. across. May–June. Va. to Fla. and La. along streams and in low grounds.

DECUMBENT: reclining or lying on the ground, but with the end more or less erect or ascending.

DECURRENT: running down along the stem, as the leaf of mullein.

DECUSSATE: opposite leaves at right angles, therefore in four rows up and down the stem; alternating in pairs.

DEERBERRY: *Vaccinium stamineum.*

DEER-BRUSH: *Ceanothus integerrimus.* **-Foot:** *Achlys triphylla.* **-Weed:** *Lotus scoparius.*

DEERÍNGIA. *Amaranthaceæ.* Herbs and subshrubs, some of them climbing, with alternate ovate lvs. and inconspicuous fls. in terminal panicles; native in Madagascar, Australia and the Pacific Isls.; about a half dozen species, one sometimes planted for ornament.

amaranthoìdes (*D. baccata. D. celosioides*). Woody climber to 15 ft.: fls. greenish-white: fr. a red globular berry ¼ in. across. Australia; grown in S. Calif. Var. **variegàta** has variegated lvs.

Amherstiàna: *Bosea Amherstiana.*

baccàta: *D. amaranthoides.*

celosioìdes: *D. amaranthoides.*

DEGUELIA: *Derris.*

DEHISCENCE: the method or process of opening of a seed-pod or anther.

DEILANTHE: *Cheiridopsis Peersii.*

DEINÁNTHE. *Saxifragaceæ.* Two Asian species related to Hydrangea, one sometimes grown in rock-gardens. **D. cærùlea.** Per. to 1½ ft.: lvs. 4 at top of st., ovate, to 4 in. or more long, toothed: fls. in terminal panicles, the fertile ones with blue petals and stamens. China.

DELÒNIX. *Leguminosæ.* African trees with 2-pinnate lvs., showy orange or scarlet fls. in corymbose racemes, calyx-lobes valvate, and great flat woody pods; one very showy species is commonly planted in frostless regions. Cult. as for Cæsalpinia.

règia (*Poinciana regia. Cæsalpinia regia*). Royal Poinciana. Peacock-Flower. Flamboyant. Wide-branching tree to 40 ft. or more: lfts. numerous and small: fls. bright scarlet, 3–4 in. across, mostly in summer: pods to 2 ft. long and 2 in. or more broad. Madagascar.—Differs from the true Poincianas in its much larger fls. and the calyx-lobes meeting edge to edge, and not strongly overlapping.

DELOPYRUM: *Polygonella articulata.*

DELOSPÉRMA. *Aizoaceæ.* Segregate from Mesembryanthemum (which see for cult.), native in S. Afr.: per., with lanceolate or narrower sessile soft lvs., the branches matted or plant sometimes stemless and with branching tuberous rootstock: fls. either rather small and white or yellow, or in some species large and purple; stigmas 5.

aberdeenénse (*M. aberdeenense*). Plant pubescent, papillose with spreading pubescence, branches crowded, becoming decumbent: lvs. to 1 in. long and ⅕ in. wide and thick: fls. reddish-purple, ½ in. across.

abyssínicum (*M. abyssinicum*). Shrubby with ascending sts.: lvs. 1½ in. long, cylindrical, pubescent, papillose: fls. rose, small. Abyssinia.

Brunnthàleri (*M. Brunnthaleri*). Branches 1 ft. or more high: lvs. spreading, 1½ in. long, papillose, edges fringed: fls. violet-rose, ¾ in. across.

cùpreum: hort. name.

Dàvyi. Sts. weak, to 1 ft. long: lvs. to 2 in. long and ⅓ in. wide and thick: fls. white, ½ in. across, in loose cymes.

echinàtum (*M. echinatum*). Erect or spreading, 1 ft.: lvs. to ½ in. or more long, hispid, thick, papillose: fls. solitary, yellowish or white, ½ in. across, on hispid peduncles.

Ecklònis (*M. Ecklonis*). Diffuse, more or less trailing: lvs. pubescent but a nearly or quite glabrous form in cult., linear, to 1 in. long, papillose: fls. ½ in. and more across, glistening-white.

Klinghardtiànum (*M. Klinghardtianum*). To 6 in., forming cushions: lvs. ⅓ in. long, papillose: fls. solitary, white or rose, ¾ in. across.

Lèhmannii: probably *Corpuscularia Lehmannii.*

millefòlium: listed name.

Pátersoniæ (*M. Patersoniæ*). Shrubby: lvs. 3-angled, ½ in. long and ¼ in. wide and thick, pubescent: fls. solitary or in 3's, whitish, small.

pergamentàceum. To 1 ft., branches crowded, glabrous: lvs. ascending, to 1¾ in. long, ⅓ in. wide and thick at base, bluntly keeled, glaucous: fls. solitary, white, 1¾ in. across.

robústum. Much branched shrub to 10 in., the branches pale: lvs. usually spreading, to 1 in. long and ⅓ in. wide and thick, keeled on back: fls. reddish-gold above, red below, ¾ in. across.

Stèytleræ. To 4 in., compact, the branches rough with papillæ: lvs. to 1½ in. long and ⅕ in. wide and thick: fls. white, 1 in. across, in cymes.

testàceum (*M. testaceum*). Shrub to 3 ft.: lvs. to 1 in. long and ¼ in. wide, 3-angled, gray-green and finely papillose: fls. copper-colored, ¾ in. across, in cymes.

DELÓSTOMA. *Bignoniaceæ.* S. American trees or shrubs with simple leathery lvs., funnelform 5-lobed fls. in terminal racemes or panicles, and oblong woody frs.; one species is sometimes grown in S. Calif.

ròseum. Lvs. oval or orbicular, to 6 in. long, tomentose beneath: fls. rose or pink, 1½ in. long, in panicles to 8 in. long: fr. dark purple, about 2 in. long. Ecuador, Colombia.

DELPHÍNIUM. Larkspur. *Ranunculaceæ.* Ann., bien. and per. herbs mostly of the north temp. zone around the world, of probably 300 or more species, a number of which are interesting and showy flower-garden subjects; lvs. palmate, variously cut and divided. The fls. have a large spur; they are mostly blue, but vary to pink, blush and white in garden races; in some they are naturally scarlet and red and in one of the cult. species are yellow. There are double-fld. stràins. The showy outer part of the larkspur fl., including the spur, is the calyx (5 sepals). The petals are smaller interior parts, 2 or 4 in number, the upper pair (sometimes united into 1) having spurs that project into the calyx spur; sometimes the petals are small and crowded in the throat of the fl. like a bee, as in some of the common garden kinds. Some of the species are known as cattle poisons. The Latin names are much confused in Delphinium, particularly in hort. material. There is an American Delphinium Society and interest in the group is active.

Many of the species of Delphinium are grown as border or wild-garden perennials, not having been developed into modified or striking horticultural forms. They are sometimes called "botanical" larkspurs, as *D. Andersonii, bicolor, Bulleyanum, carolinianum, decorum, exaltatum, Menziesii, scaposum, tricorne, variegatum, virescens.* Some of these species are native; other natives may be worthy of cultivation but are not entered here unless they have been introduced to gardens. These larkspurs are of simple cultural requirements where hardy. Some of them are spring and early summer bloomers and then go dormant, usually with fleshy or tuberous roots. Others are continuous growers, and bloom in summer and autumn.

Some of the attractive larkspurs are annual, and bloom readily the first year from seed and then perish, as *D. Ajacis* now much modified and available in many statures and colors, as well as doubles. Other annuals are *D. cardiopetalum, Consolida, divaricatum, halteratum, orientale, paniculatum.*

The main highly developed horticultural delphiniums fall into three groups: (1) Bouquet larkspurs, product of *D. grandiflorum,* short-lived perennials and often treated as biennials, or even as annuals where seasons are long; (2) Garland larkspurs, associated with *D. cheilanthum,* diffuse open growers; (3) Candle larkspurs, from *D. elatum* and probably related species, known by the tall commanding habit and the flowers in long thick spikes, the leading group amongst the special delphinium growers and to which most of the garden literature is devoted. A class of red larkspurs, under the name *D. Ruysii,* has lately come into prominence, into which the Californian *D. nudicaule* has apparently entered by means of hybridity.

Larkspurs are mostly hardy North, and require no very special attention as to soil and position, but thrive best in open exposure. They come readily from seeds, those of the perennials mostly blooming the year following the sowing. Of the perennial kinds the clumps may be divided in autumn or spring, or cuttings may be made of young shoots in spring or from second growth in summer after the flower-stems have been cut down. Asexual propagation of these kinds is essential in named garden varieties, but otherwise it is well to have fresh stock coming on from seed. As soon as the flowers are gone and before seeding, cut away the flower-stems (unless seeds are desired for sowing); frequently new flower-stems arise and give a second although usually inferior bloom in late summer or autumn. It is well to place sand or sifted coal-ashes about the crowns for winter protection, particularly on moist or heavy soils. The stately Candle larkspurs of the *D. elatum* type, with long erect spike-like racemes, are suitable for massing and for back borders, while the lower and loosely branching

Bouquet and Garland kinds are adaptable for beds and front borders.

Delphiniums are subject to diseases and insects. Plant in uninfected soil and take care not to import diseases in soil that comes with the plants, and do not propagate from infected stock. If the sclerotium rot develops, when the leaves become yellow and plant suddenly wilts, the only procedure is to prevent the spread to other plants. The infected stock should be dug up and burned, and the soil should be removed to an area of 18 inches broad and 12 inches deep; and organic matter in the soil should be avoided. Mites are often troublesome on delphinium plants and are difficult to control. Rotenone sprays are promising; the grower should keep in touch with the latest information from the research institutions.

In the following enumeration the species are perennial unless otherwise stated.

Ajàcis. Rocket L. Erect branching ann., 1–4 ft., root simple or branched: lvs. finely divided, mostly bunched at nodes: fls. blue, white, violet, pink, in long simple racemes, often double: follicle normally 1 but often more in cult. forms, pubescent. S. Eu.; popular in flower-gardens and somewhat escaped.

albéscens: *D. virescens.*

alpinum: *D. elatum* var.

Ándersonii (*D. Leonardii*). Erect to 2 ft. or less, several sts. from thickened root: lvs. to 3 in. or less broad, deeply cleft, slightly hairy: fls. deep blue, in open racemes to 10 in. long, spur short and curved at tip: follicles 3. Sierras and other mts., Calif., Nev., Utah.

atropurpùreum: *D. elatum.*

azùreum: *D. carolinianum;* the name is likely to be applied to any blue-fld. hort. kinds.

Bárbeyi (*D. subalpinum*). Stout and mostly simple, 2–3 ft. and more, usually pubescent: lvs. with few and broad divisions: fls. dark blue, in short and dense raceme, the sepals acuminate and mostly exceeded by the spur, upper petals yellow with blue tinge: follicles 3, glabrous. Wyo., Colo., Utah.—Sometimes planted.

Bárlowii. The plant now grown under this name is of the *D. cheilanthum* group, but the original *Barlowii* figured in 1837 is a very double form regarded as *D. elatum* × *D. grandiflorum,* not now in cult.

Belladónna: *D. cheilanthum* var. *formosum.*

Bellamòsum: *D. cheilanthum* var. *formosum.*

bícolor (*D. glareosum*). Erect, few-lvd., to 20 in., with thick fascicled root, the narrow lf.-divisions obtuse: fls. blue, in a short open raceme, spur somewhat exceeding sepals, upper petals brownish-yellow: follicles 3, glabrous or pubescent. S. D. north and west.—Sometimes planted in collections.

Brownii. Leafy-stemmed, 3 ft.: lvs. with about 5 divisions and again cleft into acute lobes: fls. dark blue or purple, in a lax raceme, spur straight and less than ½ in. long: follicles 3. Mont. to Alaska.

Brunoniànum. Musk L. To 18 or 20 in., musk-scented: lower lvs. reniform and 5-parted, upper 3-parted: fls. large, light blue with much darker margins and center, spur very short: follicles 3 or 4. Himalayas.—Little grown.

Bulleyànum. To 4½ ft.: lvs. deeply cut, somewhat pubescent: fls. deep blue, spur strongly hooked or nearly horse-shoe-shaped: follicles 3, lightly pilose. China.—Little grown.

califórnicum. Coast L. Root tuberous, st. to 7 ft. high, lightly pubescent: lvs. to 6 in. across, deeply parted and cut: fls. white or whitish, sometimes purplish inside, pubescent, in long dense racemes: follicles 3. Calif., near coast.

candelàbrum: form of *D. Ajacis.*

cándidum. Dwarf, slightly hairy: lvs. 5-lobed, to 5 in. across, strongly toothed but not much cut: fls. usually 3 on a branch, 2½ in. across, fragrant, white with purple anthers, spur to 2 in. long, ascending and recurved: follicles 3, densely tomentose. Mts. of trop. E. Afr.; recently intro. to N. Amer.

cardinàle. Scarlet L. Erect or flexuose, 2–3 ft. and often much more, from branching woody roots, finely pubescent, making long sts.: lvs. thick, cut into narrow often linear lobes: fls. long-spurred, in very open racemes, bright scarlet with yellowish petals, sepals often ¾ in. long: follicles mostly 3, glabrous. S. Calif.

cardiopétalum (*D. halteratum* var. *cardiopetalum*). Tap-rooted ann. to 20 in.: lvs. divided into linear or oblanceolate segms.: fls. blue, less than 1 in. across, in short terminal racemes, with upwardly projecting spur, petals heart-shaped: follicles 3, nearly or quite glabrous. S. France.

caroliniànum (*D. azureum* of botanists). Erect, 1–2½ ft., pubescent: lvs. cleft into narrow or linear segms.: fls. blue, pedicelled in open racemes, about 1 in. across, the long spur horizontal: follicles 3, pubescent; seeds strongly winged. Ga, south and west. Var. **Nortoniànum** (*D. Nortonianum*) is a taller plant, more pubescent, with large lvs.: fls. deep bluish-purple, spur ascending. Ozarks, Mo.

cashmeriànum. To 20 in., leafy: lvs. cordate-orbicular in outline, broad-lobed and sharply toothed: fls. blue, pubescent, 1–2 in. long, few and showy in a terminal broad or corymbose cluster, the spur shorter than sepals, slightly curved, obtuse or nearly so: follicles 3–5, hairy. High Himalayas.—Little cult., but distinct; rock-garden plant.

caucásicum: *D. elatum* in hort., but to botanists *D. speciosum.*

cheilánthum. Garland L. Tall, leafy, diffusely much branched above: lvs. with 3 or more deep widely separated mostly narrow divisions (except perhaps the radical ones): infl. open and loose, scarcely spicate; fls. blue, varying to whitish, large and open, at full expansion usually 1½–2 in. across in cult. forms, lightly pubescent, commonly not horizontal, spur ¾–1 in. long and stout and nearly or quite straight, petals open or spreading, blue or dull yellow, lower ones barbate and entire or nearly so: follicles 3, glabrous or pubescent; seeds 3-angled winged on margin, not scaly or only slightly so. Siberia, China. Var. **formòsum** is the usual cult. form, with large rich blue fls. to 2 in. across. To this var. belong the hort. races Belladonna and Bellamosum; fls. varying to white in var. **Mòerheimii.**

chinénse: *D. grandiflorum.*

cinèreum. Ann. larkspur of Asia Minor with small erect 3–5-lobed lvs. and small fls. with long spurs. Probably not in cult., but there has been listed a "cinerea," "cineraria," with large blue spurless fls. that apparently is a sport from *D. grandiflorum.*

cœlestìnum, cœléstis: hort. names, probably belonging to *D. cheilanthum* var. *formosum.*

columbiànum: *D. Nuttallii.*

Consólida. Forking L. Tap-rooted ann. to 1½ ft., forking rather than racemose: lvs. scattered, with linear divisions: fls. few, terminating the branches, 1 in. or more across, blue or violet: follicle 1, glabrous. Eu.—Little cult., the stock usually going under this name being *D. Ajacis.*

corymbòsum. To 2 ft. or more, pilose, late-blooming: lower lvs. palmatifid or 5-lobed, those on branches deeply 3-parted: fls. pale violet and greenish on back, in a broad infl., spur straight or slightly incurved and about ½ in. long and equalling remainder of fl.: follicles densely pubescent. Mts., Turkestan.

crassifòlium. To 1½ ft., simple, from short thick root, pilose: lvs. mostly basal, thickish, rounded in outline, to 4 in. across, cut to half or more their depth into cuneate lobes: fls. light blue, in open terminal racemes, spur curved: follicles 3. Turkestan, Siberia, China.—Perhaps not now cult. in N. Amer.

cucullàtum. Sts. many, to 6 or 8 ft. tall: lvs. like those of *D. elatum,* 6–7 in. across, pubescent: fls. small, yellowish-white to somewhat blue, about ¾ in. long, in a spike-like raceme: follicles 3. Wyo.

cultòrum. A collective name proposed by Voss in 1896 for the florist or garden larkspurs, that cannot be readily referred to botanical species; many of them bear double or semi-double fls. The name has been applied to the hort. races of *D. cheilanthum* and *D. elatum,* and is too diverse to be of much service at present.

dasyánthum. To 1½ ft., leafy, sts. usually simple, more or less pubescent: lvs. about as broad as long, deeply divided, the divisions 3-lobed and cut: fls. pubescent, light blue and splashed, spur short and straight: follicles 3, hairy. Turkestan, W. India.

decòrum. Slender or lax., 6–24 in., root a tuberous cluster, nearly or quite glabrous: lvs. few, cut or parted into narrow lobes, the basal ones shallowly cleft into broad segms.: fls. blue, petals tinged yellow, in loose often somewhat panicled racemes: follicles 3, glabrous. Calif.—Little cult.; useful in rock-garden. The name *decorum* has been applied to a hort. form of the *D. elatum* group.

Delavàyi. Tall and leafy with hairy st.: lvs. broad, 5-lobed to base and the lobes variously cut: fls. blue, pubescent, in long narrow racemes, spur about 1 in. long and mucronate: follicles 3. W. China.—Plant so called in cult. is probably one of the *elatum* group.

depauperàtum. To about 18 in., nearly simple, from tuberous root cluster, viscid-pubescent: lvs. orbicular to reniform, 1–2 in. across, 3–5-lobed: fls. dark blue to purple, 1¼ in. or less long: follicles 3. Ida., Ore., Calif.

dictyocárpum. To 2 ft. or more, leafy, sometimes hairy-pubescent: lvs. 5–7-lobed and the lobes cut: fls. blue, in open branched infl., spur straight: follicles 3, reticulate. Siberia.—Name of plants in cult. likely to be erroneous.

díscolor: one of the *elatum* forms.

divaricàtum. Very diffuse mostly simple-rooted ann., to 2 ft.: lvs. few, much divided into short narrow segms.: fls. purplish, ¾ in. across, terminal on the branches, spur long and straight and acute: follicle 1, pubescent. S. W. Asia.

Dùhmbergii. To 2 ft., leafy, hairy on lower part: lvs. 5–7-parted: fls. blue or white, glabrous, in a straight many-fld. raceme, spur 1½ in. long, straight, bracts usually colored. Russia, Siberia.

elàtum. Candle L. Bee L. Tall and very erect, to 6 ft. and more, the branches usually fastigiate: lvs. with broad mostly close or contiguous divisions that are sharply cut at the top: infl. a long more or less close spike-like raceme, the fls. on ascending not elongated pedicels; lower bracts very narrow, entire; fls. blue, little or not at all pubescent, usually not opening widely, 1 in. or less across, spur equally or slightly exceeding the sepals and slender and slightly curved and usually horizontal, petals small and closing the throat, brownish-purple, the lower pair bifid and yellow-barbate: follicles 3, lightly pubescent to glabrous; seeds widely winged, not scaly. Germany to Mongolia.—Presumed parent of the tall larkspurs with elongated spike-like clusters and relatively small fls.; it often persists in old yards. Plants cult. as *atropurpureum* and *caucasicum* are to be associated here, as also *D. palmatum.* Var. **alpìnum** (*D. alpinum*). Leafy up to infl.: bracts under lower pedicels divided and spike often leafy. Eu., Asia.

elongàtum. Tall, hairy on upper part: lvs. about 7-parted, glaucous underneath: fls. dark blue, about ½ in. long: follicles 3. Colo., Alta.

exaltàtum. Slender, to 5 or 6 ft., late-blooming, nearly or quite glabrous: lvs. with 3–5 narrow divisions usually cleft or toothed toward apex: fls. blue or purple, ¾ in. long, in long mostly dense terminal racemes, spur about ⅓ in. long and straight: follicles 3, pubescent. Woods, Pa. to Minn., Neb., Ala.—Seldom planted; not showy.

físsum. Slender, 2–3 ft., pubescent, from thick clustered root: lvs. orbicular in outline, cut to base into many very narrow divisions: fls. azure, with straight spur, in a close terminal spike: follicles 3. S. E. Eu.—Perhaps not now planted in N. Amer.

formòsum: *D. cheilanthum* var. The *formosum* of botanists, probably not in cult., from the Caucasus, is much like *D. elatum,* with purple-blue fls. and short spur.

Gayànum: alternative name for *D. Ajacis.*

Gèyeri. Erect, to 2½ ft.: lvs. mostly near base, much divided into linear lobes: fls. deep blue, sepals ½–¾ in. long, upper petals yellow: follicles usually 3, pubescent. Colo., Wyo., Utah.—Little planted; one of the cattle poisons.

glareòsum: *D. bicolor.*

glaùcum: *D. scopulorum* var.

grandiflòrum (*D. chinense. D. sibiricum*). Bouquet L. Much branched forked per. but often blooming first year from seeds, to 2 or 3 ft. or more: lvs. cut into many linear segms. making a fine feathery foliage: infl. open, diffuse, and fls. scattered or sometimes short-racemose on ends of main branches and on long spreading pedicels; fls. blue, opening wide, 1–1½ in. across, the slightly curved or straight spur equalling or exceeding the sepals, upper petals color of sepals or sometimes yellowish: follicles 3, pubescent. Siberia, China. Var. **álbum,** white-fld., and var. **pùmilum,** very dwarf, are listed. Var. **nànum,** also dwarf.—One of the commonest garden larkspurs.

halteràtum. Ann., like *D. cardiopetalum* but usually less leafy and less forked, and lower petals truncate. Medit. region.

Hánsenii. Mostly 2–4 ft. tall from a cluster of tubers, thinly hairy: lvs. mostly basal, much divided into narrow parts: fls. pale blue, lavender or pink to white, about 1 in. long, spur curved toward tip, in slender racemes: follicles 3. Cent. Calif.

hespérium. To 3 ft., from woody clustered root, usually simple: lvs. divided into narrow parts: fls. blue to white, in a rather dense raceme, spur straight or nearly so: follicles 3. Calif.

hýbridum. Hort. name for variants, perhaps hybrids, in the Candle larkspur group, *D. elatum;* this application cannot hold both because the assemblage is not definable and the name *hybridum* has earlier usage. The plant mostly known to botanists as *hybridum* is here included in *D. fissum.* The hybrid or ameliorated group known to hort. as *hybridum* may be called *D. cultorum* although there is no gain to designate it by a Latin name.

intermèdium: native plant included in the species *D. elatum.*

Lamartínii: blue-fld. hort. var. of *D. cheilanthum* var. *formosum.*

laxiflòrum: *D. villosum.*

Léonardii: *D. Andersonii.*

leucophæum: *D. Menziesii* var. *ochroleucum.*

likiangénse. Small nearly glabrous plant to 8 in. or less tall, from long deep roots: lvs. mostly radical, many-parted: fls. blue to lilac, more or less pubescent, nearly bell-shaped, 2–5 on the st., spur straight and thick, about 1 in. long: follicles 3. Likiang Mts., W. China.—Rock-garden or alpine-garden.

lùteum: color race of *D. nudicaule.*

Maàckianum. Branched, mostly leafy, to 3 ft.: lobes of lvs. blunt and in this respect differing from *D. elatum:* fls. blue, in panicles rather than spikes, spur straight or curved: follicles 3. E. Siberia.—Plants in the trade under this name are apparently hort. forms of Candle and Garland larkspurs.

macrocéntron. To 5 ft., hairy, leafy below: lvs. 5–7-parted, the lobes acute: fls. large, hanging, hairy, blue-and-green or yellow-and-green with whitish tips, spur very large and erect: follicles 3. High mts., E. trop. Afr.

Ménziesii (*D. Nelsonii*). Small per. with a cluster of thickened roots although sometimes reaching 2 ft., white-puberulent at least above: lvs. small, cut into linear divisions: fls. blue, 1 in. across, more or less pubescent outside, scattered or few in a loose raceme, spur about equalling the sepals: follicles 3, pubescent or glabrous, spreading. Rocky Mts., B.C., Calif. Var. **ochroleùcum** (*D. leucophæum*) has cream-color fls. with blue inside. Ore.

Mòerheimii: white Belladonna, *D. cheilanthum* var.

montànum. Low, usually simple, mostly 20 in. or less: lvs. divided to near base, pubescent both surfaces: fls. pale blue, borne few together on ends of branches, spur straight or at apex curved. Mts., S. Eu.—The name *montanum* in cult. is apparently not this plant.

Nélsonii: *D. Menziesii.*

Nortoniànum: *D. carolinianum* var.

nudicaùle. Red L. Slender, to 2 ft., told from *D. cardinale* by the broad mostly obtuse divisions of the lvs., which are few on the sts.: fls. long-spurred, red, sepals ⅓–½ in. long, petals mostly yellow: follicles 3, mostly puberulent, becoming glabrous. Calif. Var. **lùteum.** Fls. pale yellow, often or mostly larger.

Núttallii (*D. columbianum*). Slender, 6–18 in., with tuberous root: lvs. small, little more than 1 in. broad, with deep linear lobes: fls. small, in racemes, blue, sepals ¼ in. long, upper petals whitish: follicles 3, glabrous. Ore., Wash.

occidentàle. Tall, to 3 ft. or more, pubescent in top: lvs. to 6 in. across, 3–7-cleft, pubescent both surfaces: fls. dark blue, viscid, about ¾ in. long, spur straight or sometimes curved at tip: follicles 3. Rocky Mts.

ochroleùcum: *D. Menziesii* var.

orientàle. Ann. much like *D. Ajacis* but fls. smaller and violet-purple, spur short and declined. Fields, S. Eu., N. Afr., Asia.

oxysépalum. St. simple and erect, 12–20 in., very leafy: lvs. palmately 5-parted into incised lobes: infl. 10–12-fld., racemose; fls. pale blue, spur incurved and shorter than the long-acuminate sepals (about 1 in. long), petals brownish: follicles 3, glabrous or nearly so. E. Eu.

palmàtum: *D. elatum.*

paniculàtum. Much branched ann. to 3 ft. or more: lvs. small, cut into linear parts: fls. blue or blue-violet, 1 in. long, spur straight or upwardly curved, sharp-pointed: follicle 1. S. E. Eu., S. W. Asia.

Párishii. To 30 in. or so, glabrous, simple or nearly so, from a forked thick root: lvs. mostly basal, thickish, 2 in. or less across, twice parted: fls. azure to whitish, about ¾ in. long, spur lightly curved: follicles 3. S. Calif.

Párryi. To 3 ft., mostly simple and very finely pubescent, from a hard straight or forked root: lvs. cut into narrow or even filiform parts: fls. purplish or deep blue, about 1 in. long, pubescent, spur straight or nearly so: follicles 3. S. Calif., in coastal regions.

Penárdii: *D. virescens* var.

Przewálskii. Little glabrous plant to 10 in. high in its native place: lvs. deeply 3–5-parted, with obtuse lobes: fls. blue, usually terminal, spur straight or nearly so and about ¾ in. long: follicles 3, hairy. W. Mongolia.—Rock-garden plant. Name has been misapplied in gardens.

pùmilum: *D. grandiflorum* var.

Pylzòwii. Dwarf, silky-pubescent, leafy, to 10 in., from a long woody root: lvs. orbicular to reniform, divided, lobes nearly or quite obtuse: fls. deep purple, 2½ in. long, only 1–3 on a st., spur straight or at end curved: follicles 5. Limestone mts., W. China, at high altitudes.—The true plant probably not in cult. with us.

Requiènii. Erect bien. to 20 in., nearly simple: lower lvs. 5-parted, upper 3-parted, the segms. oblong or linear: raceme loose, the bracts narrow-lanceolate or linear, peduncles pubescent and bracted at middle; fls. blue, the curved spur about equal to the ovate white-hairy sepals; upper petals pale yellowish usually with bluish tinge: follicles 3. Medit. region.—Sometimes regarded as form of *D. Staphisagria,* differing in longer spur and bracts on peduncles, and less stature. Name often misapplied.

reticulàtum. To 3 or 4 ft., leafy, glaucous on lower part: lvs. pubescent, 3–5-lobed and acutely cleft: fls. small, dark blue and sometimes streaked yellow, viscid, in small racemes: follicles 3. Wyo., Ida.

Rùysii. Derivative from *D. nudicaule* and hort. races, in many forms. Pink Sensation now introduced and known as the Red larkspur belongs here; this plant is per. with fibrous root, 2 ft. and more high with fl. 1½ in. long standing crosswise, light pink.

scapòsum. To 30 in. from clustered hard root: lvs. 2 in. or less across with blunt lobes: fls. dark blue, about 1 in. across, standing crosswise in open raceme, spur short and nearly straight: follicles 3. Colo. to New Mex. and Ariz.

scopulòrum. Tall and very leafy, to 4 ft. and more, nearly or completely glabrous, not glaucous: lvs. large, parted into 3 divisions and again cut into sharp points: fls. blue to purplish, about ¾ in. long, in spike-like racemes, spur straight or a little curved: follicles 3. Ariz., New Mex. Var. **glaùcum** (*D. glaucum*). Plant more or less glaucous. High mts., S. Calif. to Alaska.

sibíricum: *D. grandiflorum.*

símplex. Erect and simple, mostly tall, to 3 ft., pubescent: lvs. divided into linear parts: infl. spike-like and narrow; fls. blue, pubescent outside, sepals obtuse, spur reflexed at tip, upper petals with brownish-white apex: follicles 3, pubescent. Wyo., Ore., Wash.—Seldom cult.

sinénse: *D. grandiflorum.*

speciòsum (*D. caucasicum*). Much like *D. elatum* in looks but seeds scaly while in *elatum* they are only indistinctly wrinkled or puckered: little branched, to 30 in. or more: lvs. hairy-pubescent, 3-parted and then cut into sharp points: fls. blue, 1¼ in. or more long, spur bent or hooked: follicles 3. S. E. Asia; plants in cult. may be some of the *D. elatum* forms. Var. **glabràtum** is glabrous.

spléndens: hort. form of Candle larkspur, *D. elatum* set.

Staphiságria. Tall stout bien. to 3 ft. or more, soft-hairy, st. thick: lvs. 5–7-palmatifid, the segms. broad-lanceolate and acute: raceme many-fld., simple or branched at base, bracts at base of peduncles, the upper ones linear; fls. blue, often greenish-striped, sometimes pale or white, the obtuse spur much shorter than sepals, upper petals whitish and prominent: follicles 3, swollen. S. Eu., Medit. region.—Seldom cult. with us; it yields the drug delphinine.

subalpìnum: *D. Barbeyi.*

sulphùreum: the cult. plant is probably *D. Zalil.*

tatsienénse. Much like *D. grandiflorum* but the infl. widely corymbose rather than axially racemose: to 2 ft. or more, diffuse: fls. violet-blue, about 1¼ in. long, standing crosswise, spur slender and curved or hooked at the end: follicles 3. Tatsien-lou region, W. China; name sometimes but incorrectly written *tatsíense.*—Grows quickly from seeds.

tenuiséctum. To 3 ft., leafy, from thick more or less woody root: lvs. divided into linear parts: fls. intense blue, in a raceme, spur short and stout: follicles 3. N. Mex., New Mex.

tiroliénse: form or range of *D. villosum.*

tricórne. Soft-stemmed simple per., 1–3 ft., roots a tuberous cluster: lvs. with many lobes nearly linear to lance-oblong: fls. blue, lilac, lavender to white, prominently pedicelled in a terminal raceme, 1–1½ in. across, spur about equalling sepals: follicles 3, light-pubescent to glabrous. Pa. to Minn., Ark., Ga.—A semi-succulent species sometimes planted for early spring bloom; often called "staggerweed."

tríste. To 3 ft., pubescent, nearly simple: lvs. 3–5-parted and sharply cut: fls. brown to brown-purple, gray-pubescent, about 1½ in. long, spur rather short: follicles 3, densely pubescent. Mts., Siberia.

trolliifòlium. Coarse, to 6 ft., leafy: lvs. orbicular in outline, large, 5–7-parted and again cut or lobed: fls.deep blue, small, spur very slender, infl. a long raceme. N. Calif., Ore.

truncàtum: hort. var. of the *D. elatum* group.

tyrolénse: erroneous spelling of *D. tiroliense.*

uliginòsum. About 15–24 in. from a short tap-root, glabrous or nearly so: lvs. mostly basal, later ones parted to the base: fls. blue or pink, about 1 in. long, spur straight or only slightly curved: follicles 3. Calif.

urceolàtum. Old name, probably not now represented in our cultures: to 5 ft., leafy: lvs. deeply 5-lobed, cut into acuminate parts: fls. blue suffused dull red, spur somewhat curved: follicles 3. Nativity not recorded.

variegàtum. ROYAL L. Root tuberous; st. simple or branched, to 18 in.: lvs. much parted or divided into oblong mostly obtuse segms., with spreading hairs: fls. royal purple varying to lavender, in a few-fld. loose raceme. Coast ranges, Calif.

vestìtum. Tall, to 3 ft., hairy: lvs. divided to middle into 5–7 cuneate crenate lobes: fls. pale blue, densely hairy, spur somewhat curved: follicles 3, hairy. High Himalayas.

villòsum (*D. laxiflorum*). Tall, erect: lvs. 3–7-parted, the segms. lanceolate-acute: raceme loose, the main bracts oblong or linear; fls. blue, the spur about equalling the sepals, petals brownish-purple: follicles 3 or 4, pubescent or hairy. Siberia, Turkestan, Russia.

vimíneum: a form of *D. virescens.*

viréscens (*D. albescens*). To 3 ft. or less, glandular-pubescent on upper part, root clustered and thickened: lvs. 4 in. or less across, divided into many narrow acute parts: fls. white or bluish-white, somewhat pubescent, 1¼ in. long, spur straight or curved: follicles 3. Wis. to Mont. and Tex. Var. **Penárdii** has lower part of st. glandular-pubescent and upper part only pubescent. Neb. to Colo. and Tex.

Wélbyi. To 2 ft.: lvs. rather small, 5-parted and the parts acutely lobed: fls. blue, pubescent, 2 in. across, in a short raceme, spur upright: follicles 3. Abyssinia.

yunnanénse. To 3 ft.: lvs. 5–7-parted, orbicular in outline, obtusely but deeply cut-lobed: fls. deep blue, in a long raceme, spur slender: follicles 3, glabrous. W. China, Tibet.—Plants under this name in gardens may be erroneous.

Zàlil. To 2 ft., nearly simple, from a thick woody root: lvs. deeply divided into stiffish very narrow acute segms. with recurved margins: fls. primrose-yellow, about 1 in. across, spur nearly or quite straight: follicles 3, glabrous, ribbed. Persia, where known as Zalil; fls. used in dyeing.—Little known in cult. *D. sulphureum* of lists appears to be this species.

DELTOID: triangular; delta-like.

DEMAZERIA: *Desmazeria.*

DENDRIUM: *Leiophyllum.*

DENDRÒBIUM. *Orchidaceæ.* Epiphytes of various habit and leaf form, the fls. in racemes or sometimes solitary, dorsal sepal and petals often similar, lateral sepals forming a more or less prominent sac or spur, lip entire or 3-lobed. Popular greenhouse orchids; for cult. see *Orchids.*

acuminàtum (*Sarcopodium acuminatum*). Pseudobulbs about 2 in. high, bearing 2 lvs. to 6 in. long: fls. white or yellow and white (sometimes with red), about 2½ in. across, in loose racemes about 5–20-fld.; lip 3-lobed. Feb.–May. Philippines.

aggregàtum. Pseudobulbs about 2 in. long, with 1 lf. to 3 in. long: fls. golden- or orange-yellow with deeper colored base to lip, in 3–12-fld. racemes. Mar.–May. Himalayas, Burma, Indo-China, Malaya.

Àinsworthii. Hybrid between *D. nobile* and *D. heterocarpum.*

álbo-sanguíneum. Sts. subcylindric, to 1 ft. high, leafy at extremity: lvs. to 6 in. long: fls. in 2–7-fld. racemes, yellowish-white with 2 reddish-purple spots on lip, about 2 in. long. Apr.–May. Burma.

ámplum (*Sarcopodium amplum*). Pseudobulbs to 2 in. long on a long creeping rhizome: lvs. to 6 in. long and 2 in. broad: fls. white to greenish-brown spotted with darker brown, mid-lobe of lip dark purple, in few-fld. racemes. Trop. Himalayas.

ánceps. Sts. to about 3 ft. long, densely covered with distichous triangular-ovate lvs. to 1¾ in. or more long: fls. in lateral few-fld. racemes, greenish-yellow, lip sometimes edged with purple. Apr.–May. Himalayas, Burma, Indo-China.

Ármstrongii. Hybrid between *D. heterocarpum* and *D. nobile* var. *cærulescens.*

Áshworthiæ. Pseudobulbs to 10 in. long, tapering toward base, 2-lvd. at the apex: lvs. ovate-oblong, to nearly 5 in. long, subobtuse, leathery: racemes 4–5-fld.; fls. cream-white, streaked with purple at base of lip, about 2½ in. across. Jan., Apr. New Guinea.

atroviolàceum. Pseudobulbs clavate, to 12 in. high, with 2 apical lvs. to about 5 in. long: fls. about 2–3 in. across, in 2–8-fld. racemes; sepals and petals whitish-yellow with violet spots; lip dark violet streaked with white and green on outer surface. Dec.–July. New Guinea.

aurantìacum. Sts. to 24 in. high, cylindric: lvs. to 4 in. long: racemes on leafless sts., 1–3-fld.; fls. golden-yellow. Apr. Himalayas, Burma, China.

aùreum: *D. heterocarpum.*

barbátulum. Sts. to 1½ ft. long: lvs. to about 4 in. long: fls. white, about ½ in. across, in dense 8–15-fld. racemes. Mar. India.

bellátulum. Sts. about 2 in. high: lvs. to 2 in. long: fls. white with an orange or purple-red lip. Nov.–Apr. Indo-China, China.

Bénsoniæ (*D. signatum*). Sts. to about 3 ft. high, leafless at flowering time: fls. white, the yellow lip orange-yellow at base and with purple spots in throat, 2 in. across, 1–3 together. May–June. Siam, Burma.

bigíbbum. Pseudobulbs to 1½ ft. long: lvs. leathery, to 5 in. long: fls. purple-red, 2 in. across, in 2–12-fld. racemes to 1 ft. long; lip 3-lobed. Sept.–Nov. Australia.

Brónckartii. Pseudobulbs to 3 ft. long: fls. pale rose with orange spot on lip, 2 in. across, in many-fld. pendulous racemes. Indo-China.

Brymeriànum. Sts. to 2 ft. long: lvs. to 5 in. long: fls. golden-yellow, about 2½ in. across, in few-fld. lateral racemes, the lip deeply fringed. Oct.–May. Burma, Indo-China.

burfordiénse: *D. dulce.*

Calceolària: *D. moschatum* var.

Cambridgeànum: *D. ochreatum.*

cariníferum. Pseudobulbs to 10 in. long: fls. 1½ in. across, with white sepals and petals and red-orange lip tipped with white or pale orange, long-spurred. Himalayas, Burma.

chessingtonénse. Hybrid between *D. heterocarpum* and *D. Wiganiæ.*

chlorostèle (*D. xanthocentron*). Hybrid between *D. Linawianum* and *D. Wardianum.*

chrysánthum (*D. Paxtonii*). Sts. to 7 ft. long, leafy: lvs. to 9 in. long: fls. 1–6, golden-yellow with 2 dark brown spots on throat, 1–2 in. across, lip toothed. Mar.–July, Sept.–Dec. Himalayas, Burma, Indo-China, China.

chrysodíscus: *D. melanodiscus.*

chrysotóxum. Sts. clavate or fusiform, to 15 in. long with 3–8 lvs. at the summit: lvs. linear to oblong-elliptic, to 6 in. long: racemes pendulous, loosely 8- or more-fld., about 6–9 in. long; fls. golden-yellow, about 2 in. across, lip orange in throat, fringed. Mar.–July. Burma, Indo-China, China. Var. **suavíssimum** (*D. suavissimum*) has large chestnut spot on lip.

ciliàtum. Sts. to 1½ ft. high: lvs. to nearly 5 in. long: fls. in 5–17-fld. racemes to 10 in. long; sepals and petals greenish-yellow; lip 3-lobed, yellow veined with red, the middle lobe fringed. Oct.–Nov. Burma, Indo-China.

Cœlógyne (*Sarcopodium Cœlogyne*). Pseudobulbs on a long creeping rhizome, 2 in. high, bearing 2 leathery lvs. to 6 in. long: fl. solitary, large, 2 in. or more wide; sepals and petals yellowish-green densely spotted with purple; lip dark purple. Oct.–Dec. Burma.

crassinòde: *D. pendulum.*

crepidàtum. Sts. cylindric, to 1½ ft. long: lvs. linear-lanceolate, to 6 in. long: racemes 2–3-fld.; fls. about 1–1½ in. across, white suffused with rose or lilac, center of lip golden-yellow. Feb.–Mar. Himalayas, Burma, Indo-China.

cretàceum. Sts. thickened, to almost 15 in. long, pendulous: fls. solitary, cream-white with disk of lip yellowish streaked with orange-red or purplish. May–July. Burma, Himalayas, Indo-China.

crumenàtum. Sts. to 3 ft. or more long, with basal fusiform pseudobulbous thickening to 6 in. long: lvs. about 4 in. long: fls. lax, solitary on the leafless upper part of the sts., white or pale rose-suffused, with yellow patch on lip. Indo-China, Burma, Malaya, Philippines.

crystállinum. Sts. to about 1½ ft. long, leafless when flowering: lvs. to 6 in. long: fls. in clusters of 1–3, about 2 in. across; sepals and petals white tipped with rose; lip golden-yellow at base. Apr.–June. Himalayas, Burma, Indo-China.

cùpreum: *D. moschatum* var.

Cúrtisii. Hybrid between *D. Cassiope* and *D. heterocarpum.*

cymbidioìdes. Pseudobulbs ovoid, 4- or 5-angled, about 1½ in. high, 2-lvd. at the summit: lvs. oblong or elliptic, to 6 in. long, leathery: infl. 6–14-fld., to about 10 in. high; fls. pale yellow, about 1½ in. across; sepals and petals narrowly oblong; lip 3-lobed, white marked with purple and yellow. Feb.–Aug. Java, Sumatra.

Dalhousieànum: *D. pulchellum.*

Dèarei. Sts. to 3 ft. high: lvs. to 3 in. long: racemes 3–8-fld.; fls. large, white with yellowish-green in center of lip, to 2½ in. across. Dec.–May, July–Aug. Philippines.

densiflòrum. Sts. clavate, to 20 in. high, with 3–5 leathery lvs. about 6 in. long near the summit: fls. pale or golden-yellow with orange-yellow lip, about 2 in. across, in dense many-fld. pendulous racemes to about 9 in. long. Mar.–May. Himalayas, Burma, Indo-China.

Devoniànum. Sts. to 3½ ft. long: lvs. to 4 in. long: fls. about 2 in. across, usually solitary or 2 on leafless sts., white tipped with rose, the fringed lip with 2 large orange-yellow spots. May–Aug. Himalayas, Burma, Indo-China.

dixánthum. Sts. subclavate, to about 3 ft. high: fls. yellow with orange spot on lip, in 1–5-fld. racemes. Burma, Indo-China.

Dominiànum. Hybrid between *D. Linawianum* and *D. nobile.*

dracònis. Sts. to 18 in. high: lvs. to about 3 in. long: racemes axillary on upper part of st., 2–5-fld.; fls. about 1½ in. across, ivory-white with 3 golden-yellow or orange-red ridges on lip. May–July. Burma, Indo-China.

dúlce (*D. burfordiense*). Hybrid between *D. heterocarpum* and *D. Linawianum.*

endócharis. Hybrid between *D. heterocarpum* and *D. moniliforme* (the latter being *D. Linawianum*).

eriæflòrum. Sts. to 14 in. long: lvs. oblong-lanceolate: fls. usually green or greenish-white veined with red, in many-fld. racemes. Himalayas.

euósmum. Hybrid between *D. nobile* and *D. endocharis.*

Fálconeri. Sts. much branched, swollen at nodes, to 3 ft. long: lvs. to 6 in. long: fls. 2–3 in. across, solitary, white or pale rose tipped with violet, the lip with dark purple throat surrounded by orange-red. May–July. Burma, Himalayas.

Fármeri. Sts. clavate, to 1½ ft. high: fls. about 2 in. across, in many-fld. pendulous racemes; sepals and petals white, yellowish-white or pale rose; lip golden-yellow tipped with rose. Apr.–June. Himalayas, Burma.

fimbriàtum. Sts. cane-like, to about 5 ft. long: lvs. to 6 in. long: racemes pendulous, to about 6 in. long, 6–12-fld.; fls. to almost 3 in. across, deep yellow; lip orange-yellow, fringed. Mar.–Apr. Himalayas, Burma. Var. **oculàtum** has a large dark brown or purple blotch in throat of lip.

Findlayànum. Sts. to 2 ft. long with club-shaped internodes: lvs. 3 in. long: fls. about 2–3 in. across, 1 or 2 together on leafless sts.; sepals and petals white tinged with rose; lip deep yellow in throat fading to white near edges. Feb.–May. Burma.

formòsum. Sts. to 1½ ft. high: lvs. to about 5 in. long: racemes 2–4-fld., near apex of st.; fls. snow-white with center of lip orange-yellow, to 4 in. across. Jan.–May. Himalayas, Burma. Var. **gigantèum** has larger growth and fls. to 5 in. across.

Friedricksiànum. Sts. thick, much furrowed: infl. a 3–4-fld. slender arching raceme; sepals and petals light yellow; lip bright yellow with purplish blotch, tomentose at base. Siam.

fusifórme: *D. speciosum* var.

Gòldiei: *D. superbiens.*

Griffithiànum. Sts. fusiform, to 1½ ft. high, furrowed, 3–5-lvd.: infl. a many-fld. pendent raceme; fls. bright yellow, to nearly 2 in. across; sepals oblong, petals nearly orbicular; lip orange, orbicular, fringed. May–June. Burma.

heterocárpum (*D. aureum*). Sts. stout, to about 30 in. long: lvs. to over 7 in. long: fls. 2½–3 in. across, in clusters of 2 or 3; sepals and petals cream-colored; lip yellow marked with red or reddish-purple. Blooms all year. Himalayas and Ceylon, to Java and Philippines.

Híldebrandii. Sts. slender below, thickened above, to 2 ft. long: lf. elliptic-oblong, to 5 in. long: racemes axillary, 3–4-fld.; sepals and petals pale green, whitish-yellow or creamy-pink, the lip yellow, sometimes with 2 brown blotches in throat. Apr. Burma.

Híllii: *D. speciosum.*

Hóllrungii. Sts. leafy, to 2½ ft. long: lvs. ovate-lanceolate to elliptic-lanceolate, to about 6 in. long: racemes densely fld.: fls. yellowish-white, having a lip with a dark green tip. New Guinea.

infundíbulum. Sts. cylindrical, to 2 ft. long: fls. about 3–4 in. across, snow-white with orange-yellow spot on lip. May–Aug. Burma. Var. **Jamesiànum** (*D. Jamesianum*) has lateral lobes of lip roughened and disk of lip cinnabar.

Jamesiànum: *D. infundibulum* var.

Jénkinsii. Plant dwarf; pseudobulbs crowded, to 1½ in. long, 1-lvd.: lf. oblong-oval, about 1 in. long: fls. solitary or 2, orange-yellow with darker disk of lip, to 1½ in. across, sepals oval, petals rhomboid much broader. Assam and Burma.

Kingiànum. Pseudobulbous sts. up to 6 in. long, with 2–5 lvs. to about 4 in. long: racemes 3–12-fld.; fls. rose or whitish striped with violet, the 3-lobed lip marked with a greenish-yellow callus. Mar.–Apr. Australia.

Linawiànum (*D. moniliforme*). Thickened sts. clavate, to 1½ ft. long: fls. in 2's or 3's, about 2 in. across, rose-purple fading to white at base, the lip obscurely 3-lobed. China, Japan.

lituiflòrum. Sts. thickened, to 2 ft. long: lvs. to 4 in. long: fls. 2–2½ in. across, in groups of 1–5 on leafless sts.; sepals and petals amethyst-purple; lip curved like a trumpet, maroon-purple or violet in throat surrounded by a broad white zone. Mar.–June. Burma.

Lỳonii. Similar to *D. acuminatum* from which it differs in larger lvs., longer floral bracts and larger rose-carmine fls. with wine-red lip. May–June. Philippines.

macrocárpum: listed name.

macrophýllum. Sts. clavate-thickened above, to 1 ft.

high, with 2–3 lvs. to 10 in. long at the summit: fls. about 2 in. across, in 4-many-fld. racemes to about 14 in long; sepals greenish-yellow, petals whitish; lip 3-lobed, greenish-yellow marked with purple. Nov.–Dec. Pacific Isls.

melanodíscus (*D. chrysodiscus*). Hybrid between *D. Findlayanum* and *D. Ainsworthiæ.*

micans. Hybrid between *D. Wardianum* and *D. lituiflorum.*

monilifórme: *D. Linawianum.*

moschàtum. Sts. cylindric, leafy throughout, to 6 ft. high: lvs. to 6 in. long: racemes to 12 in. long, pendulous, 8–15-fld.; fls. reddish-yellow with a pair of red-brown spots near the base of the calceolate lip, about 3–4 in. across. May–Aug. Himalayas, Burma. Var. **Calceolària** (*D. Calceolaria*) has smaller more intensely colored fls. Var. **cùpreum** (*D. cupreum*) has copper-colored fls.

nóbile. Sts. cylindric, nodose, to nearly 3 ft. high: lvs. to about 4 in. long: fls. to about 3 in. across, in 2's (rarely 3's); sepals and petals rosy-purple fading to white at base; lip white tipped with rose and with dark purple throat. Jan.–June. Himalayas, Burma, China. Runs into various color forms, such as: **álbum** with pure white sepals and petals; **Amesiæ** with large pure white fls. and lip with maroon disk; **Arnoldiànum**; **Ashworthiànum** with greenish-white fls.; **Balliànum** with pure white fls. slightly tinged with rose-pink on disk of lip; **Cooksoniànum** with petals colored like the lip; **murrhiniàcum,** fls. white tinged with violet, the throat deeper; **nobílius** with larger deeper colored fls.; **Oweniànum**; **Rothwelliànum**; **Sanderiànum,** sepals and petals intense rose-purple, lip rose with large black-purple spot surrounded by narrow white zone; **summiténse**; **virginàle,** with pure white fls. slightly tinged with primrose on lip.

ochreàtum (*D. Cambridgeanum*). Sts. cylindric, nodose, to 12 in. long: racemes short, 1–3-fld.; fls. 2–3 in. across, rich golden-yellow with chestnut or purple throat to the lip. Mar.–May. Himalayas, Burma.

Oweniànum. Hybrid between *D. Linawianum majus* and *D. Wardianum.*

Párishii. Sts. thickened, to 1 ft. long: lvs. to 5 in. long: racemes 1–3-fld.; fls. rose to lilac-purple, with a pair of dark purple blotches in the throat of the lip, about 2 in. across. May–July. Burma.

Páxtonii: *D. chrysanthum.*

péndulum (*D. crassinode*). Sts. cylindric, nodose, to 2 ft. long: lvs. to about 5 in. long: racemes short, 1–3-fld.; fls. to 2½ in. across, white tipped with purple, the lip with a yellow throat surrounded by a white zone and tipped with purple. Burma.

Phalænópsis. Sts. 2 ft. or more high: racemes to 2 ft. long, 4–18-fld.; fls. to over 3 in. across, rose, purple or whitish-rose with dark purple throat to the lip. May–Nov. Australia to New Guinea and Timor. Var. **Schroederiànum** has white sepals and petals, and lip deep violet or white. Var. **Statteriànum** has deep violet fls.

Pierárdii. Sts. cylindric, to 3 ft. long: lvs. to 5 in. long: fls. to 2 in. across, in 2–3-fld. racemes; sepals and petals pale rose; lip whitish-yellow with carmine or purplish lines at base. Feb.–May. Himalayas, Burma, China. Var. **latifòlium** has broader lvs. and sts.

Pitcheriànum (*D. Rolfeæ*). Hybrid between *D. nobile* and *D. primulinum.*

platycaùlon. Pseudobulbs strongly compressed, to 7 in. long, bearing 3–5 lvs. to about 6 in. long: fls. straw-colored, in short 3–6-fld. racemes. Philippines.

plumptonénse. Hybrid between *D. Cybele* var. *nobilius* and *D. nobile* var. *nobilius.*

primúlinum. Sts. cylindric, to 18 in. long: lvs. to 4 in. long: racemes 1–2-fld., on leafless sts.; fls. to 3 in. across; sepals and petals pale rose or pale lilac; lip primrose-yellow with purple-striped throat. Feb.–May. Himalayas, Burma, China.

pulchéllum (*D. Dalhousieanum*). Sts. cylindric, to 4 ft. long: racemes pendulous, 6–12-fld.; fls. about 3 5 in. across, pale yellow tinted with rose, with a pair of large dark purple spots in throat of the lip. Mar.–May. Himalayas, Burma, Indo-China.

ramòsum. Pseudobulbs slender, to 20 in. tall: fls. solitary or in 2's, pale primrose-yellow; lip 3-lobed, the lateral lobes white streaked with rose-purple. Himalayas.

règium. Sts. cylindric, to 12 in. high: lvs. to 4 in. long: racemes 1–3-fld.; fls. about 3–4 in. across; sepals and petals rose edged with cream-white; lip rose with golden throat. July. India.

Roeblingiànum. Hybrid between *D. nobile* and *D. Ruckeri* (the latter being *D. ramosum*).

Rólfeæ: *D. Pitcherianum.*

rùbens. Hybrid between *D. Ainsworthii* and *D. nobile.*

Sánderæ. Very similar to *D. Dearei* but with larger fls. having a purplish striped throat to the lip. May–Aug. Philippines.

Schneideriànum. Hybrid between *D. Findlayanum* and *D. heterocarpum.*

secúndum. Sts. cylindric, to 40 in. high: lvs. to almost 5 in. long: racemes densely many-fld., secund; fls. rose with orange-yellow disk to the lip. Blooms all year. Burma, Indo-China, Pacific Isls.

Sèymouriæ. Hybrid of unknown parentage.

signàtum: *D. Bensoniæ.*

speciòsum (*D. Hillii*). Sts. clavate, to 14 in. long, with 3–4 lvs. to 12 in. long: racemes many-fld., to 30 in. long; fls. straw-color or yellow with white lip spotted with red or violet. Feb.–Mar. Australia. Var. **fusifórme** (*D. fusiforme*) has fusiform sts.

spectábile. Pseudobulbs erect, clavate or fusiform, to about 16 in. high, 2–5-lvd.: terminal racemes of about 12 fls. or less; fls. to about 3½ in. across; sepals and petals greenish-yellow veined with deep reddish-brown or violet; lip whitish-yellow with more intense purplish veining. Jan.–Apr. New Guinea.

splendidíssimum. Hybrid between *D. heterocarpum* and *D. Findlayanum.*

suavíssimum: *D. chrysotoxum* var.

supérbiens (*D. Goldiei*). Sts. cylindric, to 3 ft. or more high: racemes nodding, loosely many-fld; fls.. about 2 in. across, crimson-purple with white ridges on lip. Sept.–Nov., Apr. Australia.

supérbum. Sts. cylindric, to 4 ft. long: fls. rose-purple with 2 large dark purple spots in throat of lip, to 4 in. across, solitary or in 2's (rarely in 3's). Jan.-Apr., Oct. Borneo, Celebes to Philippines. Var. **álbum** has white fls. with pale purple lip. Var. **Dèarei** has pure white fls. with faint yellow flush on lip.

tetragònum. Pseudobulbs slender, club-shaped, pendulous, 4-sided, to 16 in. long, usually 2-lvd. at the summit: lvs. elliptic-lanceolate, acute, to 4 in. long: racemes 1–3-fld.; fls. to 4 in. across; sepals and petals yellowish spotted or suffused with reddish-brown; lip cream-white, transversely barred with red and strongly recurved. Nov. Australia.

Thwàitesiæ. Cross between the hybrids *D. Ainsworthii* and *D. Wiganiæ.*

thyrsiflòrum. Perhaps only a form of *D. densiflorum* with longer rounded (not angulate) sts. and white sepals and petals. Burma.

Tóftii. Pseudobulbs 4–5 ft. tall, fusiform, with purple ribs: fls. in racemes to 1⅓ ft. long; sepals and petals whitish, the latter lined with violet; lip whitish, veined and suffused with violet. Australia.

tórtile. Pseudobulbs or sts. club-shaped, to 12 in. high, 2–3-lvd.: lvs. oblong, obtuse, to about 4 in. long: fls. in 2's or 3's from the nodes, to 3½ in. across; sepals and petals white tinged with rose; lip lemon-yellow with purple streaks at base. June–July. Burma. Var. **ròseum** has sepals and petals rose.

undulàtum. Sts. to 4 ft. high: racemes to over 1½ ft. long, many-fld.; fls. about 2 in. across, yellowish-brown, lip lined with reddish-brown or violet, sepals and petals twisted. June, Sept.–Nov. Australia.

Veìtchii. Hybrid between *D. moniliforme* and *D. Wardianum.*

Wardiànum. Sts. cylindric, nodose, to about 3 ft. long: lvs. to 5 in. long: fls. in clusters of 2–3, on leafless sts., to 4 in. across; sepals, petals, and lip white tipped with rose-purple, lip with a yellow throat marked by 2 dark purple blotches. Feb.–May. Himalayas, Burma.

Wìganiæ. Hybrid between *D. nobile* and *D. signatum* (the latter being *D. Bensoniæ*).

Wìganiæ aùreum is said to have the same parentage as *D. Wiganiæ.*

xanthocéntron: *D. chlorostele.*

DENDROCÁLAMUS. Giant Bamboo. *Gramineæ.* Tree-like bamboos of S. Asia and Malaya, the spikelets borne in globose clusters or heads in long panicles, stamens 6. See *Bamboo.*

Hámiltonii. To 80 ft.: lvs. to 15 in. long and 2½ in. wide, rough on edges: heads many-fld., to 1½ in. across, in branching panicles. Himalayas.

latiflòrus. Tall: lvs. to 10 in. long and 2 in. wide: heads few-fld., about ¾ in. across. India, Cochin-China.

membranàceus. To 80 ft.: lvs. to 10 in. long and ¾ in. wide: heads many-fld., 1 in. across. India.

stríctus. Male Bamboo. To 50 ft., sts. becoming yellowish: lvs. to 1 ft. long and 1½ in. wide: heads many-fld., 1½ in. across. India, Java.

DENDROCÈREUS *Cactaceæ.* Monotypic genus from Cuba. **D. nudiflòrus.** Tree to 35 ft.

with woody trunk to 3 ft. long and much branched top, although small plants may be erect or becoming bushy or semi-prostrate; branches weak when young; ribs 3–5, acute and wing-like, short-jointed, to 3 in. high on large branches; areoles woolly, ¼–2 in. apart; spines, when present, in clusters of 2–15, to 1¾ in. long, black-tipped, needle-like: fls. greenish-yellow outside becoming white at center, to 5 in. long, nocturnal and short-lived: fr. subcylindric, green, to 6 in. long, with rind to ⅝ in. thick.

DENDROCHÌLUM (*Platyclinis*). *Orchidaceæ.* Epiphytes with small pseudobulbs bearing 1 narrow evergreen lf. and small fls. in long often pendulous racemes, sepals and petals similar, the lip 3-lobed. Warmhouse plants; for cult. see *Orchids.*

Cobbiànum. To about 20 in. tall: fls. whitish or yellowish with orange-yellow lip, about ½ in. across, in long-stalked racemes. Apr.–Nov. Philippines.

cucumerìnum. Lvs. to almost 5 in. long and ½ in. wide: fls. very small, green and transparent. Hab.?

filifórme. Lvs. 6 (rarely 8) in. long: scape to 18 in. long: fls. numerous, minute, less than ¼ in. across, greenish-yellow or greenish-brown. Mar.–July. Philippines.

glumàceum. Fls. white to yellow, about ½ in. across, in long-stalked racemes. Aug.–June. Philippines.

latifòlium. Lvs. to about 17 in. long including petiole: fls. whitish, greenish-yellow or orange, about ½ in. across, in long-stalked racemes. Feb.–July. Philippines.

uncàtum. Similar to *D. glumaceum* from which it differs in its somewhat smaller habit and in having the arms of the column near the middle (not basal). Sept.–Jan., May–July. Philippines.

DENDROMÈCON. *Papaveraceæ.* One Californian glabrous evergreen shrub planted for ornament in warm climates. Propagated by seeds which are very slow in germinating. **D. rígida.** Bush-Poppy. Tree-Poppy. To 10 ft.: lvs. leathery with prominent veins, lanceolate to ovate-lanceolate: fls. golden-yellow, 2 in. across: fr. linear, to 4 in. long.

DENDROPANAX: *Gilibertia japonica.*

DENDROPOGON: *Tillandsia usneoides.*

DENEA: *Howea Forsteriana.*

DENMÒZA. *Cactaceæ.* Founded as a monotypic genus. **D. rhodacántha** (*Echinopsis rhodacantha. Cereus rhodacanthus* and *erythrocephalus. Pilocereus erythrocephalus*). Globular when young but becoming 5 ft. high; ribs 15–30, areoles close together on old plants and with long bristle-like spines; spines 6–12, white or reddish, 1½ in. long: fls. at top of plant, scarlet, 2 in. long, stamens red and exserted. Argentina.—The plant advertised as *D. smaragdiflora* is probably *Cleistocactus smaragdiflorus.*

DENNSTAÉDTIA. Cup-Fern. *Polypodiaceæ.* Large or medium-sized ferns with 1–3-pinnate fronds, hairy creeping rhizomes and marginal sori; native in the tropics and subtropics, one in N. N. Amer. Of easy cult.; see *Ferns.*

adiantoìdes. Glossy C. Fronds to 4 ft. long and 3 ft. wide, 3-pinnate, glabrous and shining, on bright brown stipes to 3 ft. long. W. Indies, N. S. Amer.

cicutària (*Dicksonia cicutaria. Sitolobium cicutarium*). Common C. Fronds to 6 ft. long and 3 ft. wide, 4-pinnate, shining and glabrous, on yellowish-brown stipes to 3 ft. long. W. Indies, N. S. Amer.

punctilóbula (*Dicksonia pilosiuscula* and *punctilobula*). Hay-scented-Fern. Hardy: fronds to 3 ft. long and 9 in. wide, 3-pinnate, pubescent beneath. N. S. to Ga. and Ark. —Sometimes planted in the wild-garden.

DENTÀRIA. Toothwort. *Cruciferæ.* Little spring-blooming woods herbs of the northern hemisphere, useful in the wild-garden, rock-garden, and for colonizing: per., with toothed or scaly rootstocks, and few divided or compound lvs. high on st., the radical lvs. often of different character: fls. white, rose or purple, in terminal corymb-like racemes: fr. or silique elongated and beaked.

califórnica: *D. integrifolia* var.

digitàta: *Cardamine pratensis.*

diphýlla. Erect, 6–12 in. from a long continuous rootstock: st.-lvs. mostly 2 and opposite, ternate, the divisions or lfts. ovate and toothed or shallowly lobed: fls. white, in a glabrous cluster. N. S. to Minn. and S. C.

heterophýlla. To 14 in., rootstock jointed near surface: basal lvs. trifoliolate, lfts. ovate, obtusely toothed; st.-lvs. linear to lanceolate, to 1½ in. long, entire or shallowly dentate: fls. light purple, to 1 in. across: fr. about 1 in. long. Mts. of N. J. to Ga.

integrifòlia. Milk-Maids. To 20 in.: basal lvs. simple to trifoliolate, segms. ovate to reniform, to 2¾ in. long; st.-lvs. 3–5-foliolate, segms. orbicular to linear: fls. white, to ½ in. across, in simple racemes, style to ¼ in. long. Calif. to Ore. Var. **califórnica** (*D. californica*) has larger and denticulate lvs. which are often purplish beneath with white to pale rose fls. Var. **Tràcyi** (*D. Tracyi*) has smaller lvs. which are dark purple beneath and smaller deep rose-pink fls.

laciniàta. To 1 ft. or so from a jointed rootstock: st.-lvs. commonly 3, approximately verticillate, the divisions very narrow: fls. white or purplish, in a somewhat pubescent cluster. Que. to Minn. and Fla.

macrocárpa. Differs from *D. integrifolia* in having style to ½ in. long: fls. rose-purple. Calif. to Ore.

tenélla. To 18 in., rootstock tuberous: basal lvs. simple, cordate-orbicular, to 1⅓ in. long, crenately or sinuately lobed; st.-lvs. trifoliolate, segms. narrow and entire, to 1½ in. long: fls. rose-purple, in short racemes. Ore., Wash.

Tràcyi: *C. integrifolia* var.

DENTATE: with sharp spreading rather coarse indentations or teeth.

DÉRRIS (*Deguelia*). *Leguminosæ.* Trop. woody climbers with alternate pinnate lvs., papilionaceous purple or white fls. in racemes, panicles or clusters, and flattened pods; sometimes planted out-of-doors in warm regions.

The derris-root of commerce, used as a contact insecticide, is obtained from the roots of three species (*D. elliptica, D. uliginosa* and *D. malaccensis*) of which the first is reported to yield the greatest quantity of the active ingredient, rotenone. These species are cultivated largely in the Malay States and the East Indies for their rotenone-containing roots. A secondary source of rotenone comes from the South American plants *Lonchocarpus Nicou, L. Urucu* and *Tephrosia toxicaria.*

scándens (*D. timorensis*). Malay Jewel Vine. Lvs. of 9–18 oblong lfts. to 2 in. long: fls. pale rose, in axillary racemes often twice as long as lvs.:, pods to 3 in. long. Malaya, China, Australia.

timorénsis: *D. scandens.*

DESCHÁMPSIA. Hair-Grass. *Gramineæ.* Ann. or per. grasses with glossy pale yellow to purplish 2-fld. spikelets in narrow or open panicles, differing from Aira in the lemmas tapering into the slender teeth and not truncate. One species, **D. flexuòsa** (*Aira flexuosa*), Crinkled H., is occasionally grown for ornament. Per. to 2½ ft.: lvs. involute, 3–6 in. long: panicles to 8 in. long, open, the branches flexuous. Eu., E. N. Amer.—A form with variegated foliage is sometimes grown.

DESERT-CANDLE: *Eremurus.*

DESFONTAÌNEA. *Loganiaceæ.* One glabrous little shrub in the Andean regions of S. Amer., intro. in Calif. **D. spinòsa.** To 3 ft., with opposite coriaceous spiny-tooth holly-like elliptic-oblong lvs.: fls. tubular, scarlet and yellow, terminal, with 5-lobed somewhat trumpet-shaped corolla, and 5 stamens: fr. a globose or ovoid berry.

DESMÁNTHUS (*Acuan*). *Leguminosæ.* American per. herbs or sometimes shrubs with bipinnate mimosa-like lvs. and small regular greenish or whitish fls. in heads or spikes; one species is rarely offered.

brachýlobus: *D. illinoensis.*

illinoénsis (*D. brachylobus. Mimosa illinoensis*). To 3 ft.: lfts. numerous and very small: pods in dense heads, oblong, to 1 in. long, curved. Ohio to Fla. and New Mex.

DESMAZÈRIA (erroneously spelled *Demazeria*). *Gramineæ.* Ann. and per. grasses with flattened many-fld. spikelets borne in spikes; one is sometimes grown for ornament. In 1822 Dumortier published the genus Demazeria but in 1823 corrected it to Desmareria, in honor of his friend and agrostologist Desmazières. See *Grasses.*

sícula (*Brizopyrum siculum*). Spike-Grass. Ann. to 1 ft.: lvs. to 6 in. long and ⅛ in. wide: spikelets to ½ in. long, in spikes 2–3 in. long. Medit. region.

DESMÒDIUM (*Meibomia*). Tick Trefoil. Tick Clover. *Leguminosæ.* Herbs, often woody at base, with lvs. mostly of 3 lfts., small papilionaceous fls. in racemes or panicles, and flat pods consisting of several joints which separate readily and often adhere to clothing like burs. They are sometimes transferred to borders and the wild-garden. Natives in dry woods and fields.

bícolor: *Lespedeza bicolor.*

bracteòsum: *D. cuspidatum.*

canadénse. Per. to 8 ft.: lfts. oblong or oblong-lanceolate: fls. purple, to ¾ in. long: pods 1 in. long, 3–5-jointed. N. S. to N. C. and Okla.

ciliàtum: *Rhynchosia puberula.*

cineráscens. Procumbent per., sts. to 4 ft. long, gray-pubescent: lfts. elliptic-oblong: fls. purple, about ½ in. long: pods 6–8-jointed. Mex.

cuspidàtum (*D. bracteosum. Meibomia grandiflora*). Erect per. to 5 ft.: lfts. to 6 in. long, ovate-lanceolate, glabrous: fls. lilac-purple. Me. to Minn., south to Fla. and Tex.

Dillènii. Per. to 3 ft.: lfts. oval to oblong-ovate: fls. purple, ¼ in. long: pods to 1 in. long, 2–4-jointed. Ont. to Fla. and Tex.

floribúndum (*D. sambuense*). Sts. woody: lfts. obovate-oblong: fls. purple, ½ in. long: pods to 1 in. long, 6–8-jointed. Himalayas.

formòsum. Plant erect, pubescent, sts. angular: lfts. nearly sessile, ovate to oblong, rarely glabrous, apex emarginate to mucronulate, occasionally white-spotted: fls. purplish-pink, in axillary racemes. China.

gangéticum (*Hedysarum gangeticum*). Per., sts. woody, ascending or erect, to 4 ft. high, hairy above: lfts. oblong, 3–6 in. long, acute, stalked: fls. ⅙ in. long, in lax racemes to 1 ft. long, short-pedicelled: pods falcate, to ¾ in. long, 6–8-jointed. Old World tropics. A dwarf form growing to 1 ft. high with obtusely cordate lfts. to 1 in. long is var. **maculàtum.**

gỳrans: *D. motorium.*

japónicum: *Lespedeza japonica.*

marylándicum. Per. to 3 ft.: lfts. ovate or orbicular: fls. purplish, ⅙ in. long: pods very small, 1–3-jointed. Ont. to Fla. and Tex.

motòrium (*D.* and *Codariocalyx gyrans*). Telegraph-Plant. Per. to 4 ft.: terminal lft. oblong, the lateral ones very small and moving in all directions: fls. purple or violet, ¼ in. long: pods to 1½ in. long, 6–10-jointed. Trop. Asia.—Grown as a curiosity in greenhouses. Treated as an ann. Propagated by seeds.

nudiflòrum (*Meibomia nudiflora*). Erect to 3 ft.: lfts. oval, pale green beneath, nearly glabrous: fls. rose-purple, in few-fld. narrow panicles. July–Aug. Que. to Minn., south to Fla. and La.

penduliflòrum: *Lespedeza Thunbergii.*

purpùreum (*D. tortuosum*). Beggarweed. Per., but grown as ann., to 8 ft.: lfts. ovate or oblong: fls. blue or purple, ⅙ in. long: pods to 1 in. long, twisted, 2–6-jointed. W. Indies.—Grown in S. U. S. as a forage and cover-crop. Seeds should be sown on rather moist land, in spring. No care will be needed after first year as it will reseed itself.

rígidum. Per. to 3 ft., stiff: lfts. ovate or oblong: fls. purplish, to ⅙ in. long: pods very small, 1–3-jointed. N. H. to Fla. and La.

sambuénse: *D. floribundum.*

tiliæfòlium. To 7 ft., sts. woody: lfts. obovate, to 4 in. long, long-petioled: fls. purple, ½ in. long, Aug.–Oct.: pods to 3 in. long, 6–9-jointed. Himalayas.

tortuòsum: *D. purpureum.*

DESMÓNCUS. *Palmaceæ.* Climbing or clambering monœcious very spiny palms of the American tropics, of the Bactris relationship; probably not established in our territory.

DESMOTHAMNUS: *Lyonia lucida.*

DETÀRIUM. *Leguminosæ.* Trop. African trees with pinnate lvs., small fragrant white fls. without petals borne in panicles, and pod round and indehiscent resembling a drupe; one species has been intro. into S. Fla. for ornament and interest.

senegalénse. Lfts 6–12 or more, ovate-oblong, to 3 in. long: panicles to 6 in. long: pods to 2½ in. across.

DEÙTZIA. *Saxifragaceæ.* Attractive and popular floriferous shrubs with opposite usually deciduous serrate lvs. and white, blush or purplish fls. mostly in panicles and racemes in early summer; native in E. Asia and the Himalaya region. Most of them are hardy N.

Deutzias thrive in any well-drained soil. Potted plants may be forced in a temperature of not over 50° for conservatory and greenhouse decoration, but they cannot be forced again. They are propagated by both greenwood and hardwood cuttings, also by divisions, layers, and by seeds sown in boxes or pans in spring.

candelàbrum. Hybrid between *D. gracilis* and *D. Sieboldiana*, having ovate-lanceolate lvs. and fls. in panicles. Var. **fastuòsa** (*D. gracilis fastuosa*) does not differ materially from the type.

cándida. Hybrid between *D. Lemoinei* and *D. Sieboldiana*, having ovate lvs. and fls. in panicle-like corymbs.

candidíssima: *D. scabra* var.

corymbiflòra: *D. setchuenensis* var.

crenàta: *D. scabra.*

díscolor. To 6 ft.: lvs. oblong-lanceolate, to 4 in. long, densely hairy beneath: fls. white, ¾ in. across, in many-fld. corymbs. Cent. China. Var. **candidíssima** has pure white fls.; var. **elegantíssima** is *D. elegantissima;* var. **màjor** has fls. about 1 in. across, rosy outside.

elegantíssima (*D. discolor* var. *elegantissima*). Hybrid between *D. purpurascens* and *D. Sieboldiana:* lvs. ovate or oblong-ovate, pubescent beneath: fls. pink, ¾ in. across, in loose corymbs.

excéllens (*D. discolor* var. *excellens*). Hybrid between *D. Vilmoriniæ* and *D. rosea* var. *grandiflora:* lvs. ovate-oblong, to 4 in. long, gray-pubescent beneath: fls. ¾ in. across, in loose corymbs.

Fórtunei: *D. scabra* var.

globòsa. Resembling *D. discolor* but with smaller lvs. and fls. which are creamy-white. Cent. China.

grácilis. To 6 ft., branches slender, wide spreading or arching: lvs. lanceolate, to 2½ in. long, nearly glabrous beneath: fls. pure white, ¾ in. long, in open simple or compound racemes. Japan. Var. **aùrea** has yellow lvs.; var. **campanulàta** is *D. rosea* var.; var. **carmínea** is *D. rosea* var.; var. **Lemòinei** is *D. Lemoinei;* var. **ròsea** is *D. rosea.*

grandiflòra. To 6 ft.: lvs. ovate, to 2 in. long, white-tomentose beneath: fls. white, 1–3 together, 1 in. and more across. Apr.–May. N. China.

hypoglaùca. To 6 ft.: lvs. ovate-oblong to oblong-lanceolate, to 3½ in. long, glabrous and glaucous beneath: fls. white, to ¾ in. across, in many-fld. corymbs. Cent. China.

kalmiæflòra. Hybrid between *D. purpurascens* and *D. parviflora:* lvs. ovate-oblong, to 2 in. long, slightly hairy beneath: fls. white with outside carmine, ¾ in. across, in loose corymbs.

Kosteriàna: listed name, probably a hort. form of *D. gracilis.*

laxiflòra: *D. Schneideriana* var.

Lemòinei (*D. gracilis* var. *Lemoinei*). Hybrid between *D. gracilis* and *D. parviflora:* lvs. elliptic-lanceolate, to 4 in. long: fls. pure white, ¾ in. across, in large corymbs or broad panicles. Var. **compácta** is a dwarf form with smaller fls,

longifòlia. To 6 ft.: lvs. lanceolate, to 5 in. long, pale and densely hairy beneath: fls. light purple, to 1 in. across, in many-fld. corymbs. W. China. Var. **Veìtchii,** fls. larger, bright rose. .

magnífica. Hybrid between *D. scabra* and *D. Vilmoriniæ:* lvs. ovate-oblong, to 3 in. long, tomentose and grayish-green below: fls. double, white, in short panicles. Var. **ebúrnea** has campanulate fls. Var. **formòsa** is essentially similar to the type.

maliflòra. Hybrid between *D. Lemoïnei* and *D. purpurascens:* lvs. ovate-oblong, to 1½ in. long, serrulate, acuminate: fls. purplish outside, whitish within, to ¾ in. across, in corymbs to 2½ in. across. The white-fld. hort. form "Avalanche" belongs here.

myriántha. Hybrid between *D. parviflora* and *D. setchuenensis:* lvs. oblong-ovate to -lanceolate, to 3½ in. long, hairy beneath: fls. white, ¾ in. across, in loose corymbs.

ningpoénsis. To 7 ft.: lvs. ovate-oblong, broadly cuneate, entire or slightly toothed: fls. white, in panicles to 4 in. long, petals oblong, to ⅓ in. long. E. China.

parviflòra. To 6 ft.: lvs. ovate to ovate-lanceolate, to 4 in. long, somewhat hairy: fls. white, about ½ in. across, in many-fld. corymbs. N. China.

púlchra. Lvs. oblong-ovate, to 3½ in. long, acuminate, stellate-hairy, base wedge-shaped to rounded, margin remotely serrate: fls. yellowish, in terminal corymbs to ¾ in. across, calyx-teeth triangular. Philippines.

purpuráscens. To 6 ft., slender curving branches: lvs. oblong-ovate to -lanceolate, to 2½ in. long, pubescent beneath: fls. white inside, purplish outside, ¾ in. across, in 4–10-fld. corymbs. W. China.

refléxa. Similar to *D. discolor* but with simple hairs and smaller fls. Cent. China.

ròsea. Hybid between *D. gracilis* and *D. purpurascens:* lvs. ovate-oblong to -lanceolate, slightly hairy: fls. pinkish outside, ¾ in. across, in short panicles. Var. **campanulàta** (*D. gracilis* var.), fls. white, 1 in. across; var. **carmínea,** fls. purplish outside; var. **exímia,** fls. only slightly pinkish outside; var. **floribúnda,** infl. dense; var. **grandiflòra,** infl. less dense; var. **multiflòra,** fls. white; var. **venústa,** fls. white.

scàbra (*D. crenata*). To 7 ft.: lvs. oblong-lanceolate to ovate, to 3 in. long, pubescent on both sides: fls. white or blush, to ¾ in. long, in narrow erect panicles. Japan, China. In the trade are also offered the vars.: **candidíssima** (*D. Wellsii*), fls. pure white; **Fórtunei,** fls. larger; **mirábilis,** a vigorous form with large panicles; **plèna,** fls. double, white tinged with rose outside; Pride of Rochester, very large fls. faintly tinted with rose outside; **ròsea,** fls. rose; **staphyleoìdes** has very large fls. in drooping panicles; **Thúnbergii** listed as fls. white with orange center; **Wátereri,** fls. white tinted carmine outside; **Wéllsii** is var. *candidissima.*

Schneiderianà. To 6 ft.: lvs. elliptic-ovate, to 2½ in. long, grayish-tomentose beneath: fls. white, in broad loose panicles. Cent. China. Var. **laxiflòra** (*D. laxiflora*) has narrower lvs. and broader panicles

setchuenénsis. To 6 ft.: lvs. lanceolate, to 3 in. long, densely pubescent beneath: fls. white, ½ in. or less across, in loose corymbs. China. Var. **corymbiflòra** (*D. corymbiflora*) has larger lvs. and fls.

Sieboldiàna. To 6 ft.: lvs. ovate, to 3 in. long, pubescent beneath: fls. white, ½ in. across, in loose panicles. Japan.

taiwanénsis. Lvs. lanceolate or elliptic, to 5 in. long, hairy on both sides: fls. resembling *D. Sieboldiana.* Formosa.

Vilmorìniæ. To 6 ft.: lvs. oblong-lanceolate, to 3½ in. long, densely pubescent beneath: fls. white, to 1 in. across, in loose corymbs. China.

Wátereri: *D. scabra* var.

Wéllsii: *D. scabra* var. *candidissima.*

Wîlsonii. Hybrid between *D. discolor* and *D. mollis:* lvs. oval to oblong-lanceolate, to 5 in. long, pubescent: fls. white, ¾ in. across, in loose corymbs.

DEVIL-FLOWER: *Tacca Chantrieri.* **-Tree:** *Alstonia scholaris.* **-Wood:** *Osmanthus americanus.*

DEVILS-CLUB: *Oplopanax horridum.* **-Paintbrush:** *Hieracium aurantiacum.* **-Tongue:** *Hydrosme Rivieri.* **-Walking-Stick:** *Aralia spinosa.*

DEWBERRY. The dewberries of American gardens and plantations are forms of native species of running trailing blackberries that root at joints or tip; probably they are mostly *Rubus flagellaris.* Dewberries commonly mature fruit earlier in the season than the highbush or non-trailing blackberries, the difference amounting perhaps to one or two weeks.

The culture is like that of the blackberry, but support should be given to the canes, as they are very slender and rank growers. A wire trellis or large-meshed fence-wire answers admirably; or they may be tied to stakes. The fruits are large and showy, which, combined with their earliness, make them desirable; but they are usually deficient in flavor. The Lucretia is the leading variety. Lay the canes on the ground in winter in rigorous climates. In spring tie all the canes from each plant to a stake. After fruiting, cut the old canes and burn them (as for blackberries). In the meantime, the young canes (for next years fruiting) are growing. These may be tied up as they grow, to be out of the way of the cultivator. See *Blackberry, Boysenberry* and *Loganberry.*

DIÁCRIUM. *Orchidaceæ.* Trop. American epiphytes with pseudobulbs or thickened sts. bearing a few lvs. and mostly white fls. in racemes, the sepals and petals similar, the lip free and 3-lobed; separated from Epidendrum by the presence of 2 horns on the lip. For cult. see *Orchids.*

bicornùtum (*Epidendrum bicornutum*). Sts. to 12 in. long, with 3–5 lvs. to 10 in. long: racemes (with peduncles) up to about 28 in. long, 5–20-fld.; fls. about 2 in. across, white finely spotted with purple. Dec.–Apr. Tobago, Trinidad, British Guiana. Var. **indivìsum** (*D. indivisum. Epidendrum indivisum*). Plant smaller, lip undivided or minutely biauriculate at base.

indivìsum: *D. bicornutum* var.

DIAMOND-FLOWER: *Ionopsidium.*

DIANÉLLA. *Liliaceæ.* Rhizomatous perennials with fibrous roots, grass-like sheathing lvs., blue or whitish fls. in loose panicles, the perianth-segms. distinct, and blue berries.

The plants succeed in a cool greenhouse or outdoors in mild climates. Propagated by division or seeds sown in spring with heat.

ensifòlia (*Dracæna ensifolia*). To 6 ft.: lvs. to 1 ft. long and 1 in. wide: fls. blue or whitish, to ⅓ in. long. Asia, Australia, Hawaii.

intermèdia. Rootstocks creeping, bearing the lvs. at top which are 3 ft. long and ¾ in. wide: fls. greenish- or purplish-white, about ⅓ in. across, in panicles to 2 ft. long. New Zeal.—*Mondo Jaburan* has been cult. under this name.

revolùta. To 3 ft.: lvs. in rosette, to 1½ ft. long and ⅓ in. across, purplish at edge and base. Australia, Tasmania.

tasmánica. To 5 ft.: lvs. to 4 ft. long, broadly sword-shaped, margins revolute, armed with short sharp teeth: fls. pale blue, to ¾ in. across when fully expanded, drooping segms. reflexed, in large lax much branched panicles: berries deep blue, oblong, to ¾ in. long, often persisting for many weeks on hair-like pedicels, very ornamental. Tasmania.

DIÁNTHUS. PINK. *Caryophyllaceæ.* Per. and ann. herbs, mostly of the northern hemisphere of the Old World, grown for the ornamental and often fragrant bloom. They are mostly tufted or mat-forming hardy evergreen plants, thriving best in the northern parts of the country; many of the smaller alpine and boreal species are attractive in the rock-garden. The fls. are prevailingly pink or rose, but they run also to red, white and even yellow. They may be large (to 1 in. or more across) and borne singly, or much smaller and compacted into heads. Probably one-half the names in cult. are erroneous.

Pinks are common outdoor subjects but the carnation is mostly a glasshouse flower in North America, grown for winter and early spring bloom; in Europe the border varieties or races are highly developed. See *Carnation.* Aside from Carnation, eight classes of pinks have horticultural importance: Rainbow pinks, *D. chinensis,* short-lived perennial but grown as an annual or biennial, not fragrant, passing the first winter in the open ground if not spent with bloom; Cottage and Hortulan pinks, progeny or offshoots of *D. plumarius*, hardy border perennials in many forms; Cheddar pinks, *D. gratianopolitanus*, hardy small perennials not greatly modified under cultivation; Maiden pinks, *D. deltoides*, creeping hardy and persisting small-flowered perennials; Sweet Williams, *D. barbatus* and *latifolius*, with small flowers in bracteate heads; Clusterheads, *D. carthusianorum* and related kinds, with long stiff stems bearing very dense heads of small flowers; general garden pinks of many species, with open growth and heads mostly single or in loose clusters; rock-garden pinks, comprising species of low and tufted growth, making attractive durable mats of foliage, including Neglo pinks of the *D. neglectus* kind.

Pinks are of simple cultivation. Many of them are spring-bloomers. Even the perennials should be renewed every two or three years either by division, cuttings, layers, or preferably by seeds when named varieties are not involved. Sowings in spring or summer should give good blooming plants the following year, and the second year of bloom is often the best. The perennial mat-forming kinds may be renewed by the cutting back in autumn of all the long growths; and the prompt plucking of flowers, removing the stems far down, is essential for best results. Consult the comments under some of the leading species; the plants are perennial unless otherwise stated.

acaùlis: hort. name for dwarf pinks of different species, some of which may be *D. furcatus* and *D. sylvestris*.

aciculàris. Cespitose, to 10 in. high, the sts. 4-angled and branched: lvs. long-linear and acute, less than 1 in. long: fls. rose or white, the petals digitate-multifid; bracts 4, short, appressed. Russia, Rumania.

Állwoodii. A class of hybrids between *D. plumarius* and *D. Caryophyllus* by Allwood Bros., England: per., hardy, in many colors, petals entire to variously fringed, mostly with firm broad more or less glaucous foliage and good tufted habit.—Named kinds or particular strains may be propagated any time in summer by means of cuttings and layers.

alpéstris. Low alpine, to 8–10 in., with very short narrow lvs. overtopped by inodorous fls. that are solitary or paired and about 1 in. across: petals notched or somewhat fringed and pink or rose. S. Eu.

alpìnus. Cespitose: lvs. dark green, the radical ones broad, short and obtuse: fls. to 1½ in. across, mostly solitary on sts. 2–4 in. high, inodorous, deep rose to purplish and crimson spotted and an eye; petals broad; handsome. Switzerland to Greece and Russia. Vars. **álbus, carmíneus, rubicúndus** are known in gardens.

anatólicus. Cespitose, roughish, sts. 1 ft., 1-fld.: lvs. linear, about 1 in. long, acuminate, radical ones 3-nerved: fls. rose, the obtuse dentate petals yellowish underneath, calyx-teeth acute. Asia Minor, N. W. India.—Cult. stock not likely to be true to name.

arbòreus. Very tall, to 3 and 4 ft., branching, woody at base: lvs. 2–3 in. long, ¼ in. or less broad: fls. 2 in. across, rose, fragrant, in corymb-like but not compact clusters. E. Medit. region.—The true plant probably not grown with us.

arenàrius. Cespitose, sts. many, very slender, 6–15 in. tall, bearing several long-pedicelled white fls. with slender calyx and somewhat fragrant: petals finely cut beyond middle. Finland to Dalmatia.—Good species, like a small very deeply fringed only faintly fragrant *D. plumarius*.

áridus. Glabrous, with simple diffuse sts.: lvs. narrow-linear, not stiff, acuminate: fls. in showy lax fascicles, white, the obovate petals greenish or purplish underneath. S. E. Eu.

Armèria. Weedy ann., nat. in old fields in this country, seldom cult.: sts. erect, forked, to 2 ft.: fls. rose or pink, many and small, in close heads with long pubescent bracts. Eu.

arvernénsis. A name in the trade for a small cespitose plant with 2 or 3 pink fls. on sts. 2–4 in. high, petals denticulate: lvs. mostly basal, narrow, about ½ in. long. France; reported as a natural hybrid, of which *D. monspessulanus* is one parent.—Probably the cult. stock is wrongly named.

atrococcíneus, "dark scarlet," **atrosanguíneus,** "dark blood-red": color races of *D. barbatus* or *D. latifolius*.

atrórubens: confused name in cult., commonly a dark red race of *D. carthusianorum*.

banáticus. Glaucous, sts. simple, 1 ft. high; fls. red, 10 or 12 of them in a head subtended by acuminate reddish dry bracts; petals obovate, bearded. S. E. Eu.—Plants grown under this name are likely to be forms of *D. carthusianorum;* the true plant is stouter than that species.

barbàtus. Sweet William. Glabrous, to 2 ft.: lvs. green, broad and flat: fls. in large bracted heads, inodorous, red, purple, rose, white, particolored, in some forms double. Pyrenees to Russia and China; run wild in E. U. S.—There are named vars., as Newport Pink. It is per. but would better be treated as bien. for the improved kinds; the so-called ann. sweet williams bloom first year from seed. Garden vars. are **álbus, atrococcíneus, compáctus, Dunnéttii, marginàtus, nànus, nigréscens, oculàtus, ròseus, Salamònii.**

Boissièri. Glaucous, to 20 in., with very narrow lvs.: fls. rose-color, 1 or 2 to a st., petals dentate. Spain, Portugal.—Forms of *D. plumarius* may be cult. under this name.

brachyánthus. Tufted little plant, 9 in. or less: lvs. very short and narrow: fls. small, rose, petals nearly entire. Spain.—Rock-garden subject.

brevicaùlis. Compact cespitose glaucous plant with sts. about 1 in. high and surpassing the lvs.: fls. solitary, about ½ in. long, calyx reddish, petals purple, dentate. Mt. Taurus, Cilicia.—Alpine or rock-garden subject.

cæ̀sius: *D. gratianopolitanus*.

callizònus. Glaucous and glabrous plant with 1-fld. terete sts. 4–14 in.: lvs. rather short and broad, spreading: fls. 1 in. across, the petals broad and contiguous, purple and spotted above, rose underneath, zoned in center, dentate; calyx-bracts 4, purplish, spreading. S. E. Eu.

calocéphalus. Clusterhead, to nearly 3 ft.: fls. brick-red and spotted, in dense small heads. S. E. Eu. to Armenia.

campéstris. Much branching, 1 ft. or more high, sometimes pubescent, stoloniferous: fls. bright rose with light center, petals jagged. Russia, Siberia.

capitàtus. Glaucous, pubescent or woolly, sts. simple, to 1 ft. or more: fls. small, 6–8 together in a mucronate-bracteate head, petals purple and spotted. Balkans to Siberia.—Likely to be confused in cult. with *D. carthusianorum*.

carthusianòrum. Clusterhead P. Widely variable cespitose glabrous green or seldom somewhat glaucous plant with 4-angled erect simple sts. to 20 in. high terminating in a dense few- or many-fld. head with mucronate or aristate bracts, the fls. small, inodorous, rose, purple or dark red. Denmark and the Urals to Portugal and Egypt.—Cult. in several forms, as vars. **atrórubens, gigantèus, moesìacus, nànus, Pontedèræ, pùmilus** (*D. subneglectus*), **rupícolus, subfastigiàtus, tenuifòlius.**

Caryophýllus. Clove P. Carnation. Tufted glabrous and glaucous plant, 1–3 ft. high, of stiff habit: fls. solitary or few on a st., showy and very fragrant, 1 in. and more across, the petals not bearded and irregularly dentate. S. Eu. to India.—Under cult. has given rise to many sizes, colors, races and forms, the petals from entire to shallowly cut; colors pink, rose, purple, white, yellow, known in this country mostly as a glasshouse cut-flower, but there are hardy border and marguerite races; the picotee belongs here. See *Carnation*.

caucásicus: *D. Seguieri*.

chinénsis (*D. sinensis. D. Fischeri*). Rainbow P. Glabrous green tufted plant of rather strict habit, 12–18 in. high, sts. more or less branching: fls. solitary or loosely assembled, slightly if at all fragrant, lilac, red or white, to 1 in. across. Portugal to China and Japan.—Little cult. (if the European *D. Seguieri* is excluded). Var. **Heddewígii** comprises the hardy ann. pinks of gardens, blooming first year from seed although bien. to per.; lvs. broad, bracts under calyx spreading; fls. in many colors and markings and often of great size and petals much cut and frilled. Var. **laciniàtus,** petals cut and fringed to ½ or more their depth. *D. stellaris* is a form with narrow petals, sometimes almost linear.

ciliàtus. Cespitose, glabrous, glaucous, st. simple, to 2 ft., branched above: fls. long-peduncled, rose-color, fragrant, petals dentate or entire. Austria, Italy to Egypt.

cinnabarìnus. Glabrous many-stemmed Clusterhead woody at base, 5–6 in. high, sts. 4-angled and simple: lvs. 2–3 in. long, sharp-pointed, basal ones 7-nerved: fls. few, capitate, the contiguous obovate petals cinnabar-red above and yellowish underneath. Greece.

collìnus. Glaucous, pubescent, 1–2 ft., slightly branched except near apex: lvs. many on the st., erect, rather broad, 1–2 in. long: fls. 3–5 together in an open fascicle, about ¾–1 in. across, deep pink or darker. Pyrenees to Asia Minor.

compáctus. Glabrous, to about 20 in.: lvs. plane, lanceolate: fls. purple, scentless, in dense 3-forked fascicles. S. E. Eu.—Perhaps a montane or alpine form of *D. barbatus*.

connàtus: erroneous name.

controvérsus. Like *D. monspessulanus* but sts. 4-angled, lvs. short and very acute, fls. rose-color but petals not contiguous; cespitose. Switzerland.

córsicus: confused name.

crinìtus. Sts. somewhat woody at base, erect, 4–18 in., often sparingly forked, sometimes pubescent: lvs. narrow, about 1 in. long: fls. solitary, white, slender-cylindrical, 1½–2 in. long, petals cut into hair-like divisions. Algeria to N. W. India.

croáticus. The plant grown under this name has small red or rose fls. in a compact head, after the manner of *D. carthusianorum*.

cruéntus. Cespitose, glaucous, sts. to 18 in., forked, terete, terminating in a small head of blood-red fls.: petals dentate. E. Eu.—One of the *D. carthusianorum* group, to which the cult. plants may belong. Forms are *D. orbelicus* and *D. Velenovskyi.*

Cy̆ri. Ann. but surviving the winter if sown in midsummer, much branched, to 2 ft.: fls. solitary but many, each subtended by long-pointed bracts exceeding the turbinate calyx, corolla ⅜ in. across, rose, dentate, opening in sun. S. W. Asia, Egypt.—Weedy, and little known in cult.

delicàtus: hort. forms of *D. Caryophyllus* and *D. plumarius.*

deltoìdes. MAIDEN P. Mat- or sod-forming, green, with radical lvs. and those on runners 1 in. or less long and obtuse, those on st. acute: fls. ¾ in. or less across, red or pink with crimson eye (a white-fld. form), borne on forks of sts. that rise 4–15 in. Great Britain to Japan; nat. in U. S.—Known also as *D. procumbens.* Var. **glaùcus** has prominently glaucous foliage. Varietal garden names are **álbus, eréctus, magníficus, montànus, ròseus, spléndens, supérbus.** Var. **serpyllifòlius** is a very low mat-forming race with lower lvs. not more than ½ in. long. This or similar forms are known as *D. Grisebachii, Peristeri* (improperly), *Prichardii, pyrenæus, Richardii, supinus.*—*D. deltoides* is a hardy invading plant that is likely to persist behind labels when other species have perished, with resulting confusion in names.

dentàtus, dentòsus: garden names.

diademàtus: hort. form of *D. chinensis.*

diffùsus. Glabrous, sts. 10 in. tall, with terete branches: radical lvs. obtuse: fls. 2 together and long-peduncled, rose and red, the petals slightly hairy; bracts 2, obovate and mucronate. Greece.

díscolor: under *D. Seguieri.*

disséctus: probably a fimbriate form of a garden species.

Dunnéttii: race of *D. barbatus.*

erythrocòleus. Cespitose, glabrous, sts. 1-fld., 2 in. high: lvs. about 2 in. long, acute: fls. rose, the petals fimbriate to about the middle; bracts 4, about ⅓ length of calyx. Armenia.—Plants grown under this name may be *D. deltoides.*

filifòlius: listed hort. name.

fimbrìatus. Woody at base, glabrous, sts. simple, 1 ft.: lvs. acute and appressed: fls. rose-color, the petals deeply cut or fimbriate; bracts 4–12, ⅓ length of calyx, straw-colored. Portugal to Tibet.—Forms of *D. chinensis* and *D. plumarius* are also grown under this name.

Físcheri: *D. chinensis.*

fràgrans. Cespitose, glabrous, sts. to 1½ ft., with angled branches above: lvs. acuminate: fls. fragrant, rose-white and spotted, petals fimbriate; bracts 6–8, appressed. Caucasus.—Like a small *D. plumarius.*

Frèynii. Alpine, densely cespitose, blue-green or grayish: lvs. shorter than those of *D. glacialis:* fls. solitary, bright pink. Herzegovina.

frígidus: snall form of *D. sylvestris.*

fruticòsus. Much like *D. Armeria* but per. and woody at base: fls. dark red or purple, showy, in loose heads. Grecian Isls.

furcàtus. Attractive cespitose glaucous plant with lvs. mostly basal, sts. mostly forked, to 9 in. high: fls. solitary, rose-color, inodorous, about ½ in. across, petals dentate, with reflexed margin. Alps in Italy. Var. **Leréschii** makes large cushions and light lilac fls.

gállicus. Plant pubescent, at least on radical lvs. (which are ciliate) and lower part of st., glaucous, to 1 ft. or more: fls. rose to white, fragrant, about 1 in. across, blade fimbriate or cut to ⅓ its depth; calyx-bracts 4, short, appressed. Portugal to France.

gélidus. Cespitose and glabrous, the sts. to 3 or 4 in. high, simple and 4-angled: fls. rose and spotted; calyx-bracts 6, acuminate and recurved. E. Eu.

gigantèus: form of *D. carthusianorum.*

glaciàlis. Cespitose, glabrous, 3–4 in., the sts. simple, 4-angled, 1–2-fld.: radical lvs. obtuse: fls. ½ in. or more across, inodorous, reddish-purple; petals denticulate and yellowish underneath, contiguous or close together; calyx and 2–4 bracts reddish. Mts., S. Eu.—Other species are likely to be grown under this name.

glaucophy̆llus: confused name, likely to be applied to a form of *D. carthusianorum.*

graníticus. Sts. 4–7 in., slender, 4-angled, bearing 1–3 fls.: lvs. very narrow, acute: fls. to 1 in. across, petals dentate, purple above but paler underneath, calyx purple. Pyrenees.—*D. deltoides*, a very different plant, has been grown under this name.

gratianopolitànus (*D. cæsius*). CHEDDAR P. Mat-forming, glaucous: sts. simple or somewhat branched, 3 to 12 in.: lvs. short and narrow: fls. solitary or few on a st., showy, rose-color, fragrant, petals bearded and toothed. England to Germany and S. France.

Grìsebachii: var. of *D. viscidus;* sometimes applied to condensed forms of *D. deltoides.*

Hawkiànus: *D. serotinus.*

Heddewígii: see *D. chinensis.*

Hoèltzeri. Cespitose and low, with strict radical lvs.: fls. spotted rose or yellowish, more or less fringed, about 1½ in. diam. Turkestan.

hungàricus: *D. tatræ.*

hy̆bridus: usually applied in the *D. barbatus* and *D. latifolius* groups.

imperiàlis: forms of *D. chinensis.*

inodòrus: variously applied, often in the *D. chinensis* group.

íntegerː var. of *D. strictus.*

japónicus. Glabrous, with simple sts. to 20 in.: lvs. about 2 in. long, ovate-lanceolate and acute: fls. in trichotomous fascicles, with contiguous cuneate red petals. Japan, Manchuria.—Variable.

kamtscháticus: unidentified name.

Knáppii. Erect to 16 in., scabrous, more or less glaucous, sts. simple and bearing a compact head at apex: fls. light yellow, not fragrant, ¾ in. across, with prominent acuminate calyx-bracts. Hungary, Jugoslavia.

Kotschyànus. Differs from *D. anatolicus* in white entire petals and calyx-teeth obtuse. Asia Minor.

laciniàtus: var. of *D. chinensis.*

latifòlius. Stiff and erect, 10–16 in., roughish, branched above, green, bearing terminal 1–6-fld. bracted heads: lvs. short and broad, 2–3 in. long and to ⅝ in. wide: fls. rose to dark red, single or double. Cultigen; intermediate in character between *D. barbatus* and *D. chinensis* or *D. plumarius* and accounted a hybrid. Vars. **atrococcíneus** and **atropurpùreus** are listed.—Many garden forms of close-headed pinks are referable to *D. latifolius.*

Lémsii: one of the Neglo pinks, under *D. neglectus.*

leptopétalus. Glabrous, sts. 2–3-fld., to 15 in.: lvs. long-linear and acuminate: petals yellowish-white above and bluish underneath, entire. Russia, Siberia.

Leréschii: *D. furcatus* var.

Liboschitziànus. Cespitose, glabrous, sts. to 8 in., 4-angled and 1-fld.: lvs. narrow-acuminate: fls. white or pale rose, the petals bluntly toothed; calyx-bracts very narrow and sharp. Caucasus.

libúrnicus. Glabrous, sts. simple and stiff, to 2 ft. high, more or less 4-angled at least above, terminating in a 2–6-fld. head: fls. rose, spotted, about ¾ in. across, petals dentate; calyx-bracts stiff and long-pointed. S. and E. Eu.

lilácinus: color race of *D. plumarius.*

longicaly̆cinus: *D. superbus* var.

longicaùlis. Erect stiff plant to 2 ft., glabrous, simple or branched above and sts. more or less 4-angled: lvs. very narrow: fls. 1 or 2 at summit of st., rose, fragrant, about ¾ in. across, petals sharp-dentate; calyx cylindrical, to 1 in. long, the bracts very short and broad. S. Eu.—The name has been applied also to a form of *D. Caryophyllus.*

Lumnítzeri: form of *D. plumarius.*

marginàtus: hort. name, probably for a race of *D. chinensis.*

mexicànus: unidentified hort. name.

micrólepis. Per., dwarf and cespitose: lvs. short, soft: fls. very small, solitary among foliage, rose-color. High mts., Bulgaria.

mirábilis: garden name for a form of *D. chinensis.*

moesìacus: *D. carthusianorum* var.

monspessulànus. Sts. terete, branching at top, glabrous: fls. solitary or 2 or 3 near together, inodorous, rose, varying to white (var. **álbus**) or carmine (var. **carmíneus**), 1 in. or more across, petals fringed to about the middle, sepals and bracts awn-tipped. Spain to Caucasus.

montànus: *D. Seguieri.*

montícolus: listed name; perhaps belongs with *D. superbus.*

multiflòrus: listed name.

Musàliæ. Dwarf plant of recent introduction, making dense tuft or turf of sharp foliage and bearing small pink fls.

myrtinérvius. Very condensed, 2 in. or less high in tuft, perhaps an alpine form of *D. deltoides:* fls. many but solitary, petals shallowly toothed. Macedonia.—*D. Peristeri* apparently belongs to this group.

nànus semperflòrens: trade name; probably *D. plumarius.*

nardifórmis. Cespitose, 6 or 7 in. high, with stiff spreading lvs.: fls. rose-color, in fascicles. S. E. Eu.

negléctus. Small cespitose plant sometimes regarded as a form of *D. glacialis* but larger: fls. bright crimson-pink with lighter colored eye and long narrow bracts, petals deeply toothed. Mts., S. Eu.—Apparent offshoots of this species, some of them perhaps hybrids, are the Neglo pinks, *D. Lemsii*, and such vars. as Adoree, Clara, Ida, Mona, Rita, Valerie. Vars. **compáctus** and **nànus** are listed.

nígricans: race of *D. barbatus* with dark fls.

nítidus. Green, loosely tufted, sts. to 12 in. tall: fls. 1 or 2 to a st., about 1 in. across, rose-color and spotted. Mts., Cent. Eu.—Rock-garden.

nóbilis: form of *D. chinensis.*

Noeànus. Densely tufted and very green, sts. to 10 in. high, forking and bearing 1–5 white small fragrant fls.: lvs. needle-like. S. Eu. to S. W. Asia.—The plant has been grown as *Acanthophyllum spinosum.*

ochroleùcus: *D. chinensis* form.

orbélicus: form of *D. cruentus.*

pállens. Glaucous, to 1 ft. or more: fls. rather small, white or pale rose, petals narrow and toothed. Greece, Syria.

Pancícii. Cespitose, glabrous, 1 ft. or more, with slender 4-angled sts.: lvs. rather soft, mostly in basal tuft: fls. rose, several together in a paniculate cyme or head. Balkans.

pelvifórmis. Clusterhead, 2 ft., few-lvd.: fls. purple, in a dense head, petals sharply toothed. Serbia.

Peristèri: see *D. myrtinervius.*

petræ̀us. Cespitose or mat-forming, glabrous, sts. slender, simple or forked, 6–15 in. tall: lvs. green, sharp-pointed, 3-nerved: fls. white, about ¾ in. across, fragrant, petals dentate or fimbriate; calyx cylindrical, narrowed at apex, to 1 in. long; bracts 4, about ⅓ length of calyx. E. Eu.

picturàtus: hort. name.

pinifòlius. Cespitose, roughish, st. simple and strict, to 1½ ft.: lvs. awl-like, the radical ones recurved: fls. rose, inodorous, 5–8 in a head, calyx reddish; bracts 4, aristate. S. E. Eu.

plenissimus: very double *D. chinensis.*

plumàrius. COTTAGE P. Mat-forming, glabrous and glaucous, to 1½ ft., the sts. simple or branched above and 2–3-fld.: fls. rose, varying to purple, white and particolored, very fragrant, petals fringed to the middle or less; bracts 4, about ⅓ length of calyx. Austria to Siberia.—Cult. in various forms, some of them double; a popular strain is var. **semperflòrens** (*D. semperflorens*). Named vars. of garden pinks may be offshoots of this species or hybrids with *D. Caryophyllus* and possibly other species; see *D. Allwoodii.* Vars. **álbus, compáctus, nànus** and **scóticus** are offered. The Hortulan pinks are an important group of border plants more or less intermediate between *D. plumarius* and *D. Caryophyllus.*

poéticus: a garden name for *D. barbatus.*

Pontedèræ: *P. carthusianorum* var.

præ̀cox: uncertain garden name.

Príchardii: border pink of hort. origin in England, but sometimes applied to a form of the *D. deltoides* group.

procúmbens: *D. deltoides.*

prólifer (*Tunica prolifera*). Glabrous simple or branching ann. to 2 ft., with inconspicuous little pink fls. in small heads terminating the stiff sts.; calyx and bracts dry. Eu.; nat. in U. S.—A weedy plant of little hort. interest.

pubéscens. Glandular-pubescent, rather weak, sts. terete and slender, much branched, to 1 ft.: foliage soft: fls. odorless, solitary or twin, long-peduncled, petals rose and spotted above, greenish underneath, calyx villous; bracts 2, spreading, long-pointed. S. E. Eu.

punctàtus: race of *D. chinensis.*

púngens: confused name.

pygmæ̀us: *D. subacaulis.*

pyrenæ̀us: *D. deltoides.*

pyridícolus: the garden plant under this name may be *D. viscidus* var. *Grisebachii.*

rèpens: probably *D. deltoides*, but there is a very dwarf cespitose species of this name in Alaska and Kamtschatka with rose-color or purple fls.

Requiènii. Cespitose, glabrous and glaucous, sts. slender, to 15 in., 4-angled, forked: lvs. short, narrow, strict: fls. purple, the petals dentate, somewhat rhomboid. Pyrenees.

Reùteri: form of *D. sylvestris.*

Ríchardii: apparently a form of *D. deltoides.*

robústus: Hortulan, *D. plumarius.*

Ródgersii: hort. name.

ròseus: *D. barbatus* var.

Ròysii: hort. race of undetermined origin and not uniform in cult. unless propagated asexually; showy tufted small pink with large deep rose-colored fls.

rupícolus: confused name; perhaps forms of *D. sylvestris* are usually meant.

salmòneus: color races of *D. chinensis.*

sanguíneus: var. of *D. carthusianorum.*

saxátilis: indefinite name in cult.

saxícola: form of *D. sylvestris.*

saxígenus: var. of *D. carthusianorum.*

scóticus: *D. plumarius* form.

Seguièri (*D. chinensis* var. *asper*). The European extension of *D. chinensis*, perhaps a distinct species differing in the panicled fls., and wide-spreading calyx-bracts.—Variable; known by several names in cult., as *D. caucasicus, discolor, montanus.*

semperflòrens: one of the Hortulan pinks, under *D. plumarius.*

serótinus (*D. Stawkianus. D. Hawkianus*). Clustered or cespitose, to 16 in. or more, glaucous: fls. white, fragrant, petals narrowly fringed. E. Eu.

serpyllifòlius: *D. deltoides* var.

sinénsis: *D. chinensis.*

speciòsus: form of *D. superbus.*

spectábilis: garden name; probably *D. chinensis* or *D. plumarius.*

spiculifòlius (*D. acicularis* var. *spiculifolius*). Not cespitose, sts. 10–12 in.: lvs. long-linear and acute: fls. rose to white, the petals palmatifid and barbulate; bracts 4, about ¼ length of tube. Russia and Rumania.—The plant sometimes catalogued under this name is *D. Noeanus.*

spinòsus: *Acanthophyllum pungens*, but the plant grown under that name is *D. Noeanus.*

spléndidus: garden name, usually *D. deltoides.*

squarròsus. Cespitose, sts. terete, slender and spreading, glabrous, branched, to 2 ft.: lvs. linear, acute, recurved: fls. rose, few to each st., the petals not close together, pinnately multifid; bracts 4, about ⅓ length of calyx. Russia, Siberia.

Stawkiànus: *D. serotinus.*

stellàris: form of *D. chinensis.*

Stérnbergii. Cespitose and glaucous, sts. 4-angled, 2-fld., 6–12 in.: lvs. long-linear, spreading: fls. rose and spotted, fragrant, the petals not contiguous; bracts 4, purplish, ⅓ length of calyx. Portugal, Alps, Switzerland.

stríctus. Cespitose and glabrous, sts. to 10 in., strict, slender, 1- or sometimes 2-fld.: fls. small, white, inodorous, petals not contiguous or close together and not fimbriate, oval-rhomboid. S. E. Eu. Var. **álbus** is listed. Var. **grandiflòrus** is larger-fld.

suavèolens: form of *D. plumarius.*

suàvis: *D. gratianopolitanus* or *D. plumarius.*

subacaùlis. Low, cespitose, glaucous, with several-headed caudex, sts. simple, 4-angled, 2-fld., 3–4 in.: fls. small, purple, standing above the tufts, the petals not contiguous, entire. Spain, France.—Sometimes called *D. pygmæus.*

subalpìnus: listed name.

subcauléscens: listed name.

subfastigiàtus: *D. carthusianorum* var.

subnegléctus: *D. carthusianorum* var. *pumilus.*

Súndermannii. Much like *D. strictus*, but more showy: petals to ⅓ in. broad, entire or nearly so, calyx ¾ in. long. Greece.

superbíssimus: var. of *D. chinensis.*

supérbus. Light green glabrous plant with branching sts. to 2 ft. high: lvs. rather soft, flat: fls. pale rose or lilac, very fragrant, mostly to about 1½ in. across, few or many in lax panicle, the petals multifid nearly or quite to base; calyx cylindrical, to 1 in. long; bracts very short. Spain to Norway and Japan. Var. **longicalýcinus**, with elonated calyx. Var. **nànus**, a dwarfer form with smaller fls. is offered. Var. **speciòsus** (*D. speciosus*) is mostly lower than the species, sts. little branched and few-fld., branches divaricate, fls. much larger and more showy. Vars. **álbus, montícolus, purpùreus** are listed.

supìnus: see *D. deltoides.*

sylvéstris. WOOD P. Cespitose, glabrous, sts. simple or branched, 6–16 in. tall and much exceeding the very narrow basal lvs.: fls. solitary, odorless, rose, to 1 in. across, petals contiguous and dentate; bracts very short and truncate. Spain to E. Eu. Var. **purpùreus** is listed.

tàtræ. White-fld. pink, probably a race of *D. plumarius;* the name *D. hungaricus* apparently applies to the same plant. Tatra region, S. E. Eu.

tèner. Glabrous, to 5 in. high, the slender sts. 1-fld.: fls. rose, spotted, the petals oblong-cuneate. France.

tenuifòlius: *D. carthusianorum* var.

tergestìnus: included in *D. sylvestris.*

trifasciculàtus. Clusterhead, to 24 in.: fls. purple, in dense about 3-parted heads, petals deeply dentate. S. E. Eu., S. W. Asia.

trístis. Clusterhead, to 16 in., with soft plane lvs.: fls. purple, in a small head, petals dentate on end. Bulgaria.

tymphrésteus. Small green tufted pink 9 in. or less tall, viscid-pubescent: fls. rose-color, solitary or in a loose head, about ½ in. long. Greece.—Probably not in cult. with us, the plant so named being *D. Noeanus.*

vaginàtus: form of *D. carthusianorum.*

variegàtus: probably *D. chinensis.*

Velenóvskyi: form of *D. cruentus.*

versícolor. Glabrous plant with terete paniculately branched st. 10–12 in. high: lvs. narrow-linear, the uppermost scale-like: fls. with contiguous petals red and spotted above and greenish-yellow underneath; calyx-bracts obovate and spreading. Altai Mts., Siberia.

violàceus: listed name.

virgíneus: confused name; probably usually applied to *D. gratianopolitanus* and *D. plumarius.*

víscidus. Plant cespitose and viscid-pubescent, to 1 ft., the sts. simple: lvs. soft, those on the st. appressed: fls. in fascicles of 3–6, purple and spotted, the petals few-toothed; bracts usually 4. Bulgaria, Greece, Turkey. Var. **Grìsebachii** has fls. 2–3 in the fascicle and bracts 2.

Waldsteìnei. Sts. terete, 10–14 in.: lvs. rather soft, spreading: fls. rose, very fragrant, to about 1 in. across; petals not contiguous, obovate, fringed to middle; bracts 4. Pyrenees, Alps.

warleyénsis: listed name, apparently a Clusterhead.

Wímmeri. Allied to *D. superbus:* sts. terete, to 15 in.: lvs. soft, linear, acute: fls. purple, fragrant, in a lax forked panicle, the petals fimbriate nearly to base; bracts 4, mucronate, short. Switzerland north and east.

Wínteri. Recent name for a plant of the border carnation kind, apricot or lemon-yellow, blooming all summer; said to be a hybrid.

zonàtus: probably *D. plumarius;* the true species of this name of Asia Minor is probably not in cult.

DIAPÉNSIA. *Diapensiaceæ.* Tufted evergreen plants with crowded mostly opposite entire lvs. and solitary bell-shaped fls.; suitable for the rock-garden.

lappónica. To 4 in.: lvs. narrowly spatulate, to ½ in. long, obtuse: fls. white, to ¾ in. across. June–July. Circumpolar, extending southward on mts. of N. Y. and New England. Var. **obovàta** (*D. obovata*) has lvs. obovate.

obovàta: *D. lapponica* var.

DIAPENSIÀCEÆ. Diapensia Family. About 6 genera in the north temp. zone of little evergreen shrublets or stemless per. herbs, having simple lvs., bisexual regular fls. with 5-lobed calyx and corolla, 5 stamens, superior 3-celled ovary and capsular frs.; allied to Primulaceæ. Diapensia, Galax, Pyxidanthera, Schizocodon and Shortia are cult. in rock-gardens and similar places, and employed as ground-cover.

DIÁSCIA. *Scrophulariaceæ.* S. African low slender herbs of many species ann. and per., with lvs. most y opposite, fls. violet or rose in racemes, 2-lipped but the tube nearly lacking, the lower lip 2-spurred. One is grown in flower-gardens and also as a pot-plant. The cultural requirements are simple; easily propagated by seed.

Bárberæ. Twinspur. Ann., 1 ft.: lvs. ovate, to 1½ in. long, toothed: fls. rosy-pink with yellow spot in throat, ½ in. across, in terminal racemes to 6 in. long.

DICÉNTRA (*Bicuculla. Bikukulla*). *Fumariaceæ.* Per. herbs with ternately compound lvs., irregular rose, yellow or white fls. in racemes, the corolla heart-shaped or 2-spurred and closed at top, and capsular frs.; cult. in the flower- or wild-garden.

The plants thrive in fertile light soil, in usual exposures. Propagated by division of crowns or roots.

canadénsis. Squirrel-Corn. To 1 ft., the root with many small tubers: lvs. all basal: fls. greenish-white tinged with purple, with short rounded spurs, nodding in simple racemes. N. S. to Tenn. and Neb.

chrysántha. Golden-Eardrops. To 5 ft., with leafy sts.: fls. sulfur-yellow, with very short spurs, erect in large panicled racemes. Calif.

Cucullària. Dutchmans-Breeches. To 10 in.: lvs. all basal: fls. white tipped with yellow, with widely divergent spurs, nodding in simple racemes. N. S. to N. C. and Kans.

exímia. To 2 ft.: lvs. all basal: fls. rose or pink, with short rounded spurs, nodding in compound racemes. N. Y. to Ga.

formòsa. To 1½ ft.: lvs. all basal: fls. rose-purple or rarely white, with short rounded spurs, nodding in compound racemes. B. C. to Calif.

glaùca: *D. oregana.*

ochroleùca. Similar to *D. chrysantha* but with straw-yellow or cream-colored fls. Calif.

oregàna (*D. glauca*). To 1 ft.: lvs. all basal, glaucous: fls. in terminal nodding panicles, cream with the exserted limb rose. Calif., Ore.

parviflòra: catalogue name.

pusílla. To 8 in.: lvs. ternately cut, the ultimate segms. narrowly linear-lanceolate, acute, glaucous: fls. 2–3, on naked scapes, spur not lobed, short, rounded. Japan.

spectábilis (*Dielytra spectabilis*). Bleeding-Heart. To 2 ft., with leafy sts.: fls. rosy-red, with short rounded spurs, in simple one-sided racemes. Japan.—An old garden plant. Var. **álba** has white fls.

uniflòra. To 3 in.: lvs. all basal: fls. solitary, white or pink, the outer petals strongly recurved, spurs resembling rounded sacks. Wash. to Calif.

DICHELOSTEMMA: *Brodiæa.*

DICHÓNDRA. *Convolvulaceæ.* A few species of small creeping or prostrate herbs with minute inconspicuous fls., one sometimes grown for ground-cover in greenhouses and frequently a useful substitute for lawn grass in places far south; often a weed in lawns: lvs. cordate-orbicular to reniform, entire: fls. stalked, solitary in the axils, the very small greenish-yellow corolla open, sepals hairy: fr. a 1–2-seeded caps.

carolinénsis (*D. evolvulacea. D. repens* var. *carolinensis*). Lawn-Leaf. Little silky-hairy to glabrate plant, creeping close to the ground and rooting, per. or persisting: lvs. ¾ in. or less across, standing 1–3 in. above the ground. Va. to Tex. and Mex., not far from the coast.—The West Indian *D. repens,* with repand or crenate lf.-margins, is said to be intro. in Calif.

evolvulàcea: *D. carolinensis.*

DICHORISÁNDRA. *Commelinaceæ.* Perennials from trop. Amer. with sheathing alternate lvs. and irregular blue or purple fls. in racemes or panicles, on erect or ascending simple or branched sts.

Grown under glass, or out-of-doors in warm regions. They require abundant water in the growing season. Propagated by seeds, cuttings, and division.

cærùlea: hort. name.

mosàica. St. spotted: lvs. cross-banded with white longitudinally and along cross-veins, purple underneath: fls. blue and white, close to foliage. Peru. Var. **gigantèa** has large fls. and var. **undàta** lacks white cross-veins.

thyrsiflòra. To 3 ft. or more, nearly or quite simple: lvs. glossy green, not variegated: fls. blue. Brazil.

vittàta: probably *Rhœo discolor* var. *vittata.*

DICHOTOMOUS: forked in pairs.

DICHROSTACHYS: *Cailliea.*

DICKSÒNIA. *Dicksoniaceæ.* Greenhouse tree-ferns with a distinct trunk usually several ft. tall: fronds large, 2–3-pinnate; sori marginal at the tips of veins; mostly in the tropics and subtropics of the southern hemisphere. See *Ferns.*

antárctica. Trunk to 50 ft., with matted aërial rootlets: fronds to 6 ft. long, 3-pinnate, with lanceolate toothed segms. to 2 in. long. Australia.

cicutària: *Dennstaedtia cicutaria.*

fibròsa. Trunk to 20 ft., stout, brown, covered with fibrous aërial rootlets: fronds to 8 ft. long, 2–3-pinnate. New Zeal.—A frequent glasshouse fern.

pilosiúscula: *Dennstaedtia punctilobula.*
punctilóbula: *Dennstaedtia punctilobula.*

squarròsa. Trunk to 20 ft., slender, black: fronds to 8 ft. long, 2–3-pinnate, stiff and leathery. New Zeal.

DICKSONIÀCEÆ. DICKSONIA FAMILY. Mostly tree-ferns with erect, rarely decumbent, trunks, with hairs but without scales: fronds very large, pinnately divided, usually leathery, in a crown; sori marginal or terminal on the veins. Cibotium and Dicksonia are cult.

DICRANOSTÍGMA. *Papaveraceæ.* Herbs from Cent. Asia with woody roots, basal pinnatifid lvs. and alternate st.-lvs., orange or yellow fls., and capsular frs.; one species is grown in rock-gardens.

Franchetiànum (*Chelidonium Franchetianum*). About 1 ft. high, glaucous: fls. orange, 1 in. across: caps. linear, to 3 in. long. China.

DICTÁMNUS. *Rutaceæ.* One variable species ranging from S. Eu. to N. China, cult. for the ornamental fls. **D. álbus** (*D. Fraxinella*). DITTANY. FRAXINELLA. GAS-PLANT. BURNING-BUSH. Hardy per. to 3 ft., strong-smelling and long-enduring: lvs. of 9–11 ovate lfts.: fls. white, about 1 in. long, in terminal racemes: fr. a 5-parted caps. Var. **caucásicus** (*D. caucasicus*) is a very large form with longer racemes. Var. **purpùreus** has dark fls. and var. **rùbra** rosy-purple fls. *D. dahuricus* is a form of the species.

DICTYOGRAMMA: *Coniogramme.*

DICTYOSPÉRMA (*Linoma*). PRINCESS PALMS. *Palmaceæ.* Monœcious unarmed feather-lvd. trees of the Mascarene Isls.; lvs. long and gracefully curving, with infl. on the trunk beneath the long lf.-sheaths: fls. in 3's of which the central one is pistillate, spirally disposed on the cord-like branches: fr. oblong to cartridge-shaped, ¾ in. or less long; albumen ruminate; stigma apical. Planted in S. Fla.; see *Palm.* **D. álbum** (*Areca alba*). To 40 or 50 ft.: lvs. 10 ft. long more or less; pinnæ curved or drooping, 2–3 ft. long and 2–3 in. broad, only the midrib very prominent, long-acuminate, green underneath. Var. **aùreum** (*Areca aurea*). More slender and smaller and fls. smaller: young plants with orange or yellow petioles and veins. Var. **furfuràceum.** Petioles and sheaths of young plant tomentose. Var. **rùbrum** (*Areca rubra* in part). In juvenile stage has very dark green lvs. with veins and margins reddish.

DIDISCUS: *Trachymene cærulea.*

DIDYMAÒTUS. *Aizoaceæ.* One stemless succulent per. from S. Afr. **D. lapidifórmis** (*Mesembryanthemum lapidiforme*). To 1½ in.: lvs. usually 1 pair united at base, to 1 in. long, 1¼ in. wide and 1 in. thick, keeled on back, glaucous, grayish-green, brownish or purplish: fls. one on each side of the pair of lvs., white or tinged rose with rose stamens, 1½ in. across; petals numerous, linear; stigmas 6.

DIEFFENBÁCHIA. *Araceæ.* Trop. American erect shrubby plants bearing the oblong entire lvs. toward the top of the st., the petiole sheathing, the unisexual fls. borne on an erect spadix about the length of the oblong spathe; grown as foliage subjects in the greenhouse.

Several plants may be put in a large pot until they cease developing good leaves. They may then be topped and the stems cut into 2- or 3-inch pieces, dried for a few days, and then put in boxes of sand where they will throw off shoots which will root and form new plants.

Barraquiniàna: *D. picta* var.

Baùmannii: *D. Bowmannii.*

Baùsei. Hybrid between *D. picta* and *D. Weiri* (the latter a dwarf kind with yellow spotted lvs.) having yellowish-green lvs. with small white spots and glaucescent beneath.

Bòwmannii (*D. Baumannii*). To 3 ft.: lvs. to 16 in. long and 8 in. wide, spotted with white, the petioles deeply channelled: spathes pale green, about 6 in. long. Colombia.

brasiliénsis: *D. picta.*

costàta. To 4 ft.: lvs. to 16 in. long and 1 ft. wide, deep green, paler beneath, the petioles channelled: spathes to 1 ft. long. Colombia, Peru.

Fournièri: hort. name.

imperiàlis. Lvs. to 2 ft. long and 1 ft. wide, shining green spotted with yellow and with whitish midrib, the petioles deeply channelled. Peru.

Jénmannii: *D. picta* var.
Leònii: hort. name.
Lèopoldii: *D. Seguine* var. *liturata.*

longispàtha. St. thick, to 3½ ft. high: lvs. oblong, to 18 in. long, briefly acuminate: spathes green, to 1 ft. long: berries scarlet. Panama.

magnífica: *D. picta* var.
nóbilis: *D. Seguine* var.

pícta (*D. brasiliensis*). To 4 ft.: lvs. shining green, irregularly marked with white and yellow: spathes about 6 in. long. S. Amer. Runs into many forms, some of which are: Var. **Barraquiniàna** having lvs. spotted with white and petioles and midribs almost entirely white; var. **Jénmannii** with lvs. veined and spotted with white; var. **magnífica** (*D. Rex*) has lvs. spotted along veins with yellowish-green and petioles marked with white.

Réx: *D. picta* var. *magnifica.*

Seguìne. To 6 ft.: lvs. green often variously spotted, pale green beneath, with thick midribs and petioles striped and dotted with white, not channelled: spathes green or pale green. Trop. Amer., where it is known as "dumb cane." Var. **irroràta** has lvs. to 2¼ ft. long. Var. **lituràta** (*D. Leopoldii*) has an irregular yellowish stripe along midrib. Var. **nóbilis** (*D. nobilis*), lvs. dull green spotted brownish-green.

spléndens. Hybrid between *D. Leopoldii* and *D. picta* having lvs. spotted with white and channelled petioles.

DIELYTRA: *Dicentra spectabilis.*

DIERÀMA. *Iridaceæ.* Two S. African cormous herbs, sometimes grown in S. Calif. or under glass in cold climates. Cult. as for Ixia.

péndula. To 4 ft.: basal lvs. to 2 ft. long and ¼ in. broad: fls. white to pale or dark mauve, to 1 in. long, in several slender drooping spikes. Trop. and S. Afr.

pulchérrima (*Sparaxis pulcherrima*). To 4 ft.: lvs. very stiff, to 2 ft. long and ¼ in. wide: fls. bright purple, 1½ in. long, with short tube, in slender drooping spikes. Var. **álba,** fls. white.

purpùrea: listed as a purple form.

DIERVÍLLA. BUSH-HONEYSUCKLE. *Caprifoliaceæ.* Three little bushes of E. N. Amer., spreading by means of underground sts. and forming patches: lvs. opposite: fls. small, in spring and summer, yellow sometimes shaded reddish or brownish, borne in small leafless axillary clusters that are sometimes aggregated into terminal cymes, corolla more or less bilabiate: fr. a thin-walled taper-pointed caps. See *Weigela.*

The bush-honeysuckles are adaptable for holding banks and for colonizing in rear situations and for tall ground-cover. They propagate readily by suckers.

Lonícera (*D. trifida*). To 4 ft., glabrous or essentially so: lvs. ovate to oval, long-pointed, 2–4 in. long, petioled. Newf. to Sask. and south to N. C., on banks and rocks.

rivulàris. To 6 ft., pubescent: lvs. ovate or narrower, long- or short-pointed, short-petioled: fls. in terminal clusters. N. C., Tenn., Ga., Ala., on damp banks and rocks; hardy in New England.

sessilifòlia. To 4 or 5 ft., glabrous, with 4-angled branchlets: lvs. nearly or quite sessile, ovate-lanceolate and acuminate: fls. often in crowded terminal clusters. N. C., Tenn., Ga., Ala., on exposed rocky hillsides; hardy N.

trífida: *D. Lonicera.*

DIETES: see *Moræa.*

DIFFUSE: loosely branching or spreading.

DIGITÀLIS. Foxglove. *Scrophulariaceæ.* Erect herbs with mostly tall and simple fl.-sts., grown in the border for their long racemes of tubular 2-lipped fls., the upper lip shorter than lower, in purple, yellowish or white, in summer: lvs. alternate and long and decorative, especially young rosettes, mostly ovate-lanceolate to lanceolate: native from Eu. to Cent. Asia.

Foxgloves are easily grown. The perennial species are propagated by seeds or by division. The common species and cultigens are usually treated as biennials, the seed sown in the spring or summer producing flowering plants the following season.

ambígua (*D. grandiflora. D. ochroleuca*). Yellow F. Per. or bien. to 3 ft., hairy: fls. 2 in. long, yellowish marked with brown, calyx-lobes linear. Eu., W. Asia.

Buxbaùmii: hort. name for a yellow-fld. foxglove.

canariénsis: *Isoplexis canariensis*, but the plant grown under this name is sometimes *D. ambigua.*

dùbia. Per. to 9 in.: fls. purplish, spotted inside, in few-fld. racemes. Spain, Balearic Isls.

eriostàchya. To 2 ft. or more: lvs. spatulate-lanceolate, acute, tapering to a narrow but winged petiole, serrulate: fls. hairy, probably white or yellowish and with brown netted venations, with pendent broadly ovate lower lip which is much larger than other lobes of corolla. Habitat unknown.

ferrugínea. Rusty F. Per. or bien. to 6 ft.: fls. rusty-red, downy outside, lower lip bearded, middle lobe longer than others, calyx-lobes ovate. S. Eu.

gloxinioìdes: *D. purpurea* var. *gloxiniæflora.*

grandiflòra: *D. ambigua.*

Isabellìna: form of *D. purpurea* with yellow fls.

lævigàta. Per. to 3 ft.: fls. yellow marked with purple, middle lobe of lower lip longer than others, calyx-lobes oblong. S. Eu.

lanàta. Grecian F. Per. or bien. to 3 ft.: fls. 1 in. long, nearly white with fine veins, middle lobe of lower lip longer than others, calyx-lobes linear, racemes hairy. Danube region and Greece.

lùtea. Straw F. Per. to 2 ft.: fls. yellow to white, to ¾ in. long, in one-sided racemes, upper lip 2-parted, calyx-lobes lanceolate. Eu.

Lútzii. A group of hybrids with fls. in shades of salmon.

maculàta: *D. purpurea* var.

mariàna. Per. to 1½ ft.: lvs. basal, ovate-oblong, very downy: fls. rose, brownish spotted and bearded within. Spain.

mìnor. To 1 ft., sts. slender: basal lvs. lanceolate, minutely denticulate, usually tomentose, veins prominently raised: fls. rose-pink, small, corolla glabrous with ciliate lobes. Spain.

monstròsa: *D. purpurea* var.

nervòsa. Per.: fls. yellowish, small, in long dense racemes. Cent. Asia.

obscùra. Willow-leaved F. Per., woody at base: lvs. narrowly linear-lanceolate, entire, glabrous: fls. yellow, veined bright red within, corolla-tube very short. Spain.

ochroleùca: *D. ambigua.*

orientàlis. Per. to 3 ft.: lvs. lanceolate, pubescent: fls. whitish-cream, all but lower lip finely striped red without and more irregularly so within, upper lobes rounded, to 1 in. long, subtended by lanceolate bracts that are longer than corolla. Levant.—Perhaps not too hardy N.

purpùrea. Common F. Bien., sometimes per., to 4 ft.: fls. to 3 in. long, purple more or less spotted, lobes ciliate, middle lobe of lower lip shorter or as long as others: fls. drooping in one-sided racemes to 2 ft. long; calyx-lobes broad-ovate. W. Eu. Hort. vars. are: **álba,** fls. white; **campanulàta,** upper fls. united into a large bell-shaped bloom; **gloxiniæflòra** (*D. gloxinioides*) has longer racemes and more open fls. than the type; **lilácina** is listed; **maculàta supérba,** Leopard F., improved spotted form; **monstròsa,** a double peloric form; **ròsea** has rose fls. and **rùbra** purple-red.

sibírica. Hairy per.: fls. yellowish, middle lobe of lower lip much longer than others, calyx-lobes linear. Siberia.

Thápsii. Per. to 4 ft.: lvs. ovate-lanceolate to oblong: fls. purple with pale throat, dotted red, in lax racemes, middle lobe of lower lip longer than others. Spain.

viridiflòra. Bien. to 2½ ft., glandular-pilose: lvs. oblong, dentate: fls. yellowish-green veined red, few in elongate leafy racemes. Greece.

DIGITÀRIA (*Syntherisma*). *Gramineæ.* Ann. grasses of wide range, having flat lvs. and spikelets in one-sided racemes borne in whorls or digitately at top of sts. See *Grasses.*

sanguinàlis (*S. sanguinale*). Crab-Grass. Sts. often decumbent, to 3 ft.: lvs. to 6 in. long and ⅓ in. wide: racemes to 6 in. long, very narrow, 3–10 together. Eu., but widely nat.—Weedy grass but sometimes planted for ornament.

DIGITATE: hand-like; compound with the members arising from one point, as the leaflets of horse-chestnut. See *Palmate.*

DIHOLCOS: *Astragalus bisulcatus.*

DILL: *Anethum graveolens.*

DILLÈNIA. *Dilleniaceæ.* Warm-country trees, Asia to Australia, one intro. in southernmost parts of U. S.: lvs. alternate, large and strongly pinnately veined: fls. mostly large and showy, white or yellow, solitary or in clusters, the parts 5 or in multiples, the calyx enlarging and inclosing the fleshy fr.

índica (*D. speciosa*). To 40 ft., evergreen or losing its foliage in the dry season: lvs. oblong, thick, to 12 in., serrate, borne at ends of branches: fls. white, 6 in. or more across, with a mass of yellow stamens and a rayed stigma: fr. size of fist, acid, edible. Trop. Asia.

speciòsa: *D. indica.*

DILLENIÀCEÆ. Dillenia Family. Trees, shrubs or rarely herbs of about a dozen genera, some having medicinal properties but only Actinidia, Candollea, Dillenia, and Hibbertia known in cult. in the U. S. outside botanic gardens. The family is characterized by mostly alternate lvs., yellow, white or rarely red usually bisexual fls. having commonly 5 sepals and petals, numerous stamens, ovary 1 or more carpels.

DILLWÝNIA. *Leguminosæ.* Heath-like shrubs, mostly of small size, native in Australia and adapted to Calif.: lvs. scattered or alternate, narrow-linear or needle-like: fls. papilionaceous, yellow or orange-red, prevailingly in small axillary or terminal racemes or corymbs or sometimes solitary: pod ovate or broader.

Preìssii. To 5 ft. with long erect branches: lvs. to ¾ in. long, stiff: fls. about 3 or less in the axils, standard somewhat exceeding calyx.

DIMORPHANTHUS: *Aralia.*

DIMORPHOTHÈCA. Cape-Marigold. *Compositæ.* S. African herbaceous or subshrubby annuals and perennials with white, purple, yellow or orange, solitary terminal heads of ray- and disk-fls. In Calendula the ray achenes are incurved, the lvs. entire or minutely toothed; in Dimorphotheca the ray achenes are straight, the lvs. conspicuously toothed.

Cape-marigolds are grown in the flower-garden and sometimes in the greenhouse and bedded out. They make a good display in warm sunny situations, requiring a long season for best results. Propagated by seeds and the perennial species by cuttings.

ánnua (*Calendula pluvialis*). Ann., rough-hairy: lvs. oblong: rays white or yellowish above, purplish below. Var. **ligulòsa** (*Calendula Pongei*). Double, the rays white above, yellow or violet beneath. Var. **ríngens** (*D. ringens*). Fls. pure white with blue ring around the center.

aurantìaca (*Calendula Tragus*). Per. blooming as an ann., often shrubby: lvs. linear-oblong, to 3 in. long and ½ in. wide, margins entire: rays orange-yellow.

calendulàcea. Ann., glandular-pubescent: lvs. oblong, wavy-toothed: rays orange-yellow.

chrysanthemifòlia. Shrubby per. to 2½ ft.: lvs. obovate-oblong, to 3 in. long and 1 in. wide, incised or toothed, occasionally lobed: rays yellow, heads to 3 in. across.

cuneàta. Much branched shrub, sticky-glandular: lvs. cuneate to lanceolate, to 1 in. long, toothed: rays yellow, heads about 2 in. across.

Ecklònis. Per. or subshrub to 2 ft.: lvs. lanceolate or linear-lanceolate: rays white above, purplish beneath.

hýbrida (*Calendula hybrida*). Hybrids between *D. annua* and *D. aurantiaca* with fls. varying from white to red, yellow and orange.

pluviàlis: *D. annua.*

ríngens: *D. annua* var.

spectábilis. Per. to 1½ ft.: lvs. lanceolate-elliptic, to 2½ in. long, acute, scabrous: heads about 1 in. across, ray-fls. bright purple, 3-toothed, disk-fls. purple.

DINEMA, represented by the single species *D. polybulbon*, is now referred to *Epidendrum*.

DINTERÁNTHUS. *Aizoaceæ.* S. African stemless succulents of the Mesembryanthemum association, having short thick lvs. united halfway or more and large yellow solitary fls.; petals numerous; stigmas 7–9.

Márgaretiæ: *Lapidaria Margaretiæ.*

microspérmus (*M. microspermum*). Lvs. united to ½ their length, 1 in. long and broad and ¾ in. thick, reddish with green dots: fls. yellow tipped with reddish, 1½ in. across.

Pòle-Évansii (*M.* and *Rimaria Pole-Evansii*). Plant-body to 1¾ in. wide, the fissure about ½ in. deep, grayish: fls. with outer petals pink and inner pale yellow, 1¼ in. across.

pubérulus (*D. punctatus*). Plant to 1½ in., the pair of lvs. united ⅓ to ½ their length and the tips diverging: lvs. to ¾ in. long and broad and ½ in. thick, grayish-brown dotted with dark green, velvety: fls. yellow, reddish outside.

punctàtus: *D. puberulus.*

DIOCLÈA. *Leguminosæ.* Twining vines with lvs. of 3 lfts. and papilionaceous blue, red or white fls. in clusters or racemes; sometimes planted in warm regions. Propagated by seeds, cuttings, or suckers.

glycinoìdes. Fls. scarlet, 1 in. long. Argentina.—The botanical position of the plant grown under this name is much in doubt, and it may belong to another genus.

DIŒCIOUS: staminate and pistillate flowers on different plants.

DÌON (*Dioon*). *Cycadaceæ.* Mexican palm-like or tree-fern-like plants with stiff pinnate lvs. and fls. borne in cones. For cult. and uses see *Cycas*, from which it differs in technical floral and fr. characters.

Dohènii. A plant not fully described and yet little known: lfts. broadest at base, very stiffly sharp-pointed, not toothed, glabrous, margins recurving, parallel side nerves about 12 and prominent. Erroneously reported from Guatemala.

edùle. Trunk to 6 ft. high, very stocky: lvs. 3–5 ft. long; lfts. entire in adult plants but toothed at tip on young ones, side nerves 12 or less, sharp-pointed. Hot open situations.

spinulòsum. Trunk to 50 ft. high, more slender: lvs. 4–6 ft. long; lfts. long, with separate slender spiny teeth on each margin, the parallel side veins 18 or more. Rain forests.

DIONÆA. *Droseraceæ.* One insectivorous per. of restricted range in N. C. and S. C., sometimes grown as an oddity or for botanical demonstration. The plant thrives in sunshine in a humid atmosphere. It should be potted in sphagnum or silver-sand and black silt and the pots set in about 1 in. of water. Propagated by seed under a bell-jar. **D. muscípula.** Venus Fly-Trap. Lvs. in basal rosettes, having flat petioles and round 2-lobed blades which are fringed with sensitive hairs, closing together when touched: fls. white, in umbels terminating scapes about 1 ft. high.

DIOON: *Dion.*

DIOSCORÈA. Yam. *Dioscoreaceæ.* Herbaceous twining vines or perhaps more or less woody, in both eastern and western hemispheres and mostly of warm regions, with tuberous roots and often aërial tubers, simple or compound broad lvs. and small diœcious fls. in spikes or racemes.

Several species are cultivated in the tropics for the edible tubers, and a few in the North for ornament and interest. Yams are of easy cultivation and may be planted at any time of year where hardy. Propagated by seeds, tubers or cuttings. The word yam is sometimes applied to certain varieties of sweet potato.

alàta. Tubers to 8 ft. long: sts. 4-winged or -angled, often with small axillary tubers: lvs. opposite, ovate to oblong and deeply heart-shaped at base. India to Malaya; not hardy N.

Batàtas (*D. divaricata*). Chinese Y. Cinnamon-Vine. Tubers to 3 ft. long, deep in ground: sts. tall-climbing, slightly angled, bearing small axillary tubers: lvs. opposite, ovate, strongly broadened or angled at base. China; hardy N., remaining for years, the tops dying to the ground.

bulbífera. Air Potato. With small or no root-tubers: sts. cylindrical, bearing axillary angular tubers to 1 ft. long: lvs. alternate, ovate, heart-shaped at base. Trop. Asia, Philippines; not hardy N.

cayenénsis. Yellow or Attoto Y. St. angled or cylindrical, prickly toward base: lvs. mostly opposite, ovate, deeply heart-shaped at base. W. Indies to Brazil; not hardy.

díscolor. Root tuberous: lvs. ovate, heart-shaped at base, purplish beneath, white along midrib. S. Amer.—Grown as a greenhouse foliage plant.

divaricàta: *D. Batatas.*

hirticaùlis. Plant with weak pubescent st. to 10 ft. long: lvs. pubescent beneath, alternate, broadly ovate: staminate fls. solitary, pistillate fls. in racemes, with 1–4 frs. developing from each infl. Swamps of Ga. and S. C.

macroùra. Lvs. alternate, orbicular, heart-shaped at base, wavy-margined. Trop. Afr.

oppositifòlia. Lvs. opposite, lanceolate to ovate, not heart-shaped at base. India, E. Indies.

trífida. Cush-Cush. Yampee. Tubers small: sts. angled or winged: lvs. 3–5-lobed to middle or lower. S. Amer.; not hardy.

villòsa. Wild Yam. Colic-Root. Rootstock woody, to ¾ in. thick: lvs. ovate, heart-shaped at base. R. I. to Fla. and Tex.

DIOSCOREÀCEÆ. Yam Family. Ten genera of twining herbaceous or somewhat woody vines with woody or tuberous roots, widely distributed, characterized by monœcious or diœcious fls. having 6 perianth-segms. in 2 series, 6 or 3 stamens, typically 3-celled ovary, 3 styles, and capsular or baccate fr. Only Dioscorea, Rajania, Tamus and Testudinaria are in general cult.

DIÓSMA. *Rutaceæ.* Heath-like shrubs native in S. Afr., with simple linear lvs., small white or red fls., and fr. of 5 carpels; cult. out-of-doors in the S. and under glass for ornament and use in floral decorations.

Soil for diosmas should be similar to that for heaths, fibrous loam and leaf-mold with sharp sand added. Plants should be cut back after flowering to induce bushy growth. Propagated by cuttings of young wood.

álba: *Coleonema album.*

capitàta: *Audouinia capitata.*

ericoìdes. Buchu. To 2 ft., with many branches, fragrant: fls. white and borne in great profusion.

pulchélla: *Barosma pulchella.*

púlchra: *Coleonema pulchrum.*

purpùrea: *Agathosma villosa.*

Reèvesii: listed name.

DIOSPŸROS. Persimmon. *Ebenaceæ.* Widely distributed trees and shrubs, largely Asian, with alternate simple lvs., unisexual or imperfect fls. in cymes or the pistillate solitary, and fr. a juicy edible berry with the enlarged calyx at base. *D. Kaki* and *D. virginiana* are grown for the edible fr., and others for ornament and interest.

Persimmons are not hardy North with the exception of *D. virginiana* which will stand in parts of New England. They succeed in most soils. Propagated by seeds, cuttings, and layers. For culture of *D. Kaki* see *Persimmon*. *D. Ebenaster*, the black sapote, thrives only in the tropics or perhaps will withstand two or three degrees of frost. Propagated by seeds and shield-budding. *D. Lotus* stands perhaps to north-central regions. The other species are tropical or of mild climates.

Cargíllia. Small tree: lvs. oval, to 3 in. long, yellowish beneath: fr. black, ½ in. long. Australia.

chinénsis: *D. Kaki.*

Ebenáster. Black Sapote. Tree to 60 ft.: lvs. oval or oblong, to 8 in. long, shining: fls. small, white: fr. olive-green, to 5 in. long, with chocolate-brown flesh. Mex., W. Indies.

Ébenum. Large tree with smooth branchlets: lvs. elliptic, to 4 in. long, thick: staminate fls. fascicled, pistillate solitary, corolla tubular: fr. ¾ in. diam. India.—Source of the ebony of commerce.

japónica: *D. Lotus.*

Káki (*D. chinensis*). Kaki. Japanese P. Tree to 40 ft.: lvs. ovate or obovate, to 7 in. long, shining above, pubescent beneath: fls. yellowish-white, about ½ in. long: fr. orange or reddish, to 3 in. across, with orange flesh. Japan, China, where it is much cult.

Lòtus (*D. japonica*). Date-Plum. Tree to 45 ft.: lvs. oval or oblong, to 5 in. long, pubescent: fls. reddish or greenish, to ⅓ in. long: fr. yellow turning black, ½ in. across. W. Asia to Japan.

montàna. Tree: lvs. ovate or oblong, to 4 in. long: fls. white, ¼ in. long: fr. reddish-brown, 1½ in. across. Trop. Asia.

virginiàna. Common P. Tree to 50 ft. or more: lvs. ovate, to 6 in. long, shining above: fls. to ½ in. long: fr. yellow or orange, to 1½ in. across. Conn. to Fla. and Tex., in woods and fields.

DIOSTEA: *Baillonia juncea.*

DIÒTIS. *Compositæ.* One per. less than 1 ft. high, growing along the European coast and useful in rock-gardens. Propagated by seeds or cuttings. **D. candidíssima.** Cotton-Weed. White-tomentose: lvs. alternate, oblong, ½ in. long: heads ⅓ in. across, in dense terminal clusters, of disk-fls. only. Aug.–Sept.

DIPÉLTA. *Caprifoliaceæ.* Chinese deciduous shrubs allied to Diervilla and Weigela, with opposite lvs., pinkish or purple tubular-campanulate fls. solitary or in racemes, and fr. a caps. inclosed by large showy bracts. They are hardy in the N. and thrive in any good soil. Propagated by seeds in spring and by cuttings of green and hard wood.

floribúnda. To 16 ft.: lvs. ovate to oval-lanceolate, to 4 in. long, entire: fls. pink with orange-yellow throat, fragrant, 1 in. long, the corolla slender at base, May: fr.-bract shield-like, to 1 in. across.

ventricòsa. To 20 ft.: lvs. elliptic or narrower, to 5 in. long, mostly finely denticulate: fls. rose with orange throat, drooping, the corolla swollen at base: fr.-bract cordate, attached at base.

DIPHYLLÈIA. *Berberidaceæ.* Two per. herbs native in E. N. Amer. and Japan, the former transferred to wild-gardens: lvs. large, peltate, 1 radical and 2 smaller cauline lvs.: fls. white, in a terminal cyme: fr. a berry.

cymòsa. Umbrella-Leaf. To 2 ft.: basal lf. to 2 ft. across, deeply 2-lobed, with many toothed lobes: berries blue, about ½ in. long. Va. to Ga. and Tenn., in wet places in mts.

DIPLACHNE: *Leptochloa fascicularis.*

DIPLACUS: *Mimulus.*

DIPLADÈNIA. *Apocynaceæ.* Climbing shrubs, perhaps at first erect, with opposite lvs., large funnelform fls. in terminal or axillary racemes, white or rose corolla with 2 scales at base inside, and fr. of 2 spreading follicles; native in trop. S. Amer., grown in greenhouses, and out-of-doors in the S. *D. splendens* and *D. boliviensis* are the usual species in cult; other names are likely to represent hort. derivatives.

Dipladenias may be grown under heat with good drainage, in a soil composed of fibry peat, sand and charcoal. Propagated by cuttings over bottom heat.

amábilis. Fls. rosy-crimson.

amœna. Fls. pink, suffused with rose.

boliviénsis. Lvs. oblong, to 3½ in. long: fls. white, the throat yellow inside, 1½ in. across, 3 or 4 together. Bolivia.

Brearleyàna. Fls. pink, changing to crimson.

hýbrida. Fls. bright crimson-red.

insígnis. Fls. rosy-purple.

profùsa. Fls. bright rose.

ròsea. Fls. pink with purple eye, to 4 in. across.

spléndens. Lvs. oval, to 8 in. long, heart-shaped at base: fls. white suffused with rose, 4 to 6 together. Brazil.

DIPLARRHÈNA. *Iridaceæ.* Tender herbs from Australia and Tasmania, with short rhizomes, mostly basal narrow stiff lvs. and fugacious fls. 1 or more in a stiff terminal spathe; of the Belamcanda and Sisyrinchium group.

Moræa. To 2 ft.: lvs. to 1½ ft. long and ½ in. wide: fls. whitish, 2–3 in spathes 2 in. long.

DIPLÀZIUM. *Polypodiaceæ.* Ferns closely resembling Asplenium and requiring the same general treatment, grown under glass, differing in the arrangement of the sori; mostly in the warmer zones. See *Ferns.*

lánceum (*Asplenium lanceum*). Fronds simple, lanceolate, to 9 in. long and 1 in. wide, usually entire. India, China, Japan.

DIPLOCÝATHA. *Asclepiadaceæ.* One S. African succulent leafless per. **D. ciliàta** (*Stapelia ciliata*). Sts. decumbent, 4-angled, to 2½ in. long: fls. pale yellowish dotted with red, rough inside, 3 in. across, solitary near base or middle of st.

DIPLOGLÓTTIS. *Sapindaceæ.* One tall Australian tree, sometimes planted in S. Calif. **D. Cúnninghamii** (*Cupania Cunninghamii*). Lvs. pinnate, of 8–12 oblong or ovate-lanceolate lfts. to 1 ft. long, pubescent beneath: fls. greenish, in large panicles: fr. a tomentose caps. ½ in. across, the seed inclosed in a pulpy aril from which jam is made in Australia.

DIPLOPAPPUS: see *Aster filifolius* and *fruticosus.*

DIPLOSÒMA. *Aizoaceæ.* Succulent stemless deciduous perennials of S. Afr., allied to Mesembryanthemum: lvs. of 1 pair obliquely united at base, soft and pulpy: fls. solitary and terminal; petals numerous; stigmas 7, filiform.

retrovérsum (*M. retroversum*). Lvs. to 1 in. long, ⅓ in. broad and ⅙ in. thick, united nearly halfway, smooth, with few pellucid dots: fls. rosy-purple, ½ in. across.

DIPLOTÁXIS. Rocket. *Cruciferæ.* A score of mustard-like erect ann., bien. or per. herbs of Eu. and the Medit. region, two of them sometimes raised for ornament: lvs. pinnatifid or lobed: fls. yellow, white, rose or lilac, in terminal racemes: pod or silique elongated with short beak, erect or spreading.

àcris (*Moricanda hesperidiflora*). To 7 in.: lvs. oblong to obovate, obtuse, dentate: fls. lilac-pink to white, on ascending pedicels: pods erect.

erucoìdes. Ann., to 18 in., branching from base: lower lvs. lyrate: fls. white, veined rose or lilac. In cult. fields, Eu., coming quickly to bloom.

DIPLOTHEMIUM: see *Polyandrococos caudescens.*

DIPSÀCEÆ. Teasel Family. Old World herbs of about 7 genera, having mostly opposite lvs., small bisexual fls. in dense involucrate heads or spikes, like composites, with gamopetalous 2–5-lobed corolla, 2–4 stamens, inferior 1-celled ovary, and fr. an achene, and the general looks of Compositæ. A few genera are cult. for ornament or commercial purposes, as Cephalaria, Dipsacus, Knautia, Morina, Pterocephalus, Scabiosa, Succisa.

DÍPSACUS. Teasel. *Dipsaceæ.* Bien. prickly or hairy coarse tall herbs with opposite entire or pinnately cut lvs. and 4-lobed fls. in terminal heads or spikes subtended by spiny involucral bracts; plants of thistle-like aspect; native in Eu., Asia, N. Afr. A few species are grown in the garden and *D. fullonum* for raising the nap on woollen cloth.

ásper. To 6 ft.: lower lvs. pinnatifid, rough and hairy: fls. white. Himalayas.

azùreus: listed name of blue-fld. hort. form of *D. sylvestris.*

chinénsis. To 6 ft.: lvs. pinnately cut into about 8 pairs of coarsely toothed bristly lobes: heads globose, to 2 in. across, the involucral bracts shorter than head and recurved, stamens long-exserted. China.

fullònum. Fullers T. To 6 ft.: lvs. lanceolate or oblong, to 1 ft. long, entire or toothed, sessile: fls. pale lilac, in cylindric heads to 4 in. long, the involucral bracts shorter than head and becoming reflexed, bracts of receptacle with hooked tips and the dry head employed by fullers. Eu.; grown as a special crop in U. S., and somewhat escaped.

inérmis. To 6 ft., prickly: lvs. pinnatifid: fls. white or yellowish, in nearly globose heads. Himalayas.

laciniàtus. To 3 ft.: lvs. pinnatifid or bipinnatifid, ciliate: fls. white or pale pink, in oval heads to 3 in. long, exceeded or equalled by the involucral bracts. Eu., W. Asia.

pilòsus. To 4 ft.: lvs. oblong, entire or toothed, petioled: fls. yellowish-white, in globose heads to 1 in. across, the involucral bracts equalling those of receptacle and shorter than head, bristly. Eu.

sylvéstris. Common T. Differs from *D. fullonum* in the involucral bracts as long as or exceeding head and curved upward. Eu., Asia; extensively nat. in E. N. Amer.

DIPTERÒNIA. *Aceraceæ.* Two Chinese deciduous trees with odd-pinnate opposite lvs. and imperfectly monœcious little fls. in large terminal panicles: fr. winged all around. **D. sinénsis,** adapted to southern states and Calif., is 30 ft. or more: lfts. 4–6 pairs, narrow-ovate to oblong, serrate: fls. whitish, very small: samara about 1 in. across.

DÍRCA. Leatherwood. *Thymelæaceæ.* Two deciduous bushes native in the U. S., with tough flexible branches and yellowish funnelform declined or pendent short-stalked bisexual fls. in advance of the simple alternate lvs.: fr. a small red or greenish drupe. **D. palústris,** N. B. to Mo. and Fla. in damp or fertile woods and copses, is a neat shrub to 6 ft.: lvs. elliptic to obovate, 2–3 in. long, entire.

DÌSA. *Orchidaceæ.* Terrestrial African orchids with the habit of Habenaria, with tuberous undivided rootstocks and leafy sts., the fls. with helmet-shaped dorsal sepal, commonly small petals and lip. Require moist situations in the greenhouse; for cult. see *Orchids.*

grandiflòra: *D. uniflora.*

Lùna. Hybrid between *D. racemosa* and *D. Veitchii.*

racemòsa. To 30 in. high, leafy toward the base: racemes laxly about 4–9-fld.; fls. rose-red with purple lines or veins, large, about 1½ in. across. S. Afr.

uniflòra (*D. grandiflora*). To 2 ft. high with leafy sts.: racemes laxly 1–3-fld.; fls. the largest of the genus, to about 4 in. across; dorsal sepal red without, lighter within, lined with deeper color, with a short straight spur; lateral sepals scarlet or carmine. Jan.–Mar. S. Afr.

Veìtchii. Hybrid between *D. racemosa* and *D. uniflora.* Fls. rose-lilac, about 2½ in. across.

DISÁNTHUS. *Hamamelidaceæ.* Japanese genus containing a single species. **D. cercidifòlius.** Shrub to 24 ft., twigs with conspicuous lenticels: lvs. orbicular-ovate, to 4 in. across, alternate, glabrous, entire, palmately 5–7-nerved, becoming crimson-red in autumn: fls. dark purple, to ⅝ in. across, perfect, calyx pubescent with recurved lobes.

DISCARIA. *Rhamnaceæ.* Mostly S. American spiny shrubs, but one kind in Australia and another in New Zeal., with small opposite or clustered lvs. or sometimes lacking, axillary fls. and fr. a leathery drupe or caps.; sometimes grown for ornament.

serratifòlia. To 12 ft., with pendulous branches, spines to 1 in. long: lvs. to 1 in. long, narrow-oblong: fls. greenish-white, many, ⅛ in. across, fragrant. Chile, Patagonia.

Toùmatou. To 15 ft., divaricately much branched, spines 2 in. long: lvs. to ¾ in. long, linear-obovate: fls. many, greenish-white, ⅙ in. across. New Zeal.; grown in S. Calif.

DISCOCÁCTUS. *Cactaceæ.* Low plants, globose or flattened endwise, with many tubercled ribs, spines clustered at the areoles and usually curved: fls. in a small head from the center of the plant, nocturnal, with a tube, white or pinkish: fr. naked. E. S. Amer. Differs from Melocactus in its night-blooming habit and flower-limb of many rather than few segms.; not to be confused with the very different genus Disocactus. See *Cacti.*

altèolens (*D. tricornis*). Solitary, st. wider than tall, to 4 in. diam.; ribs 9–10; radial spines 5–6; central spine usually absent: fls. white. Brazil.

Bésleri: *D. placentiformis.*

placentifórmis (*D.* and *Melocactus Besleri*). Plant depressed, broader than high, blue-green; ribs broad and low, 10–14; radial spines 6 or 7; central usually wanting: fls. somewhat elongated, rose-color. Brazil.—Long in cult. but apparently seldom seen.

tricórnis: *D. alteolens.*

DISK, DISC: a more or less fleshy or elevated development of the receptacle about the pistil; also the receptacle in the head of Compositæ; a flattened extremity, as on tendrils of Virginia creeper.

DISK-FLOWERS: the tubular flowers in the center of heads of Compositæ, as distinguished from the ray-flowers.

DISOCÁCTUS. *Cactaceæ.* Spineless epiphytic plants with terete st. and flattened often more or less leaf-like branches, of bushy habit: fls. diurnal, near tips of branches, the tube shorter than limb and segms. few. Two species in Cent. Amer.; not to be confounded with Discocactus. See *Cacti.*

bifórmis (*Cereus* and *Phyllocactus biformis. Epiphyllum biforme*). Becoming pendulous, plant 8 in. or more long; branches ½–¾ in. broad and 3 in. long, serrate: fls. purple-red, about 1½ in. long. Honduras, Guatemala.

DISPHỲMA. *Aizoaceæ.* Segregate from Mesembryanthemum (which see for cult.): sts. prostrate: lvs. half-cylindrical, slightly united at base, punctate: fls. solitary or 2–3; stigmas and fr.-cells 5, with 2-lobed tubercle at opening of each cell.

austràle (*M. australe*). Per., rooting at joints: lvs. opposite, oblong, flattened or 3-angled, mostly obtuse: fls. reddish, 1 in. across. Australia, New Zeal., Pacific Isls.

crassifòlium (*M. crassifolium*). Lvs. to 1½ in. long and ⅕ in. wide: fls. rose, 1¾ in. across, on long pedicels. S. Afr.

DÍSPORUM (*Prosartes*). Fairy Bells. *Liliaceæ.* Per. woods herbs with slender rhizomes, alternate lvs., white or greenish-yellow drooping fls. solitary or in few-fld. umbels, and fr. a berry; sometimes planted in the wild-garden.

Hoòkeri. To 2 ft.: lvs. ovate, to 3 in. long, cordate at base: fls. green, ½ in. long: berries scarlet. Calif.

lanuginòsum. To 2½ ft.: lvs. to 4½ in. long and 2 in. wide: fls. greenish, ¼ in. long: berries red. Ont. to Ga. and Tenn.

maculàtum. To 2 ft.: lvs. ovate-lanceolate, to 2 in. long: fls. yellowish dotted with black, ¾ in. long. N. C. to Ga. and Ala.

oregànum. To 2 ft.: lvs. to 3½ in. long and 2 in. wide, cordate at base: fls. creamy-white, ½ in. long. B.C. to Ida. and Ore.

Smíthii. To 3 ft.: lvs. ovate or ovate-lanceolate, to 4¾ in. long: fls. whitish, to 1 in. long: berries yellow. B. C. to Calif.

trachycárpum. To 2 ft.: lvs. ovate to ovate-lanceolate, to 3½ in. long, briefly acuminate: fls. yellowish, to ⅝ in. long. Ariz. to New Mex., north to B. C. and Man.

DISSECTED: divided into many slender segments.

DISTEGIA: *Lonicera involucrata.*

DÍSTICTIS. *Bignoniaceæ.* Trop. American woody vines with lvs. of 2–3 entire lfts. and often a terminal tendril, purple or pink funnelform fls. in terminal racemes or panicles, and oblong smooth frs.; one species grown in S. Calif.

cinèrea: *D. lactiflora.*

lactiflòra (*D. cinerea*). Lfts. ovate or oblong, to 2½ in. long, pubescent: fls. purple, to 3½ in. long and limb 2½ in. across, tomentose outside: fr. to 3½ in. long. Mex.

DISTỲLIUM. *Hamamelidaceæ.* A few evergreen trees and shrubs native in Asia, diœcious, monœcious or polygamous, with alternate lvs., fls. without petals but with small bracts, borne in axillary racemes; hardy only in warm regions. Propagated by seeds and by layers.

racemòsum. To 80 ft., shrubby in cult.: lvs. elliptic, to 3 in. long, entire, dark green and shining above, sometimes with irregular margins: fls. with red anthers, in racemes 2–3 in. long. Japan. Var. **variegàtum** has lvs. bordered or splashed yellowish-white.

DITCH-MOSS: *Anacharis canadensis.*

DITREMEXA: *Cassia.*

DITTANY: *Dictamnus albus.* **Crete:** *Origanum Dictamnus.* **Maryland:** *Cunila origanoides.*

DIVIDED: separated to the base.

DIVI-DIVI: *Cæsalpinia coriaria.*

DIZYGOTHÈCA. False Aralia. *Araliaceæ.* Shrubs or small trees, probably native in the Pacific Isls., with alternate digitately compound lvs., small fls. in umbels, and berry-like frs. The species or names are not well understood.

Tender foliage plants grown in the greenhouse in the juvenile state as pot specimens and seldom coming to flower. A good soil is one composed of equal parts sandy loam and peat or leaf-mold. For propagation see *Polyscias.*

elegantíssima (*Aralia elegantissima*). Lvs. of 7–11 thread-like drooping lfts.; petioles mottled with white.

Kerchoveàna (*Aralia Kerchoveana*). Lvs. of 7–11 prominently notched lfts. about ½ in. wide; petioles mottled.

Veìtchii (*Aralia Veitchii*). Lvs. of 9–11 toothed or wavy-margined lfts. about ¼ in. wide, reddish beneath. Var. **gracíllima** has very narrow lfts. with white midribs.

DOCK: *Rumex.* **Prairie:** *Silphium terebinthaceum.*

DOCKMACKIE: *Viburnum acerifolium.*

DOCÝNIA. *Rosaceæ.* A few partially or wholly evergreen small trees of farther Asia allied to apples and pears, sometimes planted for ornament and interest in the warmer parts of the U. S., the fruits more or less employed in other countries in cooking: the genus belongs with the Cydonia or quince group bearing several to many seeds in each carpel: lvs. simple, sometimes shallowly lobed: fls. white, in small umbels, appearing before the lvs. or with them, the calyx and pedicels tomentose.

Delavàyi (*Pyrus Delavayi*). Evergreen, to 30 ft.: lvs. ovate-lanceolate, entire, to 4 in. long, tomentose underneath: fr. ovoid, about 1 in. long. China.

docynioìdes: *D. rufifolia.*

rufifòlia (*D. docynioides*). Deciduous or only partially evergreen: lvs. elliptic or broad-lanceolate, often serrate toward apex, to 3 in. long, thinly pubescent becoming glabrous underneath: fr. nearly globose, about 1 in. diam. China.

DODECÀTHEON. Shooting-Star. American Cowslip. *Primulaceæ.* N. American small per. herbs, of woods, prairies and mts., with basal lvs., nodding cyclamen-like fls. borne in umbels on scapes, the corolla-lobes reflexed, the long slender anthers connivent into a cone.

Sometimes planted, and grown in well-drained soil in a shady place; useful in the wild-garden and some species in the rock-garden. Propagated by division and seeds.

The plants of this genus have received various specific interpretations, from the consideration of all forms as variants of the single species *D. Meadia,* to the view that all variants merit specific rank. Below are given the binominals and their varieties as listed in the trade.

alpìnum. Lvs. to 4 in. long: fls. purple, the whitish base having yellow zone and purple band; stamens deep purple. Mts., Calif., Ore.

campéstre. Lvs. to 2 in. long: fls. pink with white base and blue center; anthers pink with dark purple base. Wash.

Clèvelandii. Lvs. to 2½ in. long: fls. purple with yellow base, varying to white; filaments of stamens purple, anthers yellow. S. Calif.

Colrìgo: hort. name of unknown botanical status.

conjùgens. Glabrous plant to 10 in.: lvs. to 5 in. long: fls. large, deep purple varying to rose or white. Ore. to Mont.

Cùsickii. Differs from *D. vulgare* in its slightly smaller habit and glandular-puberulent foliage and scapes: fls. usually deep rose to lavender. B. C. to Alta., south to Wash. and Mont. Var. **álbum** has white fls.

dentàtum (*D. Meadia* var. *latilobum*). Lvs. to 4 in. long, dentate: fls. white with 2 purple spots at base of each petal; anthers brownish-red with yellow filaments. Ore. to Utah.

frígidum. To 1 ft.: lvs. oblong-obovate to ovate, entire or dentate: fls. violet, corolla-lobes oblong-linear. Bering Strait to Rocky and Sierra Mts.

Héndersonii. Similar to *D. Clevelandii* but anthers deep purple. Calif. to Wash.

Hùgeri. Lvs. to 1 ft. long: fls. white or sometimes tinged purple. Md. to Ga. and Ala.

integrifòlium: *D. Meadia.*

Jéffreyi. Lvs. to 1 ft. or more long, oblong-lanceolate, crenate: fls. deep red-purple; filaments and anthers purple. Calif. to Ida. and B. C. Var. **rédolens** has odorous foliage and fls. not so closely reflexed.

latifòlium. To 1 ft.: lvs. broadly elliptic to obovate, entire: fls. dark purple with yellow center, filaments blackish-purple: caps. circumscissile. N. W. Amer.

latílobum. Lvs. to 10 in. long: fls. yellowish-white; filaments very short, anthers purple. Wash., Ore.

Mèadia (*D. integrifolium*). Lvs. to 6 in. long: fls. rose, white at base; filaments reddish-yellow, anthers purple. Pa. to Man. and Tex. Var. **álbum,** fls. white; var. **élegans** is shorter with darker fls.; var. **spléndidum** has crimson fls. with a yellow circle; var. **supérbum** is an improved form.

multiflòrum. Lvs. to 8 in. long: fls. bluish-violet, numerous. Colo., Wyo.

pátulum. Lvs. to 1½ in. long: fls. white or pinkish with purple base; filaments and anthers purple. Calif.

pauciflòrum: *D. vulgare.*

poéticum. Lvs. to 4½ in. long: fls. rose-pink with yellow circle at base, then a narrow crimson band and a broad yellow band. Ore.

praténse: listed name.

puberuléntum: *D. puberulum.*

pubérulum (*D. puberulentum*). Lvs. spatulate, to 3½ in. long, glabrous: fls. purple with yellowish throat. Ida.—By some *D. Cusickii* is not considered distinct from this plant.

radicàtum. Lvs. to 5 in. long: fls. rose or reddish; anthers purple. Kans. to N. Mex.

salìnum. Lvs. to 1¾ in. long: fls. lilac with yellowish throat, anthers purple. Sask. to Ida. and Utah.

Stánfieldia. To 1½ ft.: lvs. spatulate, to 5 in. long, margins wavy: fls. rose-purple, corolla-lobes to ¾ in. long, showy. Tex.

tetrándrum. Lvs. to 1 ft. long: fls. purplish with yellow ring near base; anthers dark purple. Wash., Ore.

víscidum (*D. conjugens* var. *viscidum*). Differs from *D. conjugens* chiefly in its foliage and scape glandular-puberulent. Wash.

vulgàre (*D. pauciflorum*). To 18 in.: lvs. spatulate-oblanceolate, to 4 in. long, narrowed into winged petiole, usually entire: fls. purple with dark wavy line in throat, anthers purple with yellow filaments. B. C. to Colo.

DODONÆA. *Sapindaceæ* (or *Dodonæaceæ*). Small trees and shrubs with alternate simple or sometimes compound lvs.: fls. small, polygamous or diœcious: frs. capsular, winged. Sometimes planted for ornament in warm regions. Some species carry medicinal properties, and most of them have resinous sticky excretions. They are native of trop. and semi-trop. regions in both hemispheres.

attenuàta. Viscid shrub, somewhat like narrow-lvd. *D. viscosa*, but lvs. linear-cuneate or long and linear, only slightly sinuate-toothed, to 2½ in. long: fls. in short simple racemes. Australia.

cuneàta. Hop-Bush. Shrub, usually viscid: lvs. obovate or cuneate, to 1 in. long: fls. in terminal racemes or axillary clusters. Australia.

madagascariénsis. Tree to 14 ft.: lvs. of about 12 pairs of linear-lanceolate lfts. to 1½ in. long. Madagascar.

ptarmicæfòlia. Tall shrub, sometimes viscid, young branches angled: lvs. linear-lanceolate and acuminate, to 3 in. long and in some cases more, serrate or entire: fls. in terminal racemes or panicles. W. Australia.

spatulàta: considered to be one of the forms of *D. viscosa*.

Thunbergiàna. Shrub to 10 ft., glabrous: lvs. lanceolate to linear-lanceolate, to 2½ in. long: fls. in dense racemes. S. Afr.

viscòsa. Shrub to 15 ft., viscid: lvs. obovate-oblong to lanceolate, to 4 in. long: fls. in short racemes. Widely distributed in Fla. and W. Indies; a variable species.

DOELLINGERIA: *Aster umbellatus.*

DOGBANE: *Apocynum.*

DOGS-TAIL, CRESTED: *Cynosurus cristatus.*

DOGWOOD: *Cornus.* **Poison:** *Rhus Vernix.*

DOLICHÁNDRA. *Bignoniaceæ.* One Brazilian climbing shrub, suitable for greenhouse cult. **D. cynanchoìdes** (*Macfadyena cynanchoides*). Lvs. of 2 oblong entire lfts. to 2 in. long and a 3-parted terminal tendril: fls. red, tubular, to 2½ in. long, stamens long-exserted, calyx split and spathe-like: caps. linear, to 4 in. long.

DOLICHOLUS: *Rhynchosia.*

DÓLICHOS. *Leguminosæ.* Mostly twining herbs or subshrubs with trifoliolate lvs., papilionaceous fls. solitary or clustered in the axils, and flattened beaked pods; native in the tropics where several species are grown for human food, as forage and green-manure crops, but in N. Amer. cult. chiefly for ornament. Seeds should be sown in spring where the plants are to stand.

biflòrus. Ann. twiner: lfts. 1–2 in. long: fls. yellow: pods to 2 in. long, with gray seeds. India.

gigantèus: *D. Lablab* var.

Hòsei. Sarawak Bean. Forming mats to 6 in. thick: lfts. to 1½ in. long and ¾ in. broad: pods ⅕ in. across. Borneo.—Grown far S. as cover-crop and propagated by cuttings.

japónicus: *Pueraria Thunbergiana.*

Láblab (*D. soudanensis*). Hyacinth Bean. Bonavist. Lablab. Per. but grown as ann.: lfts. to 6 in. long and very broad: fls. purple or white: pods to 2½ in. long, with black or white seeds. Probably Old World but widely spread in tropics, and common in cult. Var. **gigantèus** is a large form with white fls. The hort. form Darkness has violet-purple fls. and black seeds and Daylight white fls. and white seeds.

lignòsus. Per., evergreen: lfts. to 1½ in. long, triangular-ovate: fls. rose-purple or white in var. **álba:** pods to 1 in. long, with black seeds. Probably Asia.

sesquipedàlis: *Vigna sesquipedalis.*

soudanénsis: *D. Lablab.*

violàceus: *Phaseolus violaceus.*

DOLICHOTHÈLE. *Cactaceæ.* Three small globose and more or less cespitose Texan-Mexican cacti segregated from Mammillaria, soft in texture and juice not milky, tubercles long: fls. in axils of old tubercles, large, tube funnelform, yellow. See *Cacti.*

longimámma (*Mammillaria longimamma, M. globosa. M. melaleuca*). Solitary or cespitose, to 4 in. high; tubercles 2 in. long, cylindrical, obtuse; spines puberulent, the radials 6–12 and centrals 1–3: fls. 2 in. long more or less. Cent. Mex.

sphǽrica (*Mammillaria sphærica*). Depressed plant growing in masses that may be 8 in. across; tubercles ½ in. long, more or less; spines glabrous, the radials 12–15 and central 1: fls. about 2½ in. across when wide open. S. Tex., N. Mex.

uberifórmis (*Mammillaria uberiformis*). Similar to *D. longimamma* from which it differs in its conical acute tubercles and 4 radial spines without any central spine. Cent. Mex.—Said to be less floriferous than *D. longimamma* and by some considered a variety of that species.

DOMBÈYA (*Assonia. Astrapæa*). *Sterculiaceæ.* African shrubs or small trees with alternate palmately-veined lvs., showy fls. in cymes or heads, and capsular fr.; ornamental subjects in the tropics and semi-tropics and sometimes grown in the greenhouse. Propagated by seeds, or by cuttings over heat.

acutángula. Small tree or shrub: lvs. crowded at ends of branches, palmately 3–5-lobed: fls. white or reddish, ½ in. long, in 2-parted cymes. Mauritius, Bourbon.

calántha. To 12 ft.: lvs. 3–5-lobed, toothed, tomentose beneath: fls. rose, 1½ in. across. Cent. Afr.

Cayeùxii. Hybrid between *D. Mastersii* and *D. Wallichii:* fls. pink, in drooping many-fld. umbels.

Mástersii. To 5 ft.: lvs. toothed, densely tomentose beneath: fls. white, fragrant, in many-fld. umbels. Trop. Afr.

nairobénsis. To 6 ft.: lvs. wavy-margined, densely white-tomentose beneath: fls. pink, in umbels. Nairobi.

natalénsis. Shrub or small tree: lvs. poplar-like, toothed, becoming glabrous beneath: fls. white, fragrant, in umbels. Natal.

punctàta. To 10 ft.: lvs. toothed or angled, tomentose beneath: fls. pink, in umbels. Mauritius, Bourbon.

spectábilis. To 10 ft.: lvs. wavy-margined, densely white- or rusty-tomentose beneath: fls. white, in umbels. Madagascar, trop. Afr.

Wállichii. To 30 ft.: lvs. toothed, densely tomentose beneath: fls. scarlet or pink, in many-fld. very large dense hanging heads. Madagascar, E. Afr.—Commonly planted in warm countries.

DOÒDIA. *Polypodiaceæ.* Dwarf dense ferns suitable for window-boxes and protected ferneries, with stiff pinnate or pinnatifid fronds; sori in rows parallel to midrib; native Ceylon to New Zeal.

They are to be protected from strong sunlight, and require an intermediate or cool atmosphere; propagated by spores and sometimes by division. Mostly grown under glass, often under benches. See *Ferns.*

áspera. Hacksaw-Fern. Fronds pinnatifid, to 1½ ft. long and 4 in. wide, very rough, segms. to 3 in. long. Australia.

caudàta. Fronds pinnatifid or pinnate at base, to 1 ft. long and 2 in. wide, slightly rough, segms. to 1½ in. long. New Zeal., Australia.—Some of the material cult. as *D. aspera* belongs here.

DÓRITIS. *Orchidaceæ.* One epiphytic Phalænopsis-like orchid native in Burma, Cochin-China and Siam. **D. pulchérrima** (*Phalænopsis Esmeralda*). To 2 ft. high: lvs. to 8 in. long: infl. racemose (rarely paniculate), loosely 3-many-fld.; fls. to 1¼ in. across, varying from amethyst-purple to almost white, lip from deep purple to orange-red. Oct.—Jan., July.

DORÓNICUM. Leopards-Bane. *Compositæ.* Herbaceous perennials: basal lvs. long-petioled, st.-lvs. alternate, often clasping: heads yellow, long-stalked, with one row of ray-fls., showy in spring and summer; pappus of hairs. Native in Eu. and temp. Asia.

Doronicums thrive under the average garden conditions, and are frequent in borders. Increased either by seeds or divisions.

austrìacum. To 4 ft., hairy: lvs. toothed, ovate, cordate at base: heads several. Eu.

caucásicum. To 2 ft., somewhat hairy: lvs. coarsely toothed, ovate, cordate at base: heads solitary. Sicily to Asia Minor. Var. **magníficum** is a more robust form with somewhat larger heads.

Clùsii (*Arnica Clusii*). To 2 ft.: lvs. ovate or oblong, toothed, not cordate at base: heads solitary. S. Eu.

Colúmnæ: *D. cordifolium.*

cordifòlium (*D. Columnæ*). To 5 in., glabrous: lvs. cordate-ovate to ovate-lanceolate, toothed or lobed: heads solitary. S. E. Eu. and W. Asia.

excélsum: *D. plantagineum.*

macrophýllum. To several ft.: lvs. cordate-ovate, coarsely toothed: heads in corymbs. Caucasus, Persia.

magníficum: probably *D. caucasicum* var.

Pardaliánches. To 4 ft., hairy, roots tuberous: lvs. toothed, ovate to oblong, cordate at base: heads 1–5. Eu.

plantagíneum (*D. excelsum*). To 5 ft., roots tuberous: lvs. toothed, ovate to oblong: heads 2–4 in. across, solitary. Eu. Var. **giganteùm** is listed as a more robust form with larger heads.

platanoìdes: listed name.

DOROTHEÁNTHUS. *Aizoaceæ.* One of the Mesembryanthemum segregates: S. African herbs: lvs. linear or spatulate, with crystalline papillæ.

bellidifórmis (*D. criniflorus. M. bellidiforme. M. criniflorum*). Small branched ann.: lvs. obovate, to 3 in. long and ¼ in. wide: fls. solitary, pink, red or white with pink stamens.

criniflòrus: *D. bellidiformis.*

gramíneus (*M. lineare. M. pyropeum. M. tricolor*). Low densely-fld. clump to 8 in. across: lvs. opposite, more or less fleshy, linear, to 3 in. long: fls. solitary, to 1½ in. across, light pink, rose, white, red, sometimes blue- or red-centered.

DORSAL: back; relating to the back or outer surface of a part or organ.

DORSTÈNIA. *Moraceæ.* Trop. herbs with basal lvs. and unisexual fls. imbedded in the flat dilated receptacle (something like a fig opened out); grown under glass for botanical study as an example in morphology of the receptacle or torus. Propagated by division or seeds.

Contrajérva. Lvs. to 8 in. long and as broad, deeply lobed or entire, the petioles to 10 in. long: receptacles about 1 in. long and broad, peltate. Trop. Amer.

DORYALIS: *Dovyalis.*

DORYÁNTHES. Spear-Lily. *Amaryllidaceæ.* Very large succulent plants native in the deserts of Australia, with lvs. in basal rosettes and large red fls. in panicles or heads, the perianth-segms. nearly distinct; occasionally cult. in the S. and Calif. Propagated slowly by suckers.

excélsa. To 18 ft.: lvs. many, sword-shaped, to 4 ft. long: fls. to 4 in. long, in globular heads to 1 ft. across, with green bracts.

Pálmeri. To 10 ft.: lvs. sword-shaped, to 6 ft. long and 4 in. broad: fls. 2½ in. long, whitish inside, the heads or spikes in panicles to 3 ft. long, the bracts colored.—Perhaps a var. of *D. excelsa.*

DORÝCNIUM. *Leguminosæ.* Herbs or subshrubs from Medit. region and the Canary Isls., somewhat clover-like, with lvs. of 3 or 5 lfts., papilionaceous fls. in heads, and small cylindrical pods. Of easy cult. for ornament. Propagated by seeds or division.

herbàceum. To 2 ft., herbaceous: fls. white marked with dark purple, ½ in. across. May–July. S. Eu.

hirsùtum. To 2 ft., shrubby, whole plant white-hairy: fls. white, in heads to 1½ in. across. July–Sept. S. Eu.

réctum. To 2 ft., shrubby: fls. rose-colored, in heads to ¾ in. across. July–Oct. S. Eu.

suffruticòsum. To 2 ft., much branched, shrubby, gray-green: fls. white, marked with dark blue, in heads ½ in. across. Apr.–June. S. Eu.

DORYÓPTERIS. *Polypodiaceæ.* Small trop. American ferns with lobed or entire attractive fronds, the sori confluent in a marginal line; something like Pteris and requiring similar handling. See *Ferns.*

palmàta. Fronds to 9 in. long and wide, palmately divided into 5 or more triangular lobes, stalks black. W. Indies to Brazil.

DOSSÍNIA. *Orchidaceæ.* One terrestrial species native in Borneo and Malaya, suitable for a warm greenhouse. **D. marmoràta** (*Cheirostylis marmorata*). To about 14 in. tall, lvs. clustered near the base, to 3¾ in. long, dark green veined with lighter green or yellow: fls. numerous, racemose, about ½ in. across, pink with white lip.

DOUBLE: said of flowers that have more than the usual or normal number of floral envelopes, particularly of petals; full; plenus.

DOUGLÁSIA. *Primulaceæ.* Tufted per. herbs with lvs. in rosettes and yellow or rose fls. in 1–7-fld. umbels terminating the scape; grown in the rock-garden. Cult. as for *Androsace.*

dentàta. Sts. prostrate, bearing rosettes of oblong pubescent lvs. ½ in. long: fls. violet, in 2–6-fld. umbels. Wash.

lævigàta. Lvs. imbricated, oblong-lanceolate, ¼ in. long: fls. bright red, long-tubed, in 2–4-fld. umbels. Wash., Ore.

montàna. Lvs. to ⅛ in. long, ciliate on margins: fls. purple or lilac, ⅓ in. long. Mts., Mont., Wyo., Ore.

nivàlis. To 4 in.: lvs. linear, to ½ in. long, thick, pubescent: fls. pink, ⅓ in. long. Mts., B. C. to Wash.

Vitaliàna (*Androsace* and *Gregoria Vitaliana*). Sts. prostrate, tipped by rosettes of small linear hairy lvs.: fls. yellow, long-tubed, nearly sessile, solitary or 1–2. Alps, Pyrenees. Var. **praetutiàna** is a cult. variation.

DOVE-FLOWER: *Peristeria elata.* **-Tree:** *Davidia.*

DOVỲALIS (sometimes but not originally spelled *Doryalis*). *Flacourtiaceæ.* Diœcious shrubs or small trees, with or without axillary spines, having alternate simple lvs., fls. unisexual, small and inconspicuous, and fr. an edible berry; native in Afr. and Ceylon.

The plants are suitable for subtropical climates, the umkokolo withstanding drought and lower temperatures than the kitambilla. To insure fruit both staminate and pistillate plants must be provided. Propagated by seeds, layering and shield-budding.

cáffra (*Aberia caffra*). Kei-Apple. Umkokolo. To 20 ft., with long stiff thorns: lvs. to 2 in. long, often in clusters at base of thorns: fls. greenish: fr. 1 in. diam., yellow, acid, used for pickles and preserves. S. Afr.

hebecárpa (*Aberia Gardneri*). Kitambilla. Ceylon-Gooseberry. To 20 ft., much branched: lvs. to 4 in. long: fr. maroon-purple, 1 in. across, edible. India and Ceylon.

DOWNÍNGIA. *Lobeliaceæ.* Small annuals from W. N. and S. Amer., on low plains and in valleys, with alternate entire lvs., blue, yellow or white 2-lipped fls. borne in the axils of lvs. or bracts, and fr. a linear caps.; sometimes grown in the flower-garden. Propagated by seeds.

élegans (*Clintonia elegans*). To 7 in.: lvs. oblong to oblong-lanceolate, to ¾ in. long: fls. light blue with white throat marked with green or yellow, the stamen-column long-exserted. Wash. to Calif.

pulchélla (*Clintonia pulchella*). To 10 in.: lvs. oblong-ovate, ½ in. long: fls. deep blue with white center of lower lip marked with yellow and purple, stamen-column scarcely exserted. Ore. to Calif.

DOWNY: covered with very short and weak soft hairs.

DOXÁNTHA. *Bignoniaceæ.* Trop. American woody vines of 2 species, with lvs. of 2 lfts. and a terminal 3-parted claw-like tendril, funnelform 5-lobed fls. solitary or few together, and linear leathery frs. Grown out-of-doors in the S. where it will stand a few degrees of frost, and also in the greenhouse. Propagated by cuttings under glass.

capreolàta: *Bignonia capreolata.*

Únguis-càti (*Bignonia Unguis-cati* and *Tweediana. Batocydia Unguis*). CATS-CLAW. Lfts. ovate to lanceolate, 2 in. long: fls. bright yellow, to 3 in. long and 4 in. across: frs. 1 ft. or more long. W. Indies to Argentina.

DRÀBA. *Cruciferæ.* Many little plants, ann., bien., per., mostly in north temp. and cold regions and in mts., a good number of them adaptable to alpine- and rock-gardens and cool borders: lvs. simple and small, the basal ones commonly forming a rosette, the sts. sometimes devoid of foliage, often with very deep tap-root: fls. small and dainty, white, yellow, rose or purplish, in terminal racemes: fr. a small pod or silicle, often globular or orbicular. The species are variable and difficult of determination.

Propagation is by seed sown a season in advance of blooming in the case of the biennials and perennials, and by division of the tufts.

Ádamsii: *D. alpina* var.

aizoìdes. Per., tufted, to 4 in.: lvs. in basal rosettes, linear, to ½ in. long and ⅛ in. wide, acute, ciliate: fls. yellowish, on glabrous scape, in many-fld. racemes, stamens equalling the petals: pods compressed. Mts. of Medit. region.

Aizoón (*D. lasiocarpa*). To 8 in.: lvs. very numerous, in dense rosettes, linear-lanceolate, pectinate-ciliate, to ¾ in. long and ⅛ in. wide: fls. sulfur-yellow, on glabrous scape, in many-fld. racemes, stamens shorter than petals: pods compressed. Eu.—Variable.

állica: catalogue name for white-fld. form on slender scapes to 4 in. high; probably error for *D. altaica.*

alpìna. Cespitose per. with simple erect hairy scapes 1–8 in. tall in fr.: lvs. basal, lance-elliptic, entire or essentially so, pubescent, thin, not fleshy: fls. yellow, in close clusters, petals 2–3 times as long as sepals: pods compressed. Subarctic regions, circumpolar. Var. **Ádamsii** (*D. Adamsii*), plants pilose and densely hispid. Var. **glaciàlis** (*D. glacialis*), lvs. oblong-lanceolate, slightly fleshy and keeled, sepals hispid. Siberia.

altàica. Much branched cespitose per. to 3 in.: lvs. in basal rosettes, linear-lanceolate, to nearly ½ in. long, acute, apex 1–2-toothed, pilose, ciliate, st.-lvs. sessile, entire: fls. white, in compact capitate racemes on hirsute leafy scapes: pods ovate, acute. Cent. Asia.

andìna: *Stenodraba colchaguensis,* although plants so listed in trade are probably *A. oligosperma* var. *andina.*

androsàcea: *D. lactea.*

arábisans. Per., diffuse, 8–20 in. tall with many erect sts.: lvs. narrow, to 1½ in. long in basal cluster, smaller and scattered on sts., toothed: fls. white, in corymbose racemes, on glabrous to minutely stellate-pilose scapes: pods long-acuminate. Newf. to Ont. and N. Y.

armàta: *D. longirostra.*

athòa. To 4 or 5 in. high: lvs. broad-linear, to ¾ in. long, obtuse, ciliate: fls. yellow, in 8–20-fld. lax racemes. S. E. Eu.

aùrea. Bien. or per., pubescent: lvs. oblanceolate to lanceolate, to 2 in. long, entire or sparingly serrate: fls. yellow to nearly white, in 15–30-fld. racemes. Arctic to Ariz., in several forms.

austrìaca (*D. stellata. D. Johannis*). Per., cespitose, to 4 in.: basal lvs. narrowly obovate, obtusish, entire or toothed at apex: fls. milk-white, on leafy stalks: persistent style on pod nearly ⅛ in. long. Eu.

Bertolònii: *D. longirostra* var. *erioscapa.*

boreàlis. Cespitose, to 12 in., simple or somewhat branched: lvs. pubescent-stellate, ovate to oblong-ovate, to 1 in. long, with 1 or 2 teeth: fls. white, in dense corymbose racemes on densely pilose scapes, the hairs not stellate. Arctic, Canada, Siberia.

bruniifòlia. Per., tufted, to 4 in.: lvs. linear and obtuse, about ¼ in. long, in rosettes: fls. attractive orange, in lax racemes, stamens shorter than petals, scape short-pilose. Medit. region, in mts.

cæruleomontàna. Tufted per. to 6 in.: lvs. all basal or in terminal rosettes, linear to linear-spatulate, to ¾ in. long, cuspidate, keeled beneath, sparsely pubescent and hispid, ciliate: fls. yellow, the petals to ⅕ in. long, in loose racemes, on scapes glabrous above and hispid toward base. E. Wash. Var. **Pìperi** has pods densely white puberulent; may not now be in cult.

carinthìaca. Cespitose, forming many rosettes, to 6 in.: basal lvs. lanceolate, to ⅜ in. long, usually entire or 1-toothed at acute apex, pilose, ciliate, st.-lvs. shorter, ovate to oblong: fls. white, in loose corymbose racemes, petals to ⅛ in. long, scapes glabrescent above and briefly pilose toward base: pods oblong-elliptic. Cent. Eu.

cascadénsis. Per. to 8 in., soft white-pubescent throughout, sts. leafy: rosette lvs. oblanceolate, to ¾ in. long, remotely dentate; st.-lvs. lanceolate to ovate-lanceolate, to ⅝ in. long: fls. pale yellow, to ⅛ in. across, in dense capitate racemes which become loose at fr. maturity: pods linear-oblong, to ½ in. long. Wash.

columbiàna: *D. prealter.*

cuspidàta. Per., densely tufted, to 4 in.: lvs. linear and obtusish, to ½ in. long: fls. purplish, in lax racemes: pods somewhat inflated. Medit. region, in mts.—Plants grown under this name may be *D. longirostra, D. rupestris* or *D. aizoides.*

Dedeàna. Densely cespitose, scape to 2 in. high: lvs. oblong-linear, obtuse, in rosettes, ciliate, about ¼ in. long: fls. white, rarely pale sulfur-yellow, 3–10 in a raceme. Spain.

densifòlia. Tufted per. to 2½ in.: lvs. dense, in basal rosette, linear to narrowly spatulate, to ⅓ in. long or less, obtuse, margin long-pectinate-ciliate: fls. yellow, in lax racemes, scape villous. Utah to Calif. north to Mont. and B. C.—Allied to *D. oligosperma.*

dicranioìdes: *D. rigida.*

diversifòlia. One of the many forms of *D. bruniifolia,* from Armenia, the lvs. in rosettes rather broad and deflexed, those on offsets narrow and erect.

dùbia. Many-stemmed, small, cespitose, obovate or oblong basal lvs. closely rosulate, sts. to 4 in.: fls. white, in lax racemes. Cent. Eu.

fladnizénsis. Per., cespitose and cushion-like, 2–3 in. high: lvs. basal, oblong, obtusish, mostly entire, to ⅓ in. long or more, st.-lvs. entire or remotely dentate: fls. greenish-white. Arctic regions, and south in Eu. and Amer. in mts.—Under this name forms of *D. hirta, D. lactea* and *D. Kotschyi* are sometimes grown.

frígida: name applied to different Drabas; perhaps *D. dubia* is meant.

gìgas: *Arabis carduchorum.*

glaciàlis: *D. alpina* var.

globòsa. To ¾ in. high, perhaps more in cult.: lvs. in subspherical rosettes, oblong, to ⅝ in. long and ⅛ in. wide, obtuse, incurved, briefly pectinate-ciliate, pilose: fls. yellow, in lax racemes, scape and sepals glabrous. Wyo. to Utah and Nev.—Closely allied to *D. densifolia* and *D. oligosperma.* Var. **sphǽrula** (*D. Paysonii*) has scape and sepals sparsely pilose. Ore.

Háynaldii. To 2½ in. high: lvs. in basal rosettes, narrowly linear, about ¼ in. long, acute, briefly and finely ciliate but not pectinate-ciliate: fls. yellow, in corymbiform racemes on glabrous scapes: pods inflated at base. Cent. and E. Eu.—Occasionally confused with *D. Aizoon.*

hírta. Per. to 10 in., hairy: basal lvs. narrow-lanceolate, sometimes toothed at apex, to ¾ in. long, minutely stellate, remotely ciliate: fls. milk-white, in corymbose racemes on glabrous to minutely stellate-pilose scapes: pods abruptly acute. Subarctic Eurasia.—Allied to *D. arabisans.*

hispánica. Densely cespitose, to 2 in. or somewhat more: lvs. in rosettes, linear, to ½ in. long and ⅛ in. wide, acutish, ciliate: fls. yellow, in 6–15-fld. racemes, scape hairy: pods more or less inflated at base, pilose. Spain, in several forms.—Plants in the trade are likely to be *D. Aizoon.*

Hoppeàna (*D. Zahlbruckneri*). Densely cespitose per. to 1½ in. high: lvs. linear and mucronate, ciliate, about ½ in. long: fls. few in a head, yellow. Alps.—Differs from *D. aizoides* in style short, thick and erect, not elongate, slender and subcurved.

hyperbòrea. Bien. to 10 in., hairy, short branched, sts. decumbent: basal lvs. oblanceolate, to 4 in. long including the broad winged petiole, st.-lvs. to 1 in. long, all coarsely toothed: fls. yellow, in broad corymbs: pods broadly elliptic, to ¾ in. long. Alaska.

incàna. Bien. to 1 ft. high, gray-pubescent: lvs. lanceolate and obtusish, entire or sparsely dentate, to 1 in. long, the basal ones in rosettes: fls. white, sepals often purplish. Far north in Amer. and Eurasia.

incérta (*D. oligosperma* var. *pilosa*). Tufted per. to 5 in. high: lvs. all basal, linear-oblanceolate, to ½ in. long, stellate-hairy, ciliate: fls. yellow, to ½ in. across, 3–14 on stout pedicels in loose racemes: pods flat, broadly lanceolate, to ⅓ in. long with small but distinct beak. Mts. of B. C. to Wyo. and Ore.

Johánnis: *D. austriaca.*

Kótschyi. Per. 1–4 in. high, with decumbent and rooting sts.: basal lvs. oblanceolate or elliptic, to ½ in. long, entire or with few teeth, hairy; st.-lvs. 1–3, incised-dentate: fls.

white, with small stigma not apparent in fr. Mts., middle Eu.—Forms of *D. aizoides* are grown under this name.

láctea (*D. androsacea*). Loosely cespitose per., with slender offsets: lvs. very narrow, acute, entire or nearly so, hairy: fls. white, with broad stigma on persistent style of pod. Arctic regions.

lasiocárpa: *D. Aizoon.*

láxa: *D. norvegica.*

Lémmonii. Tufted, to 2½ in.: lvs. obovate to oblong-obovate, to ¼ in. long, fleshy, obtuse, ciliate, pilose: fls. yellow, in somewhat elongate corymbose racemes on pilose scape, petals 2–3 times longer than sepals. W. Nev. to Calif. and Ore.

Loiseleùri. Densely cespitose, to nearly 2 in. high: lvs. broadly linear, to ⅓ in. long and ⅙ in. wide, obtuse, margins setose-ciliate: fls. yellow, in corymbose racemes, scape densely hispid to pilose: pods compressed, scabrous. W. Medit. region.

lonchocárpa. Densely cespitose per. 3–5 in. high: basal lvs. spatulate, ¼ in. or less long, stellate: fls. white, on leafy st.: pods linear. Mts., N. W. Amer., and subarctic.

longiróstra (*D. armata*). Much like *D. aizoides* but smaller, to 1½ in. high in bloom, lvs. shorter, about ⅓ in. long: fls. yellowish, mostly 3–6 in a compressed corymbose raceme. S. Eu., in many forms. Var. **erioscàpa** (*D. Bertolonii*) has lvs. a little larger and scape pilose. Mts., S. Eu.

Nélsonii. A form of *D. densifolia* having a glabrous or sparsely villous scape.

nivàlis. Many-stemmed densely cespitose per. about 3 in.: lvs. ¼ in. or less long, narrow-obovate to lingulate, entire or with 1 or 2 teeth: fls. white, in dense racemes, on short-pilose scape: pods oblong to elliptic, persistent style less than ⅙ in. long. Arctic and subarctic regions, south to mts. in Utah.—Allied to *D. lonchocarpa.*

norvégica (*D. laxa. D. scandinavica*). Per. to 6 or 8 in.: lower lvs. oblong-lanceolate, acute, entire or few-toothed at apex, pilose, not stellate, ciliate on margin, to 2 in. long: fls. white, on leafy st.: pods in open raceme. Subarctic.—Similar to *D. altaica.*

novolýmpica. Densely cespitose per. with very narrow thick white-ciliate lvs. nearly ¼ in. long: fls. yellow. Olympic Mts., Wash.

oligospérma. Laxly cespitose, to 4 in. tall: basal lvs. linear, to ⅜ in. long and ⅙ in. wide, acute, rigid, briefly pilose, ciliate but not pectinate-ciliate: fls. yellow, in lax racemes on briefly pilose scape, petals scarcely longer than sepals. B. C. to Alaska and eastward in Rocky Mts.—Closely allied to *D. globosa* and *D. densifolia.* Var. **andìna** is a smaller more densely compact plant with glabrous or glabrescent scape to 1 in. high. Utah to Calif. north to Mont. and B. C. Var. **pilòsa** is *D. incerta.*

olýmpica. Per., cespitose and cushion-like, 2–4 in.: lvs. linear and obtusish, lightly ciliate, ¼ in. long: fls. orange, rather large, in compact racemes, stamens shorter than petals, scape villous. Medit. region.—Plants grown under this name may be *D. bruniifolia.*

Pàysonii: *D. globosa* var. *sphærula.*

polýtricha. Per. to 2 in., rosettes dense, many, hairy: lvs. linear-lanceolate, to ½ in. long, densely imbricated, white-hairy: fls. yellow, 4–10 in racemes: pods ovate, inflated, to ⅕ in. long, on pedicels to ¼ in. long. Caucasus.

preálter (*D. columbiana*). Per. with simple sts. to about 8 in.: basal lvs. many, oblanceolate, ciliate, ½ in. or so long, entire or denticulate: fls. white. B. C. and Yukon.

pyrenàica: *Petrocallis pyrenaica.*

ramosíssima. Per., branched, to 18 in. high: lower lvs. oblanceolate, dentate, to 2 in. long, st.-lvs. smaller, oblong, dentate: fls. white, in racemes. S. E. U. S.

rèpens: *D. sibirica.*

rígida (*D. dicranioides*). Cespitose per., with many scapes to 3 in. high: lvs. broad-linear or elliptic, rigid and shining, stiffly ciliate, about ¼ in. long, obtuse: fls. yellow, in large clusters. S. Eu.—Differs from *D. bruniifolia* in ovary with 32–36 ovules and not 4–10.

ruáxes. Cespitose per. with sts. to 2 in. long and pilose: lvs. all basal, oblanceolate to suborbicular, thick, about ¼ in. long, densely white-hairy: fls. bright yellow. Alpine, Wash. and B. C.

rupéstris. Per., forming tufts 1 in. or so broad, with very slender sts. with a single lf. or none, somewhat hairy but not ciliate: lvs. membranaceous, linear-lanceolate, entire or toothed at apex: fls. small, white. N. Eu.—Plants cult. under this name are sometmes *D. borealis*, *D. hirta*, or *D. norvegica.*

scandinàvica: *D. norvegica*, but plants so named may be forms of *D. hirta.*

sibírica (*D. repens*). Plant soft, green, the slender sts. more or less prostrate and sometimes 12 in. long: lvs. scarcely in rosettes, oblong-lanceolate, acute, entire, somewhat hairy: fls. yellow, on ascending sts. Siberia, Caucasus.

stellàta: *D. austriaca.*

subamplexicaùlis. Much like *D. hirta*, but plant smaller; tufts much congested, less than 1 in. across: basal lvs. very crowded, the cauline ones oblong or oblong-ovate, the broad base sessile or somewhat clasping: fls. small, white. Siberia, Turkestan.

tomentòsa. Per., sts. weak and erect, 2–3½ in., pilose: lvs. mostly basal and crowded, elliptic or obovate, obtuse, entire, ¼ in. long, densely tomentose: fls. white or nearly so, in racemes on leafy sts.: pods rounded at apex. Cent. Eu.—Plants so named in cult. may be *D. borealis.*

vérna. Whitlow-Grass. Ann. 2–3 in. high, mostly in winter and blooming in spring: fls. small, white, the petals 2-cleft. Eu.; nat. in N. Amer.—Very variable; by some authors separated in the genus Erophila.

Zahlbrúckneri: *D. Hoppeana.*

DRACÆNA. Dracena. *Liliaceæ.* Trees and shrubs grown in the greenhouse, and out-of-doors in the S., for the handsome often vari-colored foliage; fls. rather small, in small clusters, borne in panicles. For cult. see *Cordyline*, to which most of the so-called dracenas belong and from which the genus differs in technical carpellary and floral characters.

amábilis: *Cordyline amabilis.*

australis: *Cordyline australis.*

Baptístii: a form of *Cordyline terminalis.*

Bruántii: a form of *Cordyline rubra.*

concínna. To 6 ft.: lvs. oblanceolate, the margins purple. Madagascar.

dereménsis. To 15 ft.: lvs. to 2 ft. long and 2 in. broad: fls. dark red outside and white inside. Trop. Afr. Var. **álba** is listed. Var. **Wárneckii** is mostly grown.

Doucètii: a form of *Cordyline australis.*

Dràco. Dragon-Tree. To 60 ft.: lvs. to 2 ft. long and 1¾ in. across, glaucous: fls. greenish: berries orange. Canary Isls.—Planted in Calif.

ensifòlia: *Dianella ensifolia.*

fràgrans. To 20 ft.: lvs. to 3 ft. long and 4 in. across: fls. yellowish, fragrant. Upper Guinea. Var. **Líndenii** has creamy-white bands on lvs. and var. **Massangeàna** a broad yellow stripe down center. Var. **canariénsis** is a hort. name.

Godseffiàna. Lvs. to 5 in. long and 2½ in. or less across, irregularly spotted with white: fls. greenish-yellow. Upper Guinea.

Goldieàna. Lvs. to 9 in. long and 5 in. across, with cross bars of gray and bright green: fls. white, in dense heads. Upper Guinea.

grácilis: an unidentified hort. name.

Haàgei: probably *Cordyline Haageana.*

Hookeriàna. To 6 ft. or more: lvs. ensiform, to 2½ ft. long and 2 in. across, margins white-pellucid, somewhat ribbed beneath: fls. greenish, to 1 in. long: berries orange. S. Afr. Var. **latifòlia** has lvs. to 3½ in. across and var. **variegàta** lvs. more or less white striped.

hýbrida: hort. form of *Cordyline terminalis.*

imperiàlis: form of *Cordyline terminalis.*

indivìsa: *Cordyline indivisa.*

Kélleri: hort. form of *D. Godseffiana.*

Knérkii: form of *D. fragrans* with glossy light green lvs.

Líndenii: *D. fragrans* var.

Lóngii: hort. name.

màjor: hort. name.

Mandeàna (**Mandaíana?**): a trade name.

marginàta: *Cordyline marginata.*

Massangeàna: *D. fragrans* var.

Màzelii: hort. name.

Rothiàna: a garden form of *D. fragrans.*

rùbra: *Cordyline rubra.*

Sanderiàna. Lvs. to 9 in. long and 1¼ in. across, with broad margins of white. Cameroons.

strícta: *Cordyline stricta.*

terminàlis: *Cordyline terminalis.*

trícolor: *Cordyline terminalis.*

Veìtchii: *Cordyline australis* var.

Victòria: garden form of *D. fragrans.*

Wárneckii: *D. deremensis* var.

Yoúngii: form of *Cordyline terminalis.*

DRACENA: *Dracæna, Cordyline.*

DRACOCÉPHALUM. DRAGONHEAD. *Labiatæ.* Hardy ann. or per. herbs, mostly erect, with entire, toothed or deeply cut lvs. and purple, blue or seldom white 2-lipped fls. in whorls axillary or in terminal spikes. Sometimes grown in borders and flower-gardens.

Dragonheads prefer a rather moist partially shady position and moderately rich sandy loam. Propagated by seeds or by division.

alpìnum: probably *D. nutans* var.

argunénse: *D. Ruyschiana.*

austrìacum. Per. to 1½ ft., somewhat hairy: lvs. cleft into 3–5 very narrow revolute lobes: fls. blue, 1½ in. long. Eu., Caucasus.

botryoìdes. Per. to 6 in., soft-pubescent: lvs. small, ⅓ in. across, round-ovate, deeply 5–7-lobed: corolla pubescent, in whorls that are aggregated into a head. Caucasus.

bullàtum. Per. to 10 in., hairy: lvs. cordate-ovate or -elliptic, crenate, to 2 in. long and nearly as broad: fls. bright blue, lower lobe somewhat darker. China.

canariénse: *Cedronella canariensis.*

Fórrestii. Per. to 1½ ft., leafy: lvs. pinnatisect with 2 or 3 pairs of lobes, or 3-parted, the segms. ¾ in. long, revolute, white-hairy underneath: fls. blue-purple, in whorls. China.

fruticulòsum. Per. to 3 ft. or more, glabrous: lvs. lanceolate to ovate-lanceolate, to 3½ in. long, sharply serrate, base subcordate, petioled: fls. bright violet-blue, to 1¼ in. long, in whorls. Siberia.

gigantèum: hort. name of red-fld. form, probably a Physostegia.

grandiflòrum. Per. to 1 ft.: lvs. oblong or ovate, basal lvs. notched at base: fls. blue, hairy, 2 in. long, in spikes to 3 in. long. June–July. Siberia.

Hemsleyànum. Per. to 20 in., tufted: lvs. oblong to lanceolate-oblong, to 2 in. long, obtuse, entire, sessile, glandular-pitted beneath: fls. purplish-blue, to 1¼ in. long, in 3–7-fld. cymes forming a lax infl. to 8 in. long. Tibet.

heterophýllum. Per. to 15 in. high, sts. decumbent or ascending, forming clump to 2 ft. across: lvs. oblong-ovate, to 2 in. long, short-petioled, cordate, rough-scabrous: fls. white, to 1½ in. long, in leafy racemes, corolla pubescent. China, Turkestan.

Isabéllæ. Per. to 2 ft.: lvs. deeply divided into 5–7 linear entire segms. to 1 in. long: fls. purple-blue, to 2 in. long, hairy, in spikes to 4 in. long. China.

japónicum: *D. Ruyschiana* var.

Moldávica (*Moldavica suaveolens*). Ann. to 2 ft.: lvs. lanceolate, to 1½ in. long, toothed: fls. blue or white, 1 in. or less long, in long leafy racemes. July–Aug. Eu., N. Asia.

nùtans. Per. to 1 ft.: lvs. ovate or oblong, to 2 in. long, coarsely toothed: fls. bright blue, ½ in. long, sometimes drooping, in spikes to 6 in. long. Cent. Asia. Var. **alpìnum** is listed as a dwarf form.

parviflòrum (*Moldavica parviflora*). Ann. or bien. to 2½ ft.: lvs. lanceolate to ovate, to 3 in. long, toothed: fls. light blue, scarcely longer than calyx, in short dense spikes. N. Amer.

peregrìnum. Decumbent, branches ascending: lvs. lanceolate, entire or with few teeth: fls. blue, in racemes to 1½ ft. long. July. Siberia.

Rùprechtii. To 18 in., much branched: lvs. oblong-elliptic to linear-oblong, obtuse, pinnately lobed, lobes linear, entire to coarsely toothed: fls. bluish-purple, to 1¾ in. long, in short and usually dense spikes. E. Turkestan.

Ruyschiàna (*D. argunense*). Per. to 2 ft.: lvs. linear-lanceolate, to 2 in. long, entire: fls. blue or bluish and in var. **japónicum** white shaded with blue, 1 in. long, hairy, in short spikes. Siberia.

speciòsum. Per. to 1½ ft.: lvs. orbicular, to 4 in. long, wavy-toothed, pubescent beneath and wrinkled: fls. purplish to deep purple, 1 in. long, hairy, in dense heads. June–July. Himalayas.

tangùticum. To 2 ft.: lvs. pinnatisect into 2–3 pairs of long-linear lobes: fls. blue, 1 in. long, in interrupted spikes. Mongolia.

thymiflòrum. Ann., lightly pubescent, sts. erect and simple, to 18 in.: lvs. orbicular-ovate, cordate, serrate or entire: fls. light purplish, in many-fld. whorls forming a long raceme. Eu., Asia.

virginiànum: *Physostegia virginiana.*

Wílsonii (*Nepeta Wilsonii*). Per. to 2½ ft., hairy: lvs. oblong-lanceolate, to 2 in. long, wrinkled: fls. dark blue, 1 in. long, in distant clusters. China.

DRACÓPHILUS. *Aizoaceæ.* Tufted very succulent plants of the S. African Mesembryanthemum group: lvs. many, united at base, 3-angled, bluish-green: fls. terminal, white or rose; stigmas 8–11.

rhèolens (*M. rheolens*). Lvs. to 1½ in. long and ½ in. wide, entire, with rhubarb-like odor: fls. solitary, lilac-rose, 1¼ in. across, short-stalked.

DRACOPIS: *Rudbeckia amplexicaulis.*

DRACÚNCULUS. *Araceæ.* Tuberous herbs native in the Medit. region, bearing pedately dissected lvs. and unisexual fls. on spadices surrounded by spathes; of very offensive odor when in bloom and grown only as a curiosity in the greenhouse or in the open far S.

canariénsis. To 18 in.: lvs. palmately lobed, long-petioled: spathe tubular, to 12 in. tall, spadix more than twice as long as tube. Canary Isls.

vulgàris (*Arum Dracunculus*). Lvs. of 13–15 segms. from a bow-shaped base, the petioles about 1 ft. long: spathes with purple limb to 1 ft. long, the tube striped purple.

DRAGONHEAD: *Dracocephalum.* **False:** *Physostegia.*

DRAGON-ROOT: *Arisæma Dracontium.*

DRAGON-TREE: *Dracæna Draco.*

DRÌMIA. *Liliaceæ.* Bulbous African herbs with whitish or reddish-white fls. in racemes, the corolla-tube campanulate and segms. reflexed.

haworthioìdes. Lvs. after the fls., lanceolate, to 3 in. long, thin: fls. greenish-white, ⅓ in. long, in loose racemes to 3 in. long on stalk to 1 ft., the segms. 3 times as long as tube.

DRÌMYS (*Drymis* is a later spelling). *Magnoliaceæ.* About a dozen aromatic glabrous trees and shrubs in the southern hemisphere: lvs. alternate, bearing pellucid dots: fls. small in ours, solitary or fascicled; petals spreading, 5 or more: fr. of 1 or more indehiscent berries.

axillàris. To 25 ft. or more, with black bark: lvs. narrow-ovate to oblong, to 5 in. long, obtuse, mostly coriaceous, greenish-yellow, the petals linear. New Zeal.; intro. in Calif.

lanceolàta. Shrub or small tree to 10 ft., rarely to 30 ft.: lvs. linear-lanceolate, acute: fls. brown, often unisexual, in terminal umbels. Australia and Tasmania.

Wínteri. To 50 ft., evergreen: lvs. elliptic or lanceolate, leathery, entire, aromatic, acuminate: fls. cream-colored, 1 in. or more across, fragrant. S. Amer.

DROPWORT: *Filipendula hexapetala.*

DROSÁNTHEMUM. *Aizoaceæ.* Segregate from Mesembryanthemum: per., sometimes woody at base, branching and spreading or diffuse, the sts. hispid or rough with small pustules: lvs. small, cylindric or somewhat angled, glistening: fls. solitary, white, rose, violet or reddish; stigmas 4–6. S. Afr. For cult. see *Mesembryanthemum.*

autumnàle. Shrubby, 1½ ft. high and thick: lvs. ¼ in. long and 1/12 in. thick, spreading: fls. ¾ in. across.

cándens (*M. candens*). Sts. or branches to 2 ft. or more, rooting, very slender: lvs. to ½ in. long: fls. small, violet or pinkish, terminating short lateral leafy branches.

floribúndum (*M. floribundum*). Branches short, somewhat decumbent: lvs. to about 1 in. or less, obtuse: fls. rose, ¾ in. across, on peduncles 1 in. or more long.

Fràmesii. To 3 in., compact: lvs. ½ in. long and ⅙ in. broad, erect and spreading: fls. white, yellow or pink, 1 in. across. Var. **prostràtum** is listed.

híspidum (*M. hispidum*). To 2 ft., much branched: lvs. to 1 in. long and ⅙ in. broad, spreading: fls. purple, 1 in. across.

Luederítzii (*M. Luederitzii*). To 6 in., shrubby: lvs. lanceolate, spreading, ½ in. long and ⅕ in. thick: fls. ⅓ in. long.

papaveràcium: listed name.

parvifòlium (*M. parvifolium*). To 8 in., shrubby, with many reddish branches: lvs. 3-angled, to ⅙ in. long and 1/12 in. wide, papillose: fls. purple-red, ½ in. across.

Schoenlandiànum (*M. Schoenlandianum*). To 6 in., shrubby: lvs. club-shaped, spreading, ⅓ in. long and ⅙ in. wide, densely papillose: fls. pale yellow, ½ in. long.

speciòsum (*M. speciosum*). To 2 ft., shrubby: lvs. ½ in. long and ¼ in. wide, spreading or curved upward: fls. orange-red, green at base, 2 in. and more across.

subcompréssum (*M. subcompressum*). To 2 ft., shrubby: lvs. to 1 in. long and ⅙ in. wide, spreading: fls. purple-red, ¾ in. across.

uncinéllum: probably *Ruschia uncinella*.

DRÓSERA. Sundew. *Droseraceæ.* Insectivorous usually per. herbs with basal lvs. covered with glandular hairs, and small white, pink or red fls. in a one-sided raceme terminating the scape; occasionally grown for botanical study and sometimes in rock-gardens; native in moist or swampy places, and transplanted.

The sundews are planted under glass in pots containing muddy loam and sphagnum. They require abundant moisture and sunlight. Propagated by seeds, division of shoots and root-cuttings.

filifórmis. Lvs. linear and thread-like, to 8 in. long, with purple hairs: fls. bright purple or rarely white, on scapes to 2 ft. high. Mass. to Fla. and Miss.

intermèdia. Lvs. spatulate, to 2½ in. long, petiolate, usually red and covered with glandular hairs: fls. white, on many-fld. scapes. E. N. Amer., Cuba, Eu.

longifòlia. Lvs. with long petioles and spatulate hairy blades to 1¼ in. long: fls. white, on scapes to 1 ft. high. N. Amer., N. Eu., Asia.

rotundifòlia. Lvs. with flat petiole and round hairy blades to 1½ in. long: fls. white to red, on scapes to 10 in. high. N. Amer., Eu., Asia.

DROSERÀCEÆ. Sundew Family. Four widely distributed genera of herbs with lvs. in basal rosettes which are glandular-hairy and insectivorous, bisexual fls. having 4–5 sepals, 5 petals, 4–20 stamens, superior 1-celled ovary, and capsular frs. Dionæa and Drosera are sparingly cult.

DRUPE: a fleshy 1-seeded indehiscent fruit, with seed inclosed in a stony endocarp; stone-fruit, as peach, cherry.

DRUPELET: one element in a fruit made up of aggregate little drupes, as in the raspberry.

DRYÁNDRA. *Proteaceæ.* Shrubs of extra-trop. W. Australia, two or more intro. in Calif.: lvs. alternate, mostly sinuate or pinnatifid and sometimes pinnate, often prickly-toothed: fls. in dense heads, mostly yellow, the head sitting in an involucre of scale-like bracts and attended by foliage lvs.: fr. a caps., usually hairy.

floribúnda. Bush to 8 ft.: lvs. nearly or quite sessile, cuneate or obovate, undulate and prickly, mostly less than 1 or 2 in. long: fl.-heads small, terminal, involucre not ½ in. long; fls. nearly 1 in. long, silky.

formòsa. Erect shrub to 15 ft.: lvs. to 8 in. long, divided to midrib: fl.-heads large, terminal, involucre to 1½ in. diam.; fls. to 1½ in. long, more or less silky.

DRỲAS. *Rosaceæ.* Evergreen creeping plants somewhat shrubby at base, with alternate lvs., white or yellowish solitary showy fls., and fr. an achene with feathery style or tail; native in high northern parts of northern hemisphere and on mts., suitable for rock-gardens; they make a rather close ground-cover and send up peduncles a few inches high. Propagated by cuttings, division, or seed.

Drúmmondii. Lvs. oblong, to 1½ in. long, white-tomentose beneath: fls. yellowish, about ¾ in. across, nodding: fruiting styles to 1½ in. long. N. N. Amer.

integrifòlia. Lvs. ovate-lanceolate, usually with revolute margins: fls. white, to ¾ in. across, sepals usually linear-lanceolate. N. N. Amer.

japónica: listed name of unknown botanical standing.

lanàta: *D. octopetala* var.

octopétala. Lvs. elliptic or oblong, to 1 in. long, white-tomentose beneath: fls. white, 1–1½ in. across, erect: fruiting styles 1 in. long. N. N. Amer., N. Eu., N. Asia. Var. **lanàta** (*D. lanata*), lvs. white-woolly. Var. **mìnor** is listed as a very dwarf form. Var. **vestìta** (*D. vestita*), lvs. gray-downy. Var. **integrifòlia** is *D. integrifolia*.

Súendermannii. Hybrid between *D. octopetala* (staminate) and *D. Drummondii:* fls. yellowish in bud, white in full bloom and nodding.

vestìta: *D. octopetala* var.

DRYMIS: *Drimys.*

DRYMOCALLIS: *Potentilla.*

DRYMÓPHILA. *Liliaceæ.* A genus of about 2 species in Australia and Tasmania, having a bulbous rootstock which produces simple slender erect sts. which are leafy on the upper portion only: perianth of 6 equal spreading segms., as many stamens and a 3-celled multi-ovulate ovary supporting 3 slender recurved styles: fr. a berry.

cyanocárpa. To 2 ft.: lvs. lanceolate, alternate, to 3 in. long: fls. white, to ⅝ in. across, few or solitary in the upper axils: fr. globose-oblong, blue or rarely white.—A woodland plant growing in well-drained soils high in organic matter; propagated by offsets or seed and blossoming in late spring or early summer.

DRYMOPHLŒUS: D. Normanbyi is *Normanbya Normanbyi.* The genus Drymophlœus is retained for other species, but is not known to be represented in the U. S.

DRYNARIA: *Polypodium.*

DRYÓPTERIS (*Lastrea. Nephrodium. Thelypteris. Aspidium* in part). Wood-Fern. Shield-Fern. *Polypodiaceæ.* Both temp. and trop. ferns with compound foliage; sori borne on veins with or without indusia. Many of them are woodsy plants native in the U. S. and Canada and are sometimes transferred to grounds. The greenhouse species require no special treatment. See *Ferns.*

acrostichoìdes: *Polystichum acrostichoides.*

aculeàta: *Polystichum aculeatum.*

argùta. Fronds 1–3 and even 5 ft. long, 2-pinnate with the pinnæ sessile, oblong-lanceolate, and with the pinnules spinulose toothed: indusia firm, strongly convex, with deep narrow sinuses and glandulose margins. W. N. Amer., Wash. to S. Calif.

Boòttii (*Aspidium Boottii*). Fronds to 2½ ft. long and 5 in. wide, 2–3-pinnate, pinnules finely toothed. N. S. to Minn. and Va.; probably a hybrid between *D. cristata* and *D. spinulosa* var. *intermedia.*

chrysóloba. Fronds to 9 in. long and 4 in. wide, 2-pinnate, pinnules entire. Brazil, Colombia.

Clintoniàna: *D. cristata* var.

cristàta (*Aspidium cristatum*). Fronds to 2½ ft. long and 6 in. wide, 2-pinnatifid, pinnules finely toothed. Newf. to Va. and Ark., Eu., Asia. Var. **Clintoniàna** (*D. Clintoniana*) has broader lvs.

decompósita. Fronds to 1½ ft. long and 1 ft. wide, 2–3-pinnate, pinnules toothed, pubescent. New Zeal., Australia.

dentàta (*D. mollis. D. parasitica. Aspidium violescens*). Downy W. Fronds to 3 ft. long and 1 ft. wide, 1-pinnate, the segms. pinnatifid and entire, hairy. Tropics.

dilatàta: *D. spinulosa* var.

Dryópteris: *D. Linnæana.*

erythrosòra. Fronds to 1½ ft. long and half as wide, 2-pinnate, segms. pinnatifid, toothed: fruit-dots red when young. China, Japan.—Some of the material cult. as *D. chrysoloba* belongs here.

Fìlix-más (*Aspidium Filix-mas*). Male-Fern. Fronds growing in crowns, nearly evergreen, to 4 ft. long and 1 ft. wide, 2-pinnate, segms. toothed or cut. N. Amer., Eu.—There are crisped, crested, forked, dwarf forms.

fràgrans. Fronds ¼–1 ft. long, glandular-aromatic, narrowly lanceolate, with the pinnæ pinnately parted, and nearly covered beneath with large thin imbricated indusia. Lab. to Alaska, Greenland, Finland, Siberia.

Goldiàna (*Aspidium Goldianum*). Goldie's-Fern. Fronds in large crowns, to 4 ft. long and 1½ ft. wide, 2-

pinnate, pinnæ toothed, dark green above. N. B. to N. C. and Tenn.

hexagonóptera (*Polypodium hexagonopterum. Phegopteris hexagonoptera*). BROAD BEECH-FERN. Fronds triangular, to 15 in. long and broad, 1-pinnate into pinnatifid wavy-toothed pinnæ: sori without indusia. Que. to Fla. and Tex.

hírtipes. Fronds stiff, to 3 ft. long and 16 in. wide, 1-pinnate into segms. cut one-third to midrib, stipes black-scaly. India.

intermèdia: *D. spinulosa* var.

Linnæàna (*Phegopteris* and *Polypodium Dryopteris*). OAK-FERN. Fronds triangular, to 11 in. each way, 2-pinnate, segms. entire or wavy-toothed: sori without indusia. N. N. Amer., Eu., Asia.

marginàlis (*Aspidium marginale*). MARGINAL S. Lvs. in crowns, to 2½ ft. long, 2-pinnate, segms. entire or lobed. N. S. to Ga. and Kans.

móllis: *D. dentata*.

nevadénsis (*D. oregana*). Fronds 1½–3 ft. long and 4–6 in. wide, lanceolate, with the pinnæ linear-lanceolate from a broad base, deeply pinnatifid, and the lower ones distant and greatly reduced. B. C. to Nev. and Calif.

normàlis (*Aspidium patens* in part). Rootstock horizontal, slender, with the fronds usually in 2 ranks and with the scales linear, ciliate, hairy: fronds 2–3 ft. long, bipinnatifid, somewhat pubescent beneath on the midribs. S. C. to Fla. and Tex., Bermuda, Bahamas, W. Indies.

noveboracénsis (*Aspidium noveboracense*). NEW-YORK-FERN. Fronds pale green, to 2 ft. long and 7 in. wide, 1-pinnate, pinnæ deeply pinnatifid. Newf. to Ga. and Ark.

oregàna: *D. nevadensis*.

oreópteris (*Polystichum montanum*). MOUNTAIN W. Fronds to 3 ft. long and 8 in. wide, 1–2-pinnate, pinnules nearly entire. Wash. to Alaska, Eu., Japan.

parasítica: *D. dentata*.

pàtens (*Aspidium patens*). Rootstock erect, stout, with the fronds clustered and with the scales ovate, glabrous: fronds 2–4 ft. long, bipinnatifid, with the pinnæ linear-acuminate and the ultimate segms. acutish. W. Indies Mex. to Argentina and Paraguay.

pennígera (*Polypodium pennigerum*). Fronds to 5 ft. long and 1½ ft. wide, 1-pinnate into deeply cut nearly entire segms. New Zeal., Polynesia.

Phegópteris (*Polypodium Phegopteris. Phegopteris polypodioides*). LONG OR NARROW BEECH-FERN. Fronds triangular, to 9 in. long and 8 in. wide, 1-pinnate into deeply pinnatifid nearly entire segms.: sori without indusia. N. N. Amer., Eu., Asia.

rígida (*Aspidium rigidum*). Fronds to 2 ft. long and 1 ft. wide, 2-pinnate, segms. toothed or cut. Eu.

Robertiàna (*Phegopteris Robertiana*). NORTHERN OAK-FERN. SCENTED OAK-FERN. LIMESTONE POLYPODY. Stipes and fronds minutely glandular beneath, fronds to 8 in. long and 7 in. wide, 2–3-pinnatifid: sori without indusia. N. N. Amer., Eu.

setígera. Rootstock stout, with dark brown scales: fronds dark green, 3–6 ft. long, tripinnatifid, white-hairy beneath. Established in Fla. and S. Amer., native in Asia.

spinulòsa (*Aspidium spinulosum*). SPINULOSE W. Fronds to 1½ ft. long and 9 in. wide, 2-pinnatifid into deeply cut segms. N. Amer., Eu., Asia. Var. **intermèdia** (*D. intermedia*) has indusia with marginal glands. Var. **dilatàta** has 3-pinnate lvs.

Thelýpteris (*Aspidium Thelypteris. Thelypteris palustris*). MARSH-FERN. Rootstock creeping: fronds to 2½ ft. long and 6 in. wide, 1-pinnate into deeply pinnatifid segms., margins revolute. N. Amer., Eu., Asia.

uliginòsa. Sometimes used as the name for the American plants previously identified as *D. setigera;* that name is then restricted to a species of trop. Asia.

viridéscens. GLOSS W. Fronds to 2 ft. long, 3-pinnate, segms. toothed, stalks shining. Japan.

DUCHÉSNEA. INDIAN- or MOCK-STRAWBERRY. *Rosaceæ*. Asian per. herbs with trailing often rooting branches, long-stalked 3-parted lvs., yellow solitary fls., and fr. composed of achenes borne on a dryish receptacle; used as ground-cover and for hanging baskets.

índica (*Fragaria indica*). Lfts. ovate, coarsely toothed: fls. ½–1 in. across: fr. red, surrounded by large persistent calyx. India; nat. in N. Amer.—Looks like a strawberry.

DUCKWEED: *Lemna*.

DUCKWHEAT: *Fagopyrum tataricum*.

DUDLEYA: *Echeveria*.

DUGALDIA: *Helenium Hoopesii*.

DUGGÈNA. *Rubiaceæ*. Shrubs or small trees with opposite lvs., small salverform fls. in terminal spikes, racemes or panicles, and berry-like frs.; one species intro. in S. Calif.

hirsùta (*D. spicata*). To 10 ft.: lvs. ovate to lanceolate, to 7 in. long, pubescent or becoming glabrous: fls. white, ½ in. long, in spike-like panicles to 16 in. long: fr. white or blue. W. Indies, N. S. Amer.

spicàta: *D. hirsuta*.

DURÁNTA. *Verbenaceæ*. Shrubs and trees with opposite or whorled lvs., small fls. in terminal racemes, and drupe-like frs.; one species (*D. repens*) is commonly planted in warm regions and sometimes under glass. Propagated by seeds and cuttings in spring.

Loréntzii. Shrub to 10 ft. with drooping branches: lvs. ovate, small and leathery, toothed toward apex: fls. white. Argentina.

Plumièri: *D. repens*.

rèpens (*D. Plumieri*). PIGEON-BERRY. SKY-FLOWER. Shrub or tree to 18 ft., sometimes spiny and often with drooping or trailing branches: lvs. ovate to obovate, to 4 in. long, entire or coarsely toothed: fls. lilac, to ½ in. across: fr. yellow, to ½ in. across. Fla. to Brazil. Var. **álba** has white fls. and **variegàta** variegated lvs.

stenostàchya. Shrub to 15 ft.: lvs. oblong-lanceolate, to 8 in. long, entire or toothed: fls. lilac, ½ in. across: fr. yellow, ⅓ in. across. Brazil.

DURIAN: *Durio*.

DÙRIO. *Bombacaceæ*. Malayan trees with entire leathery lvs., fls. in cymes, and large spiny frs.

The durian is grown sparingly in the western tropics, not being hardy in continental United States. It does best in deep rich soil with plenty of moisture. Propagated by seeds, and superior strains by budding on seedling stocks.

zibethìnus. DURIAN. To 80 ft.: lvs. obovate-oblong, to 7 in. long: fls. whitish: fr. oval, to 8 in. long, with custard-like pulp of disagreeable odor.

DURRA: *Sorghum vulgare* var. *Durra*.

DUSTY MILLER: *Artemisia Stelleriana, Centaurea Cineraria* and *gymnocarpa, Lychnis Coronaria, Senecio Cineraria* and *leucostachys*.

DUTCHMANS-BREECHES: *Dicentra Cucullaria*.

DUTCHMANS-PIPE: *Aristolochia durior*.

DUVÀLIA. *Asclepiadaceæ*. Succulent little leafless herbs in Afr., one or more intro. in Calif. and perhaps elsewhere: sts. thick and angled, teeth tipped: fls. near base or middle of young sts., mostly in small clusters, corolla rotate and deeply 5-lobed; corona double.

angustíloba. Tufted, sts. to 1 in. long, subglobose or oblong: fls. 5–20, dark chocolate-color, 1 in. across; corona white. S. Afr.

Corderòyi (*Stapelia Corderoyi*). Sts. 1¼ in. or less long from one crown, oblong or nearly globose, tinged purple in sun: fls. 2–4, olive-green with darker tips and bearing purple hairs toward base, to 2 in. diam.; outer corona brick-red, inner one buff. S. Afr.

hirtélla. Sts. to 3 in. long, subglobose or oblong: fls. 1–5, dark chocolate, 1 in. across; outer corona brownish-red, inner yellow. S. Afr. Var. **obscùra** (*D. obscura*) has a taller annulus, rarely pubescent: outer corona speckled or ringed dull yellow.

obscùra: *D. hirtella* var.

polìta. Sts. decumbent, to 2½ in. long: fls. 3–4, green outside, purplish-brown inside, 1¼ in. across, shining; outer corona chocolate-red, inner orange-red. Trop. and S. Afr.

pubéscens. Sts. decumbent, to 2 in. long: fls. 2–4, dark chocolate, 1 in. across, densely pubescent inside; outer corona reddish-brown. S. Afr.

radiàta. Sts. to 2 in. long and ¾ in. thick, oblong or globose, remotely 4–5-angled: fls. dark reddish-brown. S. Afr.—Coronas as in *D. hirtella* var. *obscura* and by some authors the two are not considered entirely distinct.

reclinàta. Sts. to 6 in. or more, angles obscure and tubercled: fls. dark chocolate, to 1¼ in. across, rim of annulus greenish; coronas somewhat orange-colored. S. Afr.

DÝCKIA. *Bromeliaceæ.* Stemless succulent or thick herbs with stiff spiny-margined lvs. in basal rosettes and yellow or orange fls. in racemes or panicles; native in S. Amer. and occasionally planted in Fla. or Calif. Cult. as for *Bromeliaceæ.*

frígida (*D. regalis*). Lvs. to 2 ft. long and 2 in. wide: fls. yellow with green base, ¾ in. long, the infl. to 1 ft. Brazil.

rariflòra. Lvs. to 6 in. long and ⅙ in. wide: fls. orange, ⅓ in. long, the infl. to 1½ ft. Brazil.

regàlis: *D. frigida.*

sulphùrea. Lvs. to 8 in. long and ¾ in. wide: fls. yellow, ⅓ in. long, the infl. to 1 ft. high. Brazil.

DYERS-GREENWEED: *Genista tinctoria.*

DYPSIS: see *Chrysalidocarpus madagascariensis.*

DYSCHORÍSTE (*Calophanes*). *Acanthaceæ.* Per. Ruellia-like herbs widely distributed in warm regions: lvs. opposite, entire: fls. irregular, bracted, in cymes.

lineàris. To 1½ ft.: lvs. linear to spatulate, to 2½ in. long: fls. violet spotted with purple, 1 in. long. Tex. to N. Mex.—Sometimes transferred to grounds.

DÝSÓXÝLUM. *Meliaceæ.* Large trees of which one has been intro. into Calif. for ornament, native from trop. Asia to New Zeal.: lvs. alternate, pinnate: fls. in loose axillary panicles: fr. a leathery caps.

spectábile. To 50 ft.: lvs. of 3–4 pairs of ovate-oblong entire lfts. to 7 in. long: fls. waxy-white, 1½ in. across, in drooping panicles to 1½ ft. long: caps. 1 in. long. New Zeal.

E

EARLEOCASSIA: *Cassia Roemeriana.*

EASTER BELLS: *Stellaria Holostea.*

EBENÀCEÆ. Ebony Family. Trees or shrubs of some 6 genera in warm and temp. regions of both hemispheres, with very hard wood, alternate entire lvs., regular unisexual or bisexual gamopetalous fls. having prominent 3–7-lobed calyx and corolla, 2–3 times as many stamens as corolla-lobes, superior ovary with 2–8 styles, and fr. a berry. Diospyros is grown for the edible frs. of some species and for the ornamental character of others, and Maba and Royena for ornament.

EBENÓPSIS (*Siderocarpus* of American authors). *Leguminosæ.* Spiny trees or shrubs of subtrop. regions in New World, having 2-pinnate lvs., fls. in oblong or cylindrical spikes, and turgid curved hard woody pods with valves tardily dehiscent. Propagated by seeds.

flexicaùlis (*Pithecellobium flexicaule. Siderocarpus* and *Zygia flexicaulis*). Texas Ebony. Tree to 50 ft. or shrub about 20 ft. high, twigs with stipular spines to ½ in. long: lfts. 3–5 pairs, oblong to obovate, to ½ in. long, obtuse, glabrous: fls. yellow, about ⅛ in. long, fragrant, in dense slender spikes about 1½ in. long: pods 4–6 in. long. S. Tex. to Yucatan.

ÉBENUS. *Leguminosæ.* About a score of herbs or subshrubs of E. Medit. region and W. Asia, one of which is intro. in Calif.: lvs. simple, digitate, or odd-pinnate: fls. papilionaceous, in colored clover-like heads: pod small and included in the calyx, seeds 1 or 2. **E. crética** is somewhat shrubby, to 2 ft.: lfts. 3 or more, narrowly oblong: heads more or less cylindrical, red or purplish. Crete. See *Maba.*

EBERLÁNZIA. *Aizoaceæ.* Shrubs with woody roots and erect sts.: lvs. 3-angled, united at base, blue-green with dark spots: fls. red, in branched infl. Native in S. Afr. and a separate from Mesembryanthemum.

spinòsa (*M. spinosum*). To 2 ft., the branches tipped with thorns: lvs. to 1 in. long and ⅙ in. wide: fls. deep rose, 1 in. across.

EBONY FAMILY: *Ebenaceæ.* **Mountain:** *Bauhinia variegata.* **Texas:** *Ebenopsis flexicaulis.*

EBRACTÈOLA. *Aizoaceæ.* Dwarf succulents with thick roots, 3-angled or cylindrical lvs., and solitary terminal short-stalked red or white fls.; stigmas 5. S. African, separated from Mesembryanthemum.

Derenbergiàna (*M. Derenbergianum*). To 3 in., forming clumps: lvs. 3-angled, to 1½ in. long and ⅓ in. thick, light bluish-green: fls. rose, shining, 1 in. across.

móntis-móltkei (*M. montis-moltkei*). Plant forming clumps, with rosettes of 4–8 lvs.: lvs. 3-angled, to 1 in. long and ¼ in. thick, united at base, bluish-green with pellucid dots: fls. bright rose-violet, ½ in. long. Var. **álba** is listed.

Vállis-pàcis: listed name.

ECBÁLLIUM. *Cucurbitaceæ.* One monœcious per.-rooted herb of the Medit. region, more or less trailing or prostrate but without tendrils, planted sometimes for the interest of its odd frs., usually treated as an ann.: fls. yellow, pistillate solitary, staminate racemose. It grows readily from seeds. **E. Elatèrium** (*Momordica Elaterium*). Squirting-Cucumber. Hairy-pubescent and grayish: lvs. triangular-ovate, to 4 in. long, angled or obscurely lobed: fr. oblong, to 2 in. long, rough-hairy, squirting the seeds when detached, if ripe.

ECCREMOCÁRPUS (*Calampelis*). Glory-Flower. *Bignoniaceæ.* Climbing shrubs from Peru and Chile with pinnate lvs. terminated by a branching tendril, tubular yellow, orange or scarlet fls. in terminal racemes, and fr. an ovoid caps.; grown as an ann. in the N. and per. where it is hardy.

scàber. Woody, climbing to 12 ft. but sometimes treated as an herb and blooming first year from seed: lvs. 2-pinnate into ovate entire or toothed lfts. to 1¼ in. long: fls. orange-red, 1 in. long, in racemes to 6 in. long, with small lobes: fr. 1½ in. long. Chile. Var. **aùreus** has golden-yellow fls., **carmíneus** carmine-red, and **coccíneus** scarlet.

ECHEVÈRIA. *Crassulaceæ.* American succulents with broad lvs. in rosettes and fls. in spikes, racemes or panicles, the corolla with short tube that little if at all exceeds the calyx. By some authors the genus is included in Cotyledon; as considered here the genus includes Courantia, Dudleya, Oliveranthus, Stylophyllum and Urbinia. For cult. see *Sempervivum* and *Succulents*; grown in pots and frequently planted out. The plants have the habit of Sempervivums.

Àbramsii (*Dudleya Abramsii*). Flowering sts. to ½ ft.: basal lvs. in dense rosettes, linear-ovate, to 1 in. long, somewhat glaucous: fls. yellow with reddish stripes. Calif.

acutifòlia. Sts. short: lvs. rhomboid, concave: fls. red tinged with yellow, in a narrow erect panicle. Mex.

agavoìdes (*Urbinia* and *Cotyledon agavoides*). St. or caudex very short and thick: lvs. thick and rigid, densely imbricated, ovate, to 2 in. long, spine-tipped: corolla cone-shaped, reddish with yellow tips. Mex.

albiflòra (*Dudleya albiflora*). Caudex 8–12 in. diam., with 25 or more rosettes crowning the short sts.: lvs. linear-lanceolate, 1½–2 in. long, thick, flat, becoming purplish: fls. white. Lower Calif.

alpìna. Plant small, stemless, cespitose, floral shoots to 5 in.: lvs. glaucous, oblong-spatulate, to 3 in. long, truncate and mucronate at apex: fls. 10 or more, reddish-orange, in a simple raceme. Mex.

amadoràna (*Dudleya gigantea*). Stemless or nearly so, with basal lvs. very glaucous, oblanceolate, 2–3 in. long: fl.-st. 1 in. long, with the infl. paniculate; fls. deep red. Amador Co., Calif.

amethýstina: *Graptopetalum amethystinum.*

amœ̀na (*E. pusilla*). Nearly stemless, with numerous offshoots: lvs. spatulate-lanceolate, ¾ in. long: fls. 1–8, coral-red, the flowering branches to 8 in. long. Mex.

atropurpùrea (*E. sanguinea*). To 8 in.: lvs. in dense rosette at top of st., obovate, to 4½ in. long, glaucous, dark purple above: fls. bright red, ½ in. long, on branches 1 ft. long. Mex.

atrosanguínea: probably meant for *atropurpurea.*

attenuàta (*Stylophyllum attenuatum. S. Orcuttii*). Lvs. linear, terete, to 4 in. long: fls. yellowish tinged with green and red, ⅛ in. long, in one-sided racemes. Lower Calif. and isls.

austràlis. To 2 ft.: lvs. at top of branches, broadly spatulate, to 3 in. long, glaucous: fls. bright red, ½ in. long. Costa Rica.

Bàileyi: listed name.

bifurcàta. Sts. short: basal lvs. lanceolate, to 3 in. long and ½ in. wide: fls. yellow, bright red above, ½ in. long, in one-sided racemes to 5 in. long forming a two-branched infl. Mex.

Bradburyàna: listed name.

Bríttonii: *Sedum obtusatum.*

cæspitòsa (*Cotyledon cæspitosa* and *californica. Dudleya cæspitosa. E. linguaformis*). Green or glaucous: fl.-sts. slender, 4–12 in. high: basal lvs. obovate-oblong, ¾–1½ in. long: fls. yellow, about ½ in. long. Calif.

cándicans: listed name.

carnícolor. Stemless: lvs. in dense rosettes, oblanceolate-spatulate, 2 in. long, glaucous tinged red: fls. 6–12, bright red, ½ in. long. Mex.

clavàta. Hybrid with *Pachyphytum bracteosum* as one parent: see *Pachyveria clavata.*

clavifòlia. Hybrid: lvs. gray-green with reddish margins: fls. carmine, numerous.

clavifórmis: listed as a small very green plant with horizontal fl.-sts.

coccínea. To 2 ft., gray-pubescent: lvs. oblanceolate, to 4 in. long: fls. red, in 15–25-fld. spikes. Mex.

compácta (*Dudleya compacta*). Bright green: fl.-sts. 4–12 in. high: basal lvs. oblong-lanceolate, stiff and very fleshy, to 2½ in. long: fls. bright lemon-yellow, ⅓ in. long. S. Calif.

Coòperi: presumably *Adromischus Cooperi.*

Corderòyi (*Urbinia Corderoyi*). Stemless: lvs. in dense rosettes, to 3 in. long, very thick: fls. 15–20, red with yellow tips, ¾ in. long. N. Mex.

crenulàta. Sts. long: basal lvs. obovate, to 1 ft. long and 6 in. wide, st.-lvs. with wavy purplish-red margins: fls. yellowish-red, ½ in. long. Mex.

críspa. Hybrid: lvs. with deeply crenulated red or pink edges.

cuspidàta. Stemless: lvs. in dense rosettes, obovate, to 2½ in. long, very glaucous tinged with red: fls. purplish with yellowish tips, ½ in. long, the fl.-st. to 8 in. Mex.

cymòsa (*Dudleya* and *Cotyledon cymosa*). Stemless: fl.-sts. to 14 in.: basal lvs. in dense rosettes, oblong-lanceolate, to 5 in. long: fls. pale yellow, ½ in. long. Calif.

densiflòra (*Stylophyllum densiflorum. Cotyledon nudicaulis* and *densiflora. E. nudicaulis*). Making dense clumps, very glaucous: lvs. many, nearly terete, to 4 in. or more long: fls. white or pinkish, about ¼ in. long, in cymes. S. Calif.

Dérenbergii. Lvs. in rosettes, spatulate, to 1½ in. long and 1 in. wide, grayish-white with red margins and sharp tip: fls. reddish-yellow or cinnabar-red, ½ in. long, the fl.-st. to 2½ in. Mex.

Desmetiàna: *E. Peacockii.*

edùlis (*Stylophyllum edule*). To 1½ ft.: lvs. linear, nearly terete, flat and broad at base: fls. yellowish, ¼ in. long, in panicles. S. Calif.

élegans. Stemless: lvs. in compact rosettes, to 2 in. long, glaucous, very succulent with translucent margins: fls. 5–7, pinkish with yellow tips, fl.-branches to 8 in. long. Mex.

exímia: listed name.

expatriàta. To 4 in.: lvs. in dense rosettes, oblanceolate, 1 in. long, glaucous: fls. pinkish. Described from cult. material. Mex.

farinòsa (*Cotyledon* and *Dudleya farinosa*). Sts. low, rootstock short: basal lvs. tongue-shaped, flat and white-mealy, st.-lvs. sagittate: fls. lemon-yellow, on slender pedicels in rather open cymes. Coasts, Calif.

fimbriàta. Sts. to 10 in.: lvs. in loose rosettes, oblanceolate, 5 in. long, with nearly transparent fimbriated margins: fls. pink outside, yellow inside, ½ in. long, in one-sided racemes. Mex.

flámmea: form of *E. gibbiflora* with highly colored foliage.

Fúnkii: a name of uncertain botanical application.

gibbiflòra (*Cotyledon gibbiflora. E. grandifolia*). To 2 ft.: lvs. obovate-spatulate, to 7 in. long, becoming pinkish: fls. red. Mex. Var. **metállica** has glaucous-purple foliage with metallic luster.

gibbòsa var. **víride:** listed name of no botanical standing.

gigantèa. Subshrub with thick st.: lvs. in thick rosettes, to 10 in. long and 6 in. wide, reddish: fls. red. Mex.

glaùca (*E. secunda* var. *glauca*). Lvs. nearly orbicular, ¾ in. across, pale and glaucous, with purple point: fls. pinkish outside, yellow inside, the flowering branches reddish. Mex. Var. **màjor** is listed; also var. **metállica** but this may be referable to *E. gibbiflora.*

globòsa. Nearly stemless: lvs. in dense rosettes, spatulate, to 3 in. long, pale: fls. reddish and yellowish, the flowering branches weak. Origin unknown. Vars. **cristàta** and **gigantèa** are listed.

Gòldmanii. To 8 in., sts. often prostrate and rooting at nodes: lvs. linear-oblong, 2 in. long, pale green with purple margins. Mex.

grácilis. To 8 in., often decumbent from base: lvs. subrosulate to scattered, green with red tips, obovate-oblong, 1 in. long: lowermost pedicels often 2-fld.; fls. bright scarlet. Mex.

grandiflòra: *E. lanceolata* var. *aloides.*

grandifòlia: *E. gibbiflora.*

Greènei (*Dudleya Greenei*). To 16 in., more or less glaucous: lvs. numerous, oblanceolate, to 4 in. long and ½ in. wide: fls. yellow. Santa Cruz and isls., Calif.

guatemalénsis. To 1 ft., branching at base: lvs. to 1½ in. long and ¾ in. wide: fls. borne singly, pinkish below, yellowish above. Guatemala.

Haageàna: listed name.

Hállii: *Sedum obtusatum.*

Hármsii (*Cotyledon* and *Oliveranthus elegans*). To 20 in., much branched: lvs. near ends of branches, obovate: fls. bright red tipped with yellow, 1 in. long, solitary or twin at ends of branches in summer. Mex.; hardy out-of-doors as far north as Washington, D. C.

heterosépala (*E. viridiflora*). Stemless: basal lvs. forming a dense rosette, obovate, somewhat acuminate, to 1¼ in. long: fl.-sts. to 10 in., with fls. in racemes or spikes. Mex.

Hóveyi (*Cotyledon Hoveyi*). Nearly stemless, but fls. on an elongated peduncle or scape: lvs. long-spatulate forming a basal rosette, margined: fls. 6–12, racemose, pinkish. Origin unknown; perhaps a cultigen.

imbricàta. Hybrid between *E. glauca* and *E. gibbiflora* var. *metallica:* rosettes saucer-like, lvs. gray or nearly white.

íngens (*Dudleya ingens*). Sts. to 1 ft. high, bearing at top a rosette of lvs. to 10 in. long and 1½ in. wide: fls. yellow, in open panicles. Lower Calif.

kewénsis: listed name.

lanceolàta (*Cotyledon* and *Dudleya lanceolata*). Usually somewhat glaucous: fl.-sts. to 2 ft.: basal lvs. narrowly lanceolate and long-acuminate, to 6 in. long, st.-lvs. cordate or sagitatte: fls. reddish-orange, about ½ in. long. S. Calif. Var. **aloìdes** (*E.* and *Dudleya grandiflora*) is scarcely to quite glaucous with corolla green-yellow. Var. **lùrida** (*E., Cotyledon* and *Dudleya lurida, E. Monicæ*) is not glaucous with corolla reddish.

láxa (*Cotyledon* and *Dudleya laxa*). Glaucous or yellowish-green: fl.-sts. to 2 ft.: lvs. ovate to lanceolate, acute, to about 3 in. long: fls. yellow, deeply parted, ½ in. long, in lax cymes. S. and Cent. Calif.

leucótricha. Much branched: lvs. lanceolate, thick, covered with white hairs: fls. cinnabar-red. Mex.

Lingettòlii: listed name.

linguæfòlia. To 1 ft.: lvs. thick and fleshy, nearly cylindrical at base: fls. cream-color, the flowering branches long and drooping. Mex.

linguafórmis: *E. cæspitosa.*

Lozànii. Stemless: lvs. in dense rosettes, lanceolate, 4 in. long, those in center copper-colored: fls. pale copper-color, the fl.-sts. to 1½ ft. long. Mex.

lùrida: *E. lanceolata* var.

macrántha: listed name.

macrophýlla: a name of doubtful botanical status.

maculàta. Stemless: lvs. lanceolate, 4 in. long, somewhat mottled: fls. lemon-yellow, in panicles, flowering branches to 3 ft. long. Mex.

Máxonii. Sts. to 2½ ft., becoming decumbent: lvs. spatulate, to 4 in. long, margins purplish: fls. salmon-pink, in racemes on peduncles to 1 ft. long. Mex.

McCàbei: listed name.

metállica: *E. gibbiflora* var.

mexicàna: listed name.

micrócalyx (*E. Purpusii*). Sts. 4 in. or more: lvs. spatuate, 1 in. long and ½ in. wide, thick: fls. yellowish-pink, ⅓ in. long. Mex.

mìnor: *E. nevadensis.*

Mónicæ: *E. lanceolata* var. *lurida.*

montàna. Lvs. in dense rosette at top of st., orbicular or obovate, 2 in. long: fls. ½ in. long, in racemes on fl.-sts. 1 ft. long. Mex.

multicaùlis. To 3 ft.: lvs. to 8 in. long and ¾ in. wide: fls. reddish, yellowish inside, the fl.-branches rose-colored. Mex.

nevadénsis (*Cotyledon* and *Dudleya nevadensis. E. minor*). Stemless: fl.-sts. to 8 in.: basal lvs. obovate, to 4 in. long: fls. yellow tinged with red, to ½ in. long, in compound cymes to 3 in. across. Calif.

nivàlis, nívula: listed names.

nóbilis: advertised as a prolific purplish form.

nodulòsa. Sts. 1-2 ft. long, crowned by a dense rosette of obovate-spatulate lvs. 2–3 in. long, slightly glaucous, with the margins reddish: fls. few, in a short raceme, straw-colored tinged with red. Mex.

nùda. Sts. to 4 in., with lvs. scattered towards the apex, obovate-spatulate, 2 in. long, slightly glaucous: fls. in a simple or slightly compound raceme, pink below, yellowish above. Mex.

nudicaùlis: *E. densiflora.*

Órpetii. Said to be a hybrid with large rosettes: outer lvs. rosy, inner lvs. green: see *Pachyveria Orpetii.*

ovalifórmis: catalogue name.

ovifórmis: listed name.

Pálmeri (*E. Rosei*). Stemless: lvs. rhomboid or oblanceolate, to 8 in. long and 4 in. wide, margins reddish: fls. reddish-yellow, ¾ in. long, in panicles to 8 in. long. Mex.

Pèacockii (*E. Desmetiana*). Stemless: lvs. obovate-spatulate, to 3 in. long, white-glaucous, reddish toward top: fls. bright red, the fl.-sts. 1 ft. long. Mex.

perbélla: listed name.

pinetòrum. Stemless: lvs. in dense rosettes, oblanceolate, to 1½ in. long and ½ in. wide, margins tinged red: fls. ⅓ in. long, the infl. to 10 in. long. Mex.

Pittièri. To 6 in., bearing rosette at top of st.: lvs. oblanceolate, 3 in. long: fls. rose, ½ in. long, in dense spikes 2 in. long on sts. 8 in. long. Guatemala.

Plattiàna (*Cotyledon* and *Dudleya Plattiana*). Stemless: lvs. oblanceolate, to 4 in. long, somewhat glaucous: fls. in a rather short flat-topped panicle, reddish. Calif.

plicàta: listed name.

Prínglei. Sts. decumbent, 1 ft. long, pubescent: lvs. oblanceolate, to 4 in. long: fls. scarlet. Mex.

pubéscens. To 2 ft., velvety-pubescent: lvs. obovate or spatulate, to 3 in. long: fls. bright red, ⅓ in. long, in many-fld. spikes. Mex. Var. **recurvàta** is listed.

pulvinàta. Velvety-pubescent throughout: sts. to 5 in. long with lvs. clustered in a rosette at top, 1 in. long, rounded at apex and apiculate: fls. scarlet, in a leafy raceme. Mex.

pulverulénta (*Cotyledon* and *Dudleya pulverulenta*). Mealy all over: fl.-sts. to 2½ ft.: lvs. broadly spatulate, to 3½ in. long, those on st. broadly ovate and clasping: fls. red, above ½ in. long, in racemes. S. Calif.

pùmila. Stemless, stoloniferous: lvs. in dense rosettes, to 1½ in. long and ½ in. wide, glaucous: fls. red, upper half yellow. Mex.

Púrpusii (*Cotyledon* and *Dudleya Purpusii*). Tufted, pale green: fl.-sts. to 8 in.: basal lvs. rhombic, to 3 in. long: fls. lemon-yellow, ½ in. long, in cymes to 3 in. across. Calif. —Plants under this name, in another application, are to be referred to *E. microcalyx.*

Purpusòrum (*Urbinia Purpusii*). Stemless: basal lvs. gray-green, mottled with brown, broadly ovate, pointed, to 1¼ in. long: fls. pinkish outside, yellowish within and at tip. Mex.

pusílla: *E. amœna.*

racemòsa. Stemless, with basal lvs. numerous, in a dense rosette, deep purple, to 2 in. long: fl.-branches to 1 ft.; fls. 20–40 in a simple raceme, corolla yellowish, ½ in. long, sepals ascending. Mex.

retùsa. Nearly stemless: lvs. in dense rosettes, obovate or spatulate, 3 in. long: fls. bright red, ½ in. long, in compact panicles on sts. 8 in. long. Mex.

ròsea (*Courantia rosea*). Sts. to 1 ft., branching: lvs. near tops of branches, oblanceolate-spatulate, 3 in. long, edges tinged reddish: fls. pale yellow with lobes of calyx rose, in dense spikes on leafy branches 4 in. long. Mex.

ròsea-grándis: listed name.

Ròsei: *E. Palmeri.*

rubélla: listed name.

rubromarginàta. Stemless or nearly so: lvs. oblanceolate, to 5 in. long, stiff, glaucous, with a red slightly wavy margin: fls. pale rose, fl.-sts. to 4 ft. high. Mex.

Rúnyonii. Sts. short or none: lvs. in rosettes, spatulate-cuneate, to 3 in. long, very glaucous: fls. in bifid racemes, corolla pink to scarlet, to ¾ in. long. Mex.

sanguínea: *E. atropurpurea.*

saxòsa (*Dudleya saxosa*). Pale green or somewhat glaucous: basal lvs. numerous, narrowly lanceolate, semi-terete, to 4 in. long: fl.-branches to 14 in. long with fls. in cymes, calyx-lobes red, corolla yellow, becoming reddish. Calif., Ariz.

scaphýlla. Hybrid between *E. agavoides* and *E. linguæfolia.*

Scheèri. Caulescent, to 2 ft., more or less glaucous: rosette-lvs. to 8 in. long: fls. terminal in a few-branched panicle, corolla red or tinged with yellow. Mex.

Scheìdeckeri. Hybrid between *Pachypytum bracteosum* and *E. secunda:* fls. orange-red tipped with yellow: see *Pachyveria Scheideckeri.*

scopulòrum. Sts. short, topped by rosette: lvs. obovate, to 3 in. long: fls. dark red, ⅓ in. long, the red flowering sts. to 8 in. long. Mex.

secúnda (*Cotyledon secunda*). Lvs. obovate, with very short sharp point, glaucous-blue, reddish at margins: fls. reddish, on scapes to 15 in. tall. Mex.

septentrionàlis (*Cotyledon* and *Dudleya septentrionalis*). White-powdery: fl.-sts. about 3 in. long: lvs. in compact rosettes, ovate, 1 in. broad: fls. pale yellowish-green, short and broad, in a very compact cyme. N. Calif.

Sétchellii (*Dudleya Setchellii*). Fl.-sts. numerous, from a short thick caudex, to 1 ft.: rosette-lvs. lanceolate to linear-lanceolate, very glaucous: fls. in a narrow panicle, corolla pale yellow. Calif.—Possibly only a var. of *E. laxa.*

setòsa. Stemless: lvs. in a nearly globular rosette, 2 in. long, hairy: fls. 8–12, red tipped with yellow. Mex.

Shéldonii (*Dudleya Sheldonii*). Stemless: fl.-sts. to 10 in.: lvs. lanceolate to ovate-lanceolate, to 2 in. long: fls. yellow, ¾ in. long, in compact panicles. Calif.

símulans. Similar to *E. elegans* but with flatter rosettes and narrower corolla. Mex.

Sprùcei. To 1 ft.: lvs. in dense rosettes, lanceolate, ½ in. long: fls. red, ½ in. long, in 10–12-fld. loose racemes about 6 in. long. Ecuador.

stolonífera. Short-stemmed, stoloniferous: lvs. in dense rosettes, obovate or spatulate, 2½ in. long: fls. 4–6, yellowish. Mex.

strictiflòra. Stemless: basal lvs. spatulate-lanceolate, to 4 in. long, acuminate, pale green and slightly glaucous, the upper part with bright red margins: fl.-branches to 16 in. long, either simple or two-forked, fls. scarlet. Tex., Mex.

subrígida. Stemless: lvs. in dense rosettes, ovate, very glaucous, tinged purple, margin of young lvs. scarlet: fls. red, to ¾ in. long, in panicles to 2 ft. long. Mex.

tolucénsis. Acaulescent or in age shortly caulescent: lvs. in rather open rosettes, usually ascending, glaucous, oblanceolate, to 2½ in. long: fls. 7–12 in a raceme. Mex.

túrgida. Stemless: lvs. in dense rosettes, turgid, spatulate-oblong, grayish-green tinged red: fls. rose, ⅓ in. long, in one-sided racemes on sts. 4 in. long. Mex.

venezuelénsis. To 4 in.: lvs. in rosette at top of st., oblanceolate, 3 in. long, slightly glaucous: fls. pinkish, in many-fld. racemes to 1 ft. long. Venezuela.

villòsa: of uncertain botanical status.

vìrens (*Stylophyllum virens*). Caudex elongated, branched and sprawling, crowned by dense rosettes of very fleshy oblong-linear lvs., 3½ in. long: fl.-sts. to 8 in., fls. reddish-yellow. Isls. off S. Calif.

víridens, víridis: listed names.

viridiflòra: *E. heterosepala.*

Walpoleàna. Nearly stemless: lvs. in dense rosettes, to 3 in. long and 1 in. wide, tinged with deep red: fls. orange, ½ in. long, in a two-branched infl. on sts. 1 ft. high. Mex.

Weìnbergii: *Graptopetalum paraguayense.*

Weìngartii. Hybrid.

Whìtei. Sts. to 4 in. topped by dense rosette: lvs. spatulate, to 2 in. long, margins purplish: fls. red, ½ in. long, in racemes 4 in. long on red sts. to 1 ft. long. Bolivia.

ECHIDNÓPSIS. *Asclepiadaceæ.* Leafless succulent plants of trop. Afr. and Arabia allied to Stapelia, the stout branching sts. tubercled: fls. fleshy, 5-lobed, yellow or purple-brown, small, in fascicles or sometimes solitary.

cereifórmis. Sts. ½ in. thick, 8-angled: fls. in clusters near tips of sts., bright yellow, ⅓ in. across. Nile Land. Var. **brúnnea,** fls. yellowish- to purple-brown, sts. 6–10-angled. Var. **obscùra,** fls. dark yellowish-brown, sts. 6–10-angled.

cylíndrica. Similar to *E. cereiformis* but with longer branches and larger fls. Nile Land.

Dammanniàna. Sts. to ¾ in. thick, grayish-green or purplish-green, 8–10-angled: fls. 2–5 together or solitary, corolla dark purple-brown, to ⅓ in. across. Nile Land.

ECHINÀCEA (*Brauneria*). CONEFLOWER. *Compositæ.* N. American coarse herbaceous perennials with thick black roots of pungent taste and alternate simple lvs.: heads large and showy, solitary and terminal, ray-fls. purple or rose or yellow, disk-fls. green or purple, becoming conical; pappus a short crown.

The coneflowers are easily cultivated in the border or wild-garden. Propagated by division but this should not be practiced too frequently; also by seed.

angustifòlia. To 2 ft., hairy: lvs. lanceolate or linear-lanceolate, to 8 in. long, entire: heads light purple, rays about 1 in. long, spreading, the fruiting disk often 1 in. high. Sask. to Tex.

pállida (*Rudbeckia pallida*). To 3 ft., hairy: lvs. linear-lanceolate, to 8 in. long, entire: heads rose-purple to nearly white, rays to 3 in. long, drooping. Ill. to Tex. Var. **álba** with pure white rays is listed.

purpùrea (*Rudbeckia purpurea*). Purple C. To 5 ft.: lvs. ovate or ovate-lanceolate, to 8 in. long, usually toothed: heads purple varying to white, rays to 3 in. long, spreading or drooping. Pa. to Ga. and La. Var. **grandiflòra** is said to have larger heads.

ECHINOCÁCTUS. *Cactaceæ.* More than 1,000 names have been applied in this genus, but it is now restricted to a few species: plants thick, sometimes very large, many- or several-ribbed, cylindric, the large areoles very spiny: fls. on the crown, yellow or pink, often immersed in wool; axils of scales on ovary and fr. woolly: fr. white-woolly. S. W. U. S. and Mex. See *Cacti*.

Various kinds of echinocacti and closely related genera are favorites for pot and tub culture and for plunging in the open in summer. They are propagated by seeds as they do not branch nor readily produce offsets. Seeds are sown in late spring or early summer. Under glass they may require pollination to produce seeds. In winter, the plants may be placed in a light dry greenhouse and kept fairly dormant; in spring and summer water may be supplied liberally to establish plants.

acanthòdes: *Ferocactus acanthodes.*

acutíssimus: *Chilenia acutissima.*

alamosànus: *Ferocactus alamosanus.*

albàtus: *Stenocactus albatus.*

anfractuòsus: *Stenocactus anfractuosus.*

Anisítsii: *Gymnocalycium Anisitsii.*

ápricus: *Notocactus apricus.*

árrigens: *Stenocactus arrigens.*

Astèrias: *Astrophytum Asterias.*

aureicéntrus: probably *Parodia aureicentra.*

aureispìnus: listed name, perhaps *Parodia aureispina.*

Beguìnii: *Neolloydia Beguinii.*

bícolor: *Thelocactus bicolor.*

Bodenbenderiànus: *Gymnocalycium Bodenbenderianum.*

brevihamàtus: *Ancistrocactus brevihamatus.*

califórnicus: *Ferocactus californicus.*

calochlòrus. Depressed-globose, 1½ in. high and 2¼ in. diam., shining bright green, slightly proliferous; ribs 11 and tubercled, areoles slightly woolly; radial spines 9 and ⅓ in. long: fls. pale rose with darker marks, 2 in. long. Argentina.

capricórnis: *Astrophytum capricorne.*

cataphráctus: *Frailea cataphracta.*

centetèrius: *Pyrrhocactus mammillarioides.*

ceratístes: *Eriosyce ceratistes.*

chilénsis: *Chilenia chilensis.*

chrysacánthion: *Parodia chrysacanthion.*

chrysacánthus: *Ferocactus chrysacanthus.*

columbiànus: *Frailea columbiana.*

concínnus: *Notocactus concinnus.*

conoídeus: *Neolloydia conoidea.*

conothèlos: *Thelocactus conothelos.*

coptonogònus: *Stenocactus coptonogonus.*

cornígerus: *Ferocactus latispinus.*

crassihamàtus: *Ferocactus crassihamatus.*

crispàtus: *Stenocactus crispatus.*

cupreàtus: a name of doubtful botanical standing as it was described without fls. or fr.

curvispìnus: *Pyrrhocactus curvispinus.*

cylindràceus: *Ferocactus acanthodes.*

Dámsii: *Gymnocalycium Damsii.*

Dàvisii: listed name; see *Hamatocactus hamatacanthus.*

Delaètii: *Gymnocalycium Schickendantzii* var.

denudàtus: *Gymnocalycium denudatum.*

discifórmis: *Strombocactus disciformis.*

ebenacánthus: *Neoporteria fusca.*

Éhrenbergii: *Thelocactus Ehrenbergii.*

electracánthus: *Ferocactus melocactiformis.*

elephántidens: *Coryphantha elephantidens.*

Émoryi: probably *Bergerocactus Emoryi.*

énsifer: *Stenocactus arrigens.*

excúlptus: *Chilenia subgibbosa.*

Fiedleriànus. Forming clumps, depressed-globose and woolly at apex; ribs 13 and tubercled, areoles depressed; spines 4–7 and 1 in. long: fls. yellow, greenish outside. Chile.

flavóvirens: *Ferocactus flavovirens.*

floricomus: *Notocactus floricomus.*

Fórdii: *Ferocactus Fordii.*

Froehlichiànus: *Pyrrhocactus Froehlichianus.*

fúscus: *Neoporteria fusca.*

gibbòsus: *Gymnocalycium gibbosum.*

Gielsdorfiànus: *Thelocactus Gielsdorfianus.*

gladiàtus: *Stenocactus gladiatus.*

glaucéscens: *Ferocactus glaucescens.*

Graèssneri: *Notocactus Graessneri.*

grándis. To 7 ft. tall and half as wide, very woolly on top; ribs usually more than 40, narrow; spines subulate, yellow to reddish; radials 5–6, to 1½ in. long; central 1, to 2 in. long, straight: fls. yellow, to 2 in. long, outer segms. ciliate and acute, inner ones obtuse and serrate. Mex.

Grósseі: *Notocactus Grossei.*

Grùsonii (*Ferocactus Grusonii*). A few in. to 4 ft. or more high, to 2½ ft. diam., light green; ribs 21–37; spines golden-yellow when young but becoming whitish, the radials 8–10: fls. yellow, brownish outside, imbedded in a felt-like cushion, opening in sunlight. Cent. Mex.

guayennénsis: *Chilenia subgibbosa.*

Haageànus: see *Astrophytum ornatum.*

hamatacánthus: *Hamatocactus hamatacanthus.*

Háselbergii: *Notocactus Haselbergii.*

helóphorus: an imperfectly described species, perhaps the same as *E. ingens.*

Hértrichii. Solitary, cylindrical, to 5½ ft. high and 2 ft. diam.; ribs 12–24; radial spines 17–19, to 1½ in. long, spreading, reddish-brown, ringed; centrals 4, to 2¼ in. long, one hooked: fls. reddish-brown, to 2¼ in. long. Ariz.

heteracánthus: *Stenocactus heteracanthus.*

heterochròmus: *Thelocactus Pottsii.*

hexædróphorus: *Thelocactus hexædrophorus.*

horizonthalònius. Not large, globular or short-cylindric, to 10 in. high, glaucous; ribs commonly 8; spines 6–9 and to 1½ in. long and reddish or blackish at base, central 1: fls. pale rose or pink, 2 in. or more long and of greater breadth when expanded. W. Tex. to Ariz. and Mex.

Hóssei: *Gymnocalycium Hossei.*

hùmilis: doubtful name in the lists.

íngens. To 5 ft. high and 4 ft. diam., more or less short-oblong, somewhat glaucous and purplish, woolly at top; ribs 8; spines brown, 8 radial, 1 central: fls. ¾ in. long and somewhat broader, yellow. Mex. Var. **grándis** is *E. grandis* and var. **Pálmeri** is *E. Palmeri.*

intertéxtus: *Echinomastus intertextus.*

intórtus: see *Melocactus intortus.*

islayénsis: *Parodia islayensis.*

Jóhnsonii: *Echinomastus Johnsonii.*

Knèbelii: listed name, perhaps *Mammillaria Knebeliana.*

Knuthiànus: *Thelocactus Knuthianus.*

korethroìdes: *Eriosyce korethroides.*

Kraùsei: *Echinomastus Krausei.*

Kurtziànus: *Gymnocalycium Kurtzianum.*

latispìnus: *Ferocactus latispinus.*

Leeànus: *Gymnocalycium Leeanum.*

Lecóntei: see *Ferocactus acanthodes.*

Lemàirei: *Melocactus Lemairei.*

Léninghausii: *Notocactus Leninghausii.*

leptánthus (*Gymnocalycium leptanthus*). Subglobose; ribs 8–10, low and broad, rounded; radial spines 6–9; centrals 1–3: fls. funnelform. Argentina.

leucacánthus: *Thelocactus leucacanthus.*

leucótrichus: *Arequipa leucotricha.*

Llóydii: see *Stenocactus Lloydii.*

longihamàtus: *Hamatocactus hamatacanthus.*

lophophoroìdes: listed name.

lophothèle: *Thelocactus lophothele.*

loricàtus: *Gymnocalycium Spegazzinii.*

Maàssii: *Parodia Maassii.*

Macdòwellii: *Echinomastus Macdowellii.*

macrodíscus: *Ferocactus macrodiscus.*

mammillarioìdes: *Pyrrhocactus mammillarioides.*

mammulòsus: *Notocactus mammulosus.*

Mandrágora: *Thelocactus Mandragora.*

Máthssonii: *Ferocactus crassihamatus.*

mazanénsis: *Gymnocalycium mazanense.*

megalothèlos: *Gymnocalycium megalothelos.*

megarhìzus: *Ancistrocactus megarhizus.*

melocactifórmis: *Ferocactus melocactiformis.*

microspérmus: *Parodia microsperma.*

Mihanovíchii: *Gymnocalycium Mihanovichii.*

minúsculus: *Rebutia minuscula.*

Moèlleri: listed name.

Mónvillei: *Gymnocalycium Monvillei.*

Móstii: *Gymnocalycium Mostii.*

multicostàtus: *Stenocactus multicostatus.*

multiflòrus: *Gymnocalycium multiflorum.*

muricàtus: *Notocactus muricatus.*

myriostígma: *Astrophytum myriostigma.*

Netreliànus: *Gymnocalycium Netrelianum.*

nídulans: *Thelocactus nidulans.*

Nìdus: *Neoporteria Nidus.*

nigriareolàtus: see *Gymnocalycium nigriareolatum.*

nígricans: *Neoporteria nigricans.*

nivòsus: *Parodia nivosa.*

nóbilis: *Ferocactus nobilis.*

obrepándus: *Echinopsis obrepanda.*

occúltus: *Neoporteria occulta.*

Órcuttii: *Ferocactus Orcuttii.*

ornàtus: *Astrophytum ornatum.*

Ottònis: *Notocactus Ottonis.*

Ourseliànus: *Gymnocalycium multiflorum.*

Pálmeri. To 6 ft. high and 8 in. thick; ribs 12–26; radial spines 5–8; central spines 4 and to 3 in. long, yellow at tips: fls. yellow, small. Mex.

pampeànus: *Notocactus pampeanus.*

penínsulæ: *Ferocactus peninsulæ.*

peruviànus: *Oroya peruviana.*

Pfeìfferi: *Ferocactus glaucescens.*

Pflánzii: *Gymnocalycium Pflanzii.*

phyllacánthus: *Stenocactus phyllacanthus.*

phymatothèle: *Thelocactus phymatothele.*

pilòsus: *Ferocactus Stainesii.*

platénsis: *Gymnocalycium platense.*

polyancístrus: *Sclerocactus polyancistrus.*

polycéphalus. Rather small, at length forming clumps, body globular or short-cylindric and sometimes 2 ft. tall; ribs 13–21; spines many and covering the plant, radials 7–15, centrals 4: fls. yellow, 2 in. or more long. Utah, Nev., Ariz., Calif., Mex.

porréctus: *Thelocactus porrectus.*

Poselgeriànus: *Coryphantha Poselgeriana.*

Póttsii: *Thelocactus Pottsii.*

Prínglei: *Ferocactus Pringlei.*

pulchéllus: *Echinocereus pulchellus.*

pulchérrimus: *Frailea pulcherrima.*

pùmilus: *Frailea pumila.*

pygmæus: *Frailea pygmæa.*

Quehliànus: *Gymnocalycium Quehlianum.*

rafaelénsis: *Ferocactus rafaelensis.*

rectispìnus: *Ferocactus rectispinus.*

recúrvus: *Ferocactus nobilis.*

rhodanthèrus: *Gymnocalycium mazanense.*

rinconénsis: *Thelocactus rinconensis.*

Rítteri: *Aztekium Ritteri.*

robústus: *Ferocactus robustus.*

Roseànus: *Thelocactus Roseanus.*

Sagliònis: *Gymnocalycium Saglione.*

salmòneus: trade name, perhaps *E. Salmianus* which is *Melocactus macrocanthus.*

saltillénsis: *Coryphantha Poselgeriana.*

Sandíllon: *Eriosyce ceratistes.*

sanguiniflòrus. To 3 in. high and thick, simple or branched; ribs 10–12, areoles to 2 in. long and white-woolly; spines all radial, 7–9, ½ in. long, whitish or pale brown: fls. red, 2 in. long. Argentina.

Sauèri: *Thelocactus Saueri.*

Saussièri: *Thelocactus Saussieri.*

Scheèri: *Ancistrocactus Scheeri.*

Schickendántzii: *Gymnocalycium Schickendantzii.*

Schilinzkyànus: *Frailea Schilinzkyana.*

Schumanniànus: *Notocactus Schumannianus.*

Schwebsiànus: *Parodia Schwebsiana.*

scòpa: *Notocactus scopa.*

Séllowii: *Malacocarpus Sellowii.*

senìlis: *Neoporteria Nidus.*

setispìnus: *Hamatocactus setispinus.*

Símpsonii: *Pediocactus Simpsonii.*

Smíthii. Globose or cylindrical, 3 in. across; ribs 21 and strongly tubercled; radial spines 20–27 and ½ in. long; central spines 4, white with darker tips: fls. reddish, 1½ in. long. Mex.

Soehrénsii: *Pyrrhocactus tuberisulcatus.*

sphærocéphalus: *Stenocactus arrigens.*

spiniflòrus: *Acanthocalycium spiniflorum.*

Stàinesii: *Ferocactus Stainesii.*

Steìnmannii: *Lobivia Steinmannii.*

stellàtus: see *Gymnocalycium stellatum.*

Strausiànus: *Pyrrhocactus Strausianus.*

Stúckertii: *Gymnocalycium Stuckertii.*

Stùemeri: *Parodia Stuemeri.*

submammulòsus: *Notocactus submammulosus.*

Sutteriànus: *Gymnocalycium Sutterianum.*

tabulàris: *Notocactus tabularis.*

tephracánthus: *Malacocarpus Sellowii.*

tetráxiphus: *Stenocactus heteracanthus.*

texénsis: *Homalocephala texensis.*

Townsendiànus: see *Ferocactus Townsendianus.*

Trolliètii: *Echinomastus unguispinus.*

tuberisulcàtus: *Pyrrhocactus tuberisulcatus.*

tulénsis: *Thelocactus tulensis.*

turbinifórmis: *Strombocactus disciformis.*

umadeàve: *Pyrrhocactus umadeave.*

uncinàtus: *Hamatocactus uncinatus.*

unguispìnus: *Echinomastus unguispinus.*

Urseliànus. Described as depressed-globose, ribs 7–9, broadly rounded, dark green, spines 7–9: fls. white. Hort. origin.

Valdeziànus: *Thelocactus Valdezianus.*

Vaupeliànus: *Stenocactus Vaupelianus.*

Velenòwskyi: see *Gymnocalycium Velenowskyi.*

violaciflòrus: *Stenocactus violaciflorus.*

viridéscens: *Ferocactus viridescens.*

viridiflòrus: *Echinocereus viridiflorus.*

Visnàga. Large, to 10 ft. high and 3 ft. or more diam., glaucous-green, tawny-woolly on top; ribs 15–40; spines 4 and all radial: fls. yellow, about 3 in. long. Mex.

Vorwerckiànus: *Malacocarpus Vorwerckianus.*

Wagneriànus: *Thelocactus Wagnerianus.*

Whípplei: *Sclerocactus Whipplei.*

Wílliamsii: *Lophophora Williamsii.*

Wíslizenii: *Ferocactus Wislizenii.*

xeranthemoìdes (*E. polycephalus* var.). Similar to *E. polycephalus* from which it differs primarily in its more numerous spines, with the lower central of each areole being broad, flattened and not curved. Tex. to Calif. and Mex.

xiphacánthus: *Stenocactus arrigens.*

zacatecasénsis: see *Stenocactus zacatecasensis.*

ECHINOCÈREUS. *Cactaceæ.* Sts. solitary or cespitose and forming large clumps, erect or prostrate, always low, sometimes pendent, globular to cylindric, mostly spiny or bristly, ovary and fr. spiny: fls. diurnal but not always closing at night, bell-shaped to funnelform, scarlet, purple, yellow. About 60 species in W. U. S. and Mex. See *Cacti.*

The echinocerei are more or less grown in collections but are not generally useful for greenhouse conditions although the bloom is showy. The plants are likely not to last many years, and they may be renewed from the wild or from the stock of regular dealers.

ácifer (*Cereus acifer*). Sts. clustered, 6–8 in. high and to 2 in. diam., glossy-green; ribs prevailingly 10; radial spines 5–10; centrals mostly 4: fls. scarlet, 2 in. and more long. Mex.

adústus (*E. pectinatus* var. *adustus*). Simple, to 2 in. high; ribs 13–15; radial spines 16–20; central spine 1 or none: fls. purplish, 1½ in. long. Mex.

aggregàtus: *E. coccineus.*

amœ̀nus (*Echinopsis amæna*). Sts. obconical, to 3 in. diam.; ribs 10–14, prominent, bright green, areoles usually 7-spined, latter to ½ in. long: fls. bright pink. Mex.

angústiceps. Cespitose, sts. to 3¼ in. long and 1¼ in. diam., many; ribs 7–8, prominent; spines acicular, radials 7–9, white to yellow, central 1, brown: fls. yellow with orange-red center, 1⅜ in. long: fr. green. Tex.

arizónicus. Tufted, sts. from common root, unequal; ribs 10, deeply tuberculate, areoles white-woolly; radial spines 10, white, unequal; centrals 1–4, purplish, to 1 in. long: fls. crimson. Ariz.

armàtus: listed name.

Bàileyi. Cylindric, about 4 in. high; ribs 15; radials about 16 and first white then brownish or yellowish, no centrals: fls. about 2½ in. broad, light purple inside and segms. erose or toothed. Okla.

Barthelowànus. Sts. clustered, cylindric, to 8 in. long and 2 in. diam.; ribs about 10; spines numerous and to 3 in. long: fls. ½ in. or less long. Lower Calif.

Berlandièri: *E. Blanckii.*

Blánckii (*Cereus Blanckii. E.* and *Cereus Berlandieri*). Prostrate and branching from the base making a colony of erect or ascending sts. to 6 in. long and 1 in. diam.; ribs 5–7; radial spines 6–8; central 1: fls. purple, to 3 in. and more long. S. Tex., Mex.

Bónkeræ. A recent species similar to *E. Engelmannii* but with more ribs, shorter spines and deep purple fls.

Brándegeei. Sts. clustered, to 3 ft. or more long and 2 in. diam.; ribs strongly tubercled; radial spines 12; central spines commonly 4 and to 3 in. long: fls. purplish, 2 in. long. Lower Calif.

Brístolii. Sts. cylindrical, to 8 in. tall or more and 2 in. diam., light green; ribs 15–16, tubercled; spines curved; radials about 20, white; centrals 3, white with red tips: fls. violet-pink: fr. red, spiny. Mex.

cæspitòsus: *E. Reichenbachii.*

castàneus: referable to *E. Reichenbachii.*

chloránthus (*Cereus chloranthus*). Usually simple, sts. cylindric to 6 in. long and 2–3 in. diam., very spiny; ribs about 13; radials several; centrals 3 or 4: fls. yellowish-green, ¾ in. long. W. Tex., New Mex. and Mex.

cineráscens (*Cereus cinerascens*). Making patches 2–4 ft. across, sts. ascending 1 ft.; ribs about 12; spines pale or white; radials about 10; centrals 3 or 4: fls. about 3 in. long, purple inside, tube with white wool. Mex.

coccíneus (*E. aggregatus. E. phæniceus. Cereus coccineus. C. phæniceus. C. Roemeri. C. aggregatus*). Mostly densely cespitose, forming mounds, sts. 6–8 in. high, 1–2 in. diam.; ribs 8–11; radials 8–12 and needle-like and commonly white; centrals several and straight and terete: fls. 2 in. or more long, crimson. Colo., Utah, New Mex., Ariz.

conglomeràtus (*Cereus conglomeratus*). In large clumps, sts. 4–8 in. long and often partly in the ground; ribs 11–13; radials needle-like; centrals several: fls. 2 in. or more long, purplish. Mex.

conoídeus (*Cereus conoideus*). Cespitose; like *E. coccineus* but central spines somewhat curved and more or less angled. W. Tex., Mex.

ctenoìdes (*Cereus ctenoides*). Sts. cylindric, to 16 in. long and 3–4 in. diam.; ribs 15–17; radial spines to 20 and not spreading; centrals 8–10: fls. 3–4 in. long, wide-expanding, bright or reddish-yellow. S. Tex., Mex.

dasyacánthus (*Cereus dasyacanthus*). Sts. cylindric, 4–12 in. high, very spiny; ribs 15–20; radials 16–24 and pinkish at first; centrals 3–8: fls. to 4 in. long, yellow. W. Tex., New Mex., Mex.

Delaètii. Clustered, to 8 in. high, covered by long white curling hairs; ribs indistinct, areoles with many long white hairs and few bristles: fls. pink. Mex.

dùbius (*Cereus dubius*). Somewhat cespitose, sts. to 8 in. long, soft, pale green, white-spined; ribs 7–9; radials 5–8; centrals 1–4: fls. 2½ in. or more long, pale purple. S. W. Tex.

Éhrenbergii. Sts. erect or nearly prostrate, to 6 in. long and 1 in. diam.; ribs 6, notched, straight; spines stiff, straight; radials 8–10, slender, to ⅝ in. long, white to yellowish; central 1, to 1 in. long: fls. purple- to violet-red, about 3 in. long, inner segms. dentate. Mex.

Émoryi: *Bergerocactus Emoryi.*

Éngelmannii (*Cereus Engelmannii*). In large clumps, sts. cylindric, 4–12 in. long and 2 in. or more diam.; ribs 11–14; radial spines about 10; centrals 5 or 6: fls. 2–3 in. long, widely expanding, purple. Utah, Nev., S. Calif., Ariz., Mex.

enneacánthus (*Cereus enneacanthus*). Cespitose, sts. ascending and 3–5 in. long and 2 in. diam. more or less; ribs 7 or 8; radials mostly 8; central 1: fls. to 2½ in. long, purple. S. Tex., New Mex., Mex.

Féndleri (*Cereus Fendleri*). Cespitose but with few sts. which are ascending or erect and 4–12 in. long and 2–3 in. diam.; ribs 9–12; radials 5–10; central 1: fls. to 4 in. broad in expansion, deep purple. Utah, Ariz., Tex., Mex.

Fereìrræ. Catalogue name of no known botanical standing: Mexican plant said to resemble *E. Fendleri*, differing in its larger brown central spines and clear pink larger fls. having clusters of white spines on the outer involucral bracts.

Fítchii. Plant-body cylindric or narrowed to top, to 4 in. high and half as thick; ribs 10–12; radials about 20: fls. pink, to nearly 3 in. long, widely spreading. Tex.

flavispìnus: listed name.

Géntryi. Cespitose, sts. 2–4, procumbent to ascending, to 6 in. high and 1 in. diam.; ribs 5, indistinct, tubercles inconspicuous; spines acicular, to ⅒ in. long; radials 8–12, base bulbous, white to brownish; central 1, darker: fls. deep rose-pink within, funnelform, to 3 in. long, style exserted, stigma green, 7–9-lobed, anthers red. Mex.

glycimórphus (*Cereus glycimorphus*). Sts. erect or nearly prostrate, to 10 in. long and 1½ in. diam.; ribs 6–7, acute, notched, straight; radial spines 8–9, white; central spine brownish, to ⅝ in. long: fls. purple-red, to 3 in. long, inner segms. dentate, narrow. Cent. Mex.

gonacánthus: see *E. triglochidiatus.*

grándis. Sts. subcylindric, to 18 in. tall and 6 in. diam.; ribs 21–25, shallow; spines short, stiff, dull white; radials 15–25; centrals 8–12: fls. white, striped green, to 2½ in. long. Mex.

Knippeliànus. About 4–8 in. high, thick, branching, deep green; ribs 5–7; spines 1–3 and weak: fls. about 1 in. long, pinkish. Mex.

Lédingii. Tufted, subcylindrical, to 20 in. long; ribs usually 13–16, yellowish-green; spines yellow; radials 10–12, straight; central usually 1, rarely 3, about 1 in. long, curved downwards: fls. rose-purple, to 1¾ in. long. Ariz.

leonénsis. Sts. erect, to 10 in. tall and 2 in. diam.; ribs 6–7, acute, straight; spines white; radials 7–9, to ⅝ in. long; central 1, to 1¼ in. long: fls. purplish-red with purple stripe down each inner segm. Mex.

leptacánthus: *E. pentalophus.*

Llóydii. Sts. clustered, to 10 in. high and 4 in. diam., bright green; ribs 11; radial spines 14 and ⅓ in. long; central spines 4–6, red: fls. reddish-purple, 3 in. long. Tex.

longisètus (*Cereus longisetus*). Sts. erect, to 10 in. tall and 3 in. diam.; ribs 11–14, notched; spines slender, white; radials 18–20, to ½ in. long; centrals 5–7, unequal, to 2¼ in. long: fls. red. Mex.

longispìnus: perhaps *Trichocereus strigosus* var.

lùteus. Sts. cylindrical, to 10 in. tall, occasionally branching near base; ribs 8–9, remotely undulate, often somewhat purplish, thin; spines small; radials 6–8, to ¼ in. long; central 1: fls. pale yellow, to 3 in. long, fragrant. Mex.

mamillàtus (*Cereus mamillatus*). Cespitose, sts. 8–12 in. long, cylindric, 1½ in. or more diam.; ribs 20–25; radials 10–25; central spines 3 or 4: fls. not described. Lower Calif.

marítimus. Forming dense clumps, sts. to 6 in. long; ribs 8–10; radial spines 10; central spines 4 and 1 in. long: fls. pale yellow, 1½ in. long. Lower Calif.

melanocéntrus: listed name.

Mérkeri. Cespitose, parts erect, to 6 in. diam., light green; ribs 8 or 9; radial spines 6–9 and white; centrals 1 or 2: fls. 2 in. or more long, purple. Mex.

mojavénsis (*Cereus mojavensis*). Forming great clumps, sts. globose to oblong to 8 in., pale green; ribs 8–13; radials about 10; central spine 1: fls. to nearly 3 in. long, crimson. Utah, Nev., Calif., Mex.

Múnzii (*Cereus Munzii*). Sts. cylindrical, erect, usually in compact clumps; ribs shallow; spines dull white; radials 10–12, to 1 in. long; centrals 2–4, unequal, to 2 in. long: fls. cerise-pink. Calif.

octacánthus (*Cereus octacanthus*, and *C. Roemeri* of some lists). Cespitose, joints or sts. ovoid to 4 in. long and nearly 3 in. diam.; ribs 7–9; radials 7 or 8; central 1: fls. 2 in. long, red. Tex., perhaps westward.

pacíficus. Tufted, forming clumps to 2 ft. across, sts. to 10 in. tall and 1¼ in. diam.; ribs 10–12, rounded; spines gray, often tinged reddish; radials 10–12, to ½ in. long or less; centrals 4–5, unequal, to 1 in. long: fls. deep red, to 1¼ in. long. N. Lower Calif.

papillòsus (*E. texensis* of some lists). Somewhat cespitose, dark green, sts. to 12 in. long and to 1½ in. diam.; ribs 6–10; radials about 7 and needle-like; central 1: fls. 4 in. or more broad, yellow. W. Tex. Var. **gigantèus** is listed.

paucispìnus: *E. triglochidiatus.*

pectinàtus (*Cereus pectinatus*). Simple, cylindric, 4–6 in. long, 1–2 in. diam., with many interlocking spines; ribs 20–22; radials about 30; centrals several: fls. 2–3 in. long, purplish. Mex. Var. **adústus:** *E. adustus.* Var. **cæspitòsus:**

E. Reichenbachii. Var. **Paileànus** is listed. Var. **rigidíssimus:** *E. rigidissimus.* Var. **tamaulipénsis** has more numerous white spines and larger pink fls.

pénsilis (*Cereus pensilis*). Sts. prostrate to pendent, to 18 in. long and 1½ in. diam.; ribs 8–10, notched; spines to ¾ in. long, bulbous at base, yellow to reddish-brown; radials 8; central 1: fls. bright red, to 2½ in. long. Mex.

pentálophus (*E. leptacanthus. Cereus pentalophus. C. procumbens*). Procumbent, branches ascending to 5 in. and deep green; ribs 4–6; radials 4 or 5 and very short; central 1 or absent: fls. 3–5 in. long, reddish-violet. S. Tex., Mex.

perbéllus. Simple or clustered, to 4 in.; ribs 15; spines all radial, 12–15, ¼ in. long: fls. purple, 2½ in. long. Tex.

phœníceus: *E. coccineus.*

polyacánthus (*Cereus polyacanthus*). Cespitose, pale green sometimes tinged red; ribs mostly 10; radial spines about 12; centrals 4: fls. 2 in. or more long, crimson. New Mex., Ariz., Mex.

Posélgeri: *Wilcoxia Poselgeri.*

procúmbens: *E. pentalophus.*

pulchéllus (*Echinocactus pulchellus*). Obconical, to 2 in. diam., blue-green to gray-green; ribs 11–13, notched; spines yellow to gray, usually only 3–4, to ½ in. long: fls. pink, to 1¾ in. long, inner segms. acute, dentate. Mex.

purpùreus. Cylindrical, to 5 in. tall and 1¼ in. diam.; spines slender, unequal, 14–18, white with purple tips, all radial: fls. deep magenta-purple. Okla.

Reìchenbachii (*Cereus Reichenbachianus. C.* and *E. cæspitosus. C. texensis*). Somewhat cespitose, sts. globose or short-cylindric, to 8 in. long and 3 in. diam.; ribs 12–19; radials 20–30; centrals 1 or 2: fls. 2–3 in. long, light purple, fragrant. Tex., Mex., perhaps Kans.

rigidíssimus. RAINBOW CACTUS. Simple, erect and rigid, short-cylindric, 4–8 in. high and 4 in. diam., covered with interlocking spines; ribs 18–22; radials about 16, no centrals: fls. 2–3 in. long, purple. Ariz., Mex.

Roètteri (*Cereus Roetteri*). Cylindrical, to 6 in. tall and 2½ in. diam., erect; ribs 11–13, notched, straight; spines acicular; radials 15–17, purplish to white, to ½ in. long; centrals 2–5, bulbous, to ⅝ in. long or more: fls. violet-purple, to 2½ in. long. Tex. to New Mex. and Mex.

Ròsei. Forming clumps, sts. to 8 in. long and 3 in. diam.; ribs 8–11; radial spines 10; central spines 4 and 2 in. long: fls. scarlet, to 2½ in. long. New Mex., W. Tex., N. Mex.

Sálm-Dyckiànus. Sts. ascending, to 8 in. long and 1 in. diam; ribs 7–9, straight to spiral; spines yellowish to red; radials 8–9, to ⅜ in. long; central 1, to ⅝ in. long: fls. orange, to 4 in. long. Mex.

sarissóphorus. Tufted, sts. depressed-globose, to 4 in. diam.; ribs 9; spines slender; radials 7–10, to 3¼ in. long; centrals 3–5, somewhat angled: fls. purplish, to 3½ in. long: fr. globular, spiny. Mex.

Scheèrii. Cylindrical, to 10 in. tall and 1½ in. diam., erect or ascending; ribs usually 7–9 formed from tubercles, dark glossy green; spines to ½ in. long, from yellowish areoles; radials 7–9, straight, whitish; centrals 3, brown with red tips: fls. pink, to 5 in. long. Mex.—Plants so listed in the trade frequently belong elsewhere.

sciùrus (*Cereus sciurus*). Clump-forming, tufts to 2 ft. across, sts. to 8 in. tall; ribs 12–17, shallow, notched; spines slender; radials 15–18, to ½ in. long, brown-tipped; centrals usually 3–5, to about ¼ in. long: fls. bright magenta-red, to 3 in. long. S. Lower Calif.

scopulòrum. Sts. solitary, to 18 in. tall; ribs 13–17, notched, shallow; spines pink with black tips when young becoming gray; centrals 3–6: fls. rose to rose-purple, paler without, to 3½ in. across, fragrant. Mex.

stoloníferus (*E. subterraneus* of hort.). Colony-forming by stolons, making clumps to 1½ ft. across; ribs 14–16, about ¼ in. deep and twice as wide, remotely tubercled; spines black or red becoming white; radials 10–12, spreading; centrals 3–5 of which one is more conspicuous than others: fls. yellow: fr. red. Mex.

stramíneus (*Cereus stramineus*). Forming mounds 1–3½ ft. high, joints to 10 in. long and 1–3 in. diam.; ribs about 13; radials 7–14; centrals 3 or 4: fls. 3-nearly 5 in. long, purple. W. Tex., New Mex., Mex.

subterràneus: *E. stoloniferus.*

texénsis: *E. Reichenbachii, E. papillosus.*

triglochidiàtus (*Cereus triglochidiatus. C. gonacanthus. C.* and *E. paucispinus*). Cespitose, sts. to 2 ft. long and 3 in. diam.; ribs 5–8; spines 3–8 and often all radial: fls. 2 in. long more or less, scarlet. W. Tex., New Mex., Colo.

tuberòsus: *Wilcoxia Poselgeri.*

viridiflòrus (*Cereus* and *Echinocactus viridiflorus*). Small, nearly globular or cylindric, to 8 in. high; ribs 14; radials about 16; centrals 2 or 3 or wanting: fls. about 1 in. long, greenish. S. D. and Wyo. to Tex. Var. **centrispìnus** is listed.

ECHINÓCHLOA. *Gramineæ.* Tall coarse ann. or per. grasses with broad lvs. and spikelets in spike-like racemes borne in large terminal panicles; native in warm regions and grown for forage and grain. See *Grasses.*

Crús-gálli (*Panicum Crus-galli. P. Crus-corvi*). BARNYARD-GRASS. Ann. to 4 ft.: lvs. to 2 ft. long and 1 in. wide: panicles to 8 in. long, awned. Eu., but widely distributed elsewhere. Var. **frumentàcea** (var. *edulis, E. frumentacea, Panicum frumentaceum*), JAPANESE BARNYARD MILLET, BILLION-DOLLAR-GRASS, has denser appressed panicles and stiffer purplish awnless spikelets.

frumentàcea: *E. Crus-galli* var.

ECHINOCÝSTIS (incl. *Marah*). *Cucurbitaceæ.* Ann. and per. tendril-climbing monœcious vines of N. and S. Amer., with lobed or angled lvs. and small white or greenish fls., the staminate racemose or paniculate and the pistillate solitary. One ann. species, grown from seeds, is frequently planted for covering arbors and fences.

lobàta (*Micrampelis lobata*). WILD- or MOCK-CUCUMBER. Essentially glabrous ann., slender, to 20 ft. or more: lvs. sharply 3- to 5-lobed: staminate fls. in long prominent profuse clusters: fr. a papery puffy spiny pod to 2 in. long. N. B. to Ida. and Tex.

macrocárpa. CHILICOTHE. Monœcious per. from very large thick root, st. to 20 ft.: lvs. more or less circular in outline, several-lobed, to 8 in. across: fls. rotate, clear white: fr. oblong, spiny, to 4 in. long. S. Calif., and sometimes planted there.

Márah: *E. oregana.*

oregàna (*E. Marah*). MAN-ROOT. Differs from *E. macrocarpa* in having bell-shaped rather than rotate fls.: fr. ovate, 3½ in. or less long, tapering to ends. Coast ranges and hills, Cent. Calif. to Ore.

ECHINOFOSSULOCACTUS: *Stenocactus.*

ECHINOMÁSTUS. *Cactaceæ.* A half dozen globular or short-cylindric ribbed cacti allied to Echinocactus and with the appearance of Coryphantha; axils of scales on ovary and fr. naked, all or most of the spines needle-like; fls. purple, rose or reddish. See *Cacti.*

dasyacánthus. Cylindric, to 6 in. tall; ribs of compressed tubercles, spiralled, areoles oblong; spines somewhat purplish, radials 19–25, to ¾ in. long, centrals usually 4, alike; top of st. woolly: fls. purplish to nearly white. S. W. Tex. and N. Mex.

durangénsis. Simple, ovoid, about 3 in. long and broad; areoles circular, ribs 18–21; radials 15–30 and white tipped black; centrals 3–4 and ¾ in. long, acicular. Mex.

erectocéntrus. Ovoid to short-cylindric, to 6 in. tall; ribs 21, comprising closely set tubercles, areoles oblong-elongate; radial spines 14, reddish, straight; centrals 1 or 2, erect, base bulbous: fls. pale pink, to 2 in. long. S. E. Ariz.

intertéxtus (*Echinocactus intertextus*). Simple, nearly or quite globular, to 4 in. diam.; ribs 13, areoles elongate; radial spines 16–25 and appressed and upper ones nearly or quite white; centrals 4, one of which is very short and conical: fls. about 1 in. long, purple, the outer segms. white-margined. S. W. Tex., Ariz., Mex.

Jóhnsonii (*Ferocactus* and *Echinocactus Johnsonii*). Oblong, to 8 in. high, very spiny; ribs 17–21; radials 10–14; centrals 4–8 and longer and stouter: fls. 2–2½ in. long, deep red to pink. Utah, Nev., Ariz., Calif.

Kraùsei (*Echinocactus Krausei*). St. cylindric to subconical, to 10 in. tall and 5 in. diam.; ribs 21–23, somewhat spiral, notched; spines straight, radials 14–20, to 1¼ in. long, centrals 2–4, to 1½ in. long: fls. pink with white center, to 1½ in. long. Ariz.

Macdòwellii (*Echinocactus Macdowellii*). Simple, globular or somewhat depressed, nearly 3 in. high, more in diam.; ribs 20–25, areoles circular; radials 15–20 and white, acicular; centrals 3 or 4 and dark: fls. to 1½ in. long, rose-purple. N. Mex.

uncinàtus: *Hamatocactus uncinatus.*

unguispìnus (*Echinocactus unguispinus* and *Trollietii*). Globular to short-cylindric, to 5 in. tall, blue-green; ribs 21, shallow, areoles circular; spines almost hiding body, radials 21–25, mostly white, to ¾ in. long, centrals 4–8, stout, subulate: fls. reddish, to 1 in. long. Mex.

ECHINOPANAX: *Oplopanax.*

ECHÌNOPS. Globe Thistle. *Compositæ.* Stout erect thistle-like per. and bien. herbs with coarse pinnatifid spinescent lvs. tomentose or white-woolly underneath: florets each with its own involucel, all aggregated into a spherical dense head that bears a small reflexed common involucre at its base; achenes hairy; pappus either an entire cup, or a dentate or fimbriate crown comprised of more or less united parts; the bracts of the involucel and the pappus afford distinguishing marks for the identification of the species, which are confused in cult. The species of Echinops are many, distributed from Portugal and Spain to India and Cent. Asia, and also in Afr.

The globe thistles are bold plants good for striking effects in the border or in colonized clumps. The prominent stiff involucel scales are metallic-blue in the cultivated kinds, giving the head a pleasing color effect; the little corollas themselves may be blue or white. The plants are of simple culture, in open places. Propagation is by seed, which gives blooming plants the following summer: but perennial kinds may be increased also by dividing the clumps and by root-cuttings. They are hardy North.

bannáticus. Per. to 3 ft. and more, the st. lightly canescent: lvs. rather thin, green above and canescent underneath, lower ones petioled and lyrate or somewhat divided into large oblong segms., the margins ciliate-spinulose, upper lvs. small and clasping: involucel bracts 18–20, glabrous; pappus scales united at base. S. E. Eu., Asia Minor.

commutàtus of lists: perhaps *E. exaltatus.*

dahùricus Per., st. hairy-pubescent at base and cobwebby above: lvs. smooth above, white-tomentose underneath, pinnatifid into either narrow-lanceolate or broad-lanceolate segms., margin with small spines: involucel bracts slender-acuminate and ciliate; pappus a fimbriate crown. Siberia, Mongolia.—Imperfectly known as a cult. plant.

exaltàtus. Bien. to 3 or 4 ft., st. simple or nearly so, glandular-hairy and cobwebby: lvs. somewhat rough above, grayish-woolly underneath, unevenly pinnatifid and small-spined: head large, blue; involucel bracts long-acuminate, short-ciliate; pappus a rim or entire cup. E. Eu., probably Russia.

gigantèus. To 16 ft., cottony above: lvs. rough-hairy above, white-tomentose beneath, pinnatisect into lanceolate deeply spiny-toothed lobes: heads to 3½ in. across; involucel bracts about 15; pappus scales united at base. Nile Land.

Gmélinii: probably *E. dahuricus.*

hùmilis. Per., 3–4 ft., st. simple and 1-headed: lvs. villous-cobwebby above, white-tomentose underneath, lower ones short-petioled, sinuate-lyrate and obtuse, nearly spineless, st.-lvs. oblong-linear and spiny-toothed: involucel bracts long-ciliate; pappus a fimbriate crown. Siberia. Var. **cyàneus** is listed.

níveus of lists: probably *E. sphærocephalus.*

pùmilus: listed name.

Rìtro. Small G. Per., 1–2 ft., st. glandless, terete, branched above, white-tomentose: lvs. nearly glabrous or somewhat webby above, white-tomentose underneath, much pinnatisect into narrow or linear and very spiny short lobes: involucel bracts about 20, the outer ones short and broad-triangular and dentate, the others lanceolate and ciliate; pappus scales united to about the middle. Spain to Asia Minor and Siberia.—Apparently little cult. although the name is common in the lists: see *E. sphærocephalus.*

ruthénicus: confused name; probably a form of *E. Ritro* is meant.

sphærocéphalus. Great G. Per. to 5 and 8 ft., branched, st. grooved, glabrous or somewhat canescent or cobwebby on branches and more or less finely glandular or viscid: lvs. green and roughish above and with scattered viscid hairs, canescent underneath, pinnatifid into triangular-oblong spinulose segms.: heads large, to 2 in. across; involucel bracts about 16, somewhat viscid, ciliate-pectinate; pappus united above the middle. Cent. and S. Eu., N. Afr. to Siberia.—Common in cult. and sometimes sparingly escaped; apparently sometimes passes for *E. Ritro.*

syrìacus: *E. viscosus.*

viscòsus (*E. syriacus*). Per., st. tall, branched, mostly canescent and with reddish glandular hairs: lvs. greenish or canescent above and with glandular hairs, canescent underneath, lobed or pinnate into spinose lanceolate revolute segms.: heads large; involucel bracts 20–22, glabrous or glandular; pappus united ⅓ or less its length. Medit. Isls. to Asia Minor.

ECHINÓPSIS. Sea Urchin Cacti. *Cactaceæ.* Low condensed plants with ribs continuous or undulate, bearing the areoles which are felted or spiny: fls. from old areoles just above the clusters of spines, narrowly funnelform with long tube, mostly white, the ovary and fr. not spiny. S. American cacti, east of the Andes, perhaps 30 known species although many more names have been applied in the genus; many of the species have also been named in Cereus. See *Cacti.*

The kinds of echinopsis are often showy because of the long flowers, and although not much grown they are capable of making good window-garden and conservatory subjects.

albiflòra. Globose, to 4 in. diam., bluish-green; ribs 10–11; spines 11–16, about ½ in. long and whitish tipped brown: fls. white, greenish outside, 6 in. across and 8 in. long. Paraguay.

albispinòsa (*E. tucumanensis*). Globose, becoming columnar, to 4 in. diam., olive-green; ribs 10–12, obtuse, straight; spines subulate, straight, radials about 12, white, sometimes yellow tipped, centrals 1–4, to 1½ in. long: fls. white, to 7 in. long, tube longer than limb. Bolivia, Paraguay.

amœ̀na: *Echinocereus amœnus.*

ancistróphora. Simple, nearly globose, 3 in. diam.; ribs 15–16; radial spines 3–7 and recurved; central 1 and to ¾ in. long, hooked: fls. white, green outside, to 6 in. long. Argentina.

aùrea: *Lobivia aurea.*

Báckebergii: *Lobivia Backebergii.*

Bérlingii: listed name.

boliviénsis: see *Lobivia boliviensis.*

Brídgesii (*E. Salmiana*). Cylindrical, to 12 in. tall and 3½ in. diam.; ribs 11–14, obtuse, straight, notched; radial spines 8–12, usually 10, to ½ in. long, straight; centrals 4, to ¾ in. long: fls. white, tube of perianth shorter than limb. Bolivia.

cæspitòsa: *Lobivia cæspitosa.*

calochlòra. Globular to oval, to 3½ in. diam. and 4 in. tall; ribs 12, acute; spines straight, subulate, yellow to brown, radials 14–22, to ½ in. long, centrals 3–4, stouter: fls. white, to 6½ in. long, inner segms. acute. Brazil.

campylacántha: *E. leucantha.*

chionántha: *Lobivia chionantha.*

cinnabarìna: *Lobivia cinnabarina.*

colmariénsis: possibly *Lobivia Pentlandii* or a form of it.

cordobénsis. Simple, to 1½ ft. high and 1 ft. diam., slightly glaucous; ribs 13; radial spines 8–10; centrals 1–3 and to 2 in. long: fls. white, to 8 in. long. Argentina.

Droegeàna. Hybrid between *E. tubiflora* and *E. oxygona*, having pink outer and white inner petals.

Duvàlii. Probably a variety of *E. Eyriesii* or a hort. hybrid of which the latter is the mother parent and differs from that species in its inner perianth-segms. obtuse, not acute.

Eyrièsii. Simple or clustered, globular to columnar; ribs 11–18, areoles nearly spineless; spines 14–18, straight, very short: fls. from side of plant toward top, white. S. Brazil to Argentina. Var. **grandiflòra** (*E. grandiflora*) has more acute ribs and dark pink fls. Var. **Shelhàsei** (*E. Shelhasei*), ribs more acute, and areoles with yellowish-brown wool. Var. **cristàta** is offered in the trade.

famatiménsis: *Lobivia famatimensis.*

fèrox: *Lobivia ferox.*

Fièbrigii. Globular, to 7½ in. diam., usually spineless at top; ribs 18–24, obtuse, nearly ⅝ in. deep, strongly crenate; spines stout, curved, at least the 8–10 radials, to 1 in. long or more, central 1: fls. white, to nearly 8 in. long, the tube much longer than the limb. Bolivia.

Físcheri: listed name.

Fórbesii (*E. valida*). Simple, to 3 ft. high and 8 in. diam., glaucous; ribs 10–15; spines straight, subulate, radials 8–15 and nearly white, centrals 1 or more and to 1½ in. long: fls. white, 4 in. long. Paraguay. Var. **gigantèa** (*E. gigantea*) has 8–11 ribs, radial spines 5–10, yellow-brown to tan colored, curved upward.

formòsa (*Acanthocalycium formosum*). Simple, oblong, to 20 in. high; ribs 15–35, straight; radial spines 8–16 and yellowish, to 1¾ in. long; centrals 2–4 and brown, to 2¾ in. long: fls. golden-yellow, 3 in. across and as long. Argentina.

formosíssima. St. to 6 ft. tall and 1 ft. diam.; spines curved upwards, radials about 14, yellow, centrals 4, to 1½ in. long: fls. not known. Bolivia.—Probably only rarely cult.; some plants under this name are said to be *Trichocereus pasacana.*

gemmàta: *E. turbinata.*

gigantèa: *E. Forbesii* var.

grandiflòra: *E. Eyriesii* var.

grándis: *Lobivia grandis.*

Graùlichii: see *E. Kratochviliana.*

Haàgeana: *Astrophytum ornatum;* see also *Lobivia Haageana.*

hæmatántha: see *Lobivia hæmatantha.*

Hertrichiàna: *Lobivia Hertrichiana.*

Higginsiàna: *Lobivia Higginsiana.*

Hóssei: *Lobivia Hossei.*

Huòttii. Simple, short-columnar, to 1 ft. high; ribs 9–11; radial spines 9–11; central spines usually 4 and to 1½ in. long: fls. white, to 8 in. long. Bolivia.

imperiàlis. Listed name of form said to be club-shaped, to 15 in. tall or more and 4 in. diam; ribs 11, straight, obtuse, to ½ in. deep; spines straight, subulate, to 3/16 in. long, radials 8–9, centrals 2–3: fls. white, to 7½ in. long and as wide. Origin not known, possibly a garden hybrid.

korethroìdes: *Eriosyce korethroides.*

Kratochviliàna (*Lobivia Graulichii*). Globose, top flattened, not spiny; ribs usually 17, acute, straight; spines curved, stout, radials 8–12, to ¼ in. long, whitish, centrals 1–2, usually hooked, to ⅝ in. long: fls. cream-white, to 2 in. long, tube shorter than limb. N. Argentina.

Kubeàna: see *Mila Kubeana.*

leucántha (*E. campylacantha. E. salpigophora*). Globose or oblong, 1 ft. high; ribs 12–14; radial spines 8 and curved; central 1 and to 4 in. long: fls. purplish to nearly white, brownish outside, 6 in. or more long. Argentina.

leucorhodántha. Globose to subcylindric, dark green; ribs usually 18–22, to ⅙ in. high, compressed, acute, somewhat warty; spines yellow, to ½ in. long, radials 9, becoming gray, centrals 1–2, tipped brownish or black: fls. white and suffused pink inside, brownish-white outside, to 5 in. long, fragrant. N. Argentina.

lobivioìdes. A plant from Argentina with the general appearance of *Lobivia cinnabarina* but with white fls.

longispìna: *Lobivia longispina.*

mamillòsa. Globose, to 2½ in. tall and 3 in. diam., dark glossy green; ribs about 17, undulate, strongly tubercled; spines more or less curved, yellowish with brown tip, radials 8–10, subulate, centrals 1–4: fls. white, tinted rose at margin, to 7½ in. long, tube longer than limb. Bolivia.

mìa: listed name.

mirábilis. Cylindric, to 6 in. tall and ¾ in. diam.; ribs about 11, somewhat undulate; spines straight, radials 9–14, central 1, to ½ in. long, erect: fls. white, to 5 in. long: fr. to 1½ in. long and ¼ in. diam. Argentina.

mistiénsis: *Lobivia mistiensis.*

Mùelleri: garden form, probably hybrid.

múltiplex. Simple or proliferous, globular to club-shaped and rounded at top, to 6 in. high; ribs 13–15; radials 5–15; centrals 2–5: fls. rose-color, 6–8 in. long, tube enlarged. S. Brazil. Vars. **cristàta** and **variegàta** are listed.

Nealeàna: *Lobivia Nealeana.*

nigérrima. Probably a hybrid between *E. oxygona* and *E. Eyriesii.*

nìgra. Globose to subcylindric, to 6 in. diam., blue-green; ribs about 20, acute, tubercles to 1½ in. long; radial spines 12-14, to 1¾ in. long, spreading, incurved, lower ones shorter than upper; central usually 1, to 3 in. long, brown to gray: fls. white within, greenish-red outside, to 4 in. long. Argentina.

nùda: listed name.

obrepánda (*Echinocactus obrepandus*). Depressed-globose, to 8 in. diam.; ribs 17-18, undulate, acutish; spines curved, brownish, radials 10, to ⅝ in. long, central 1, to 1 in. long: fls. white to purplish, 10 in. long or more, tube much longer than limb. Bolivia.

oxygòna. Subglobose, simple or clustered, to 10 in. diam., somewhat glaucous; ribs 14; spines about 14: fls. about midway of body, to nearly 1 ft. long, pale red inside. S. Brazil to Argentina. Var. **cristàta** is listed.

paraguayénsis: *E. tubiflora* var.

pelecyrhàchis. Depressed-globose, bluish-green; ribs acute, low; radial spines about 10, to ⅓ in. long; central 1: fls. white, to 4 in. long. Argentina.

Péntlandii: *Lobivia Pentlandii.*

polyancístra. Depressed-globose, to 2½ in. diam., usually smaller; ribs 17–30, about ⅛ in. high and slightly wider, obtuse, tubercled; spines numerous, to ½ in. long, slender, bristly: fls. white, to 4 in. long, fragrant. Probably Argentina.

potosìna: *Lobivia potosina.*

pseudocachénsis: *Lobivia pseudocachensis.*

rhodacántha: *Denmoza rhodacantha.*

rhodotrícha. Clustered, sts. to 2½ ft. high and 3½ in. diam.; ribs 8–13; radial spines 4–7 and slightly curved; central 1 and 1 in. long: fls. white, 6 in. long. Paraguay, Argentina. Var. **argentiniénsis** has shorter darker sts.

Ròhlandii. Said to be a hybrid between *E. tubiflora* and *E. oxygona*, characterized in part by its long spines and pink fls.

Rotheriàna: listed name.

Rùteri: confused name, possibly referable to *Echinocereus Roetteri* or *Aztekium Ritteri.*

Salmiàna: *E. Bridgesii.*

salpigóphora: *E. leucantha.*

salténsis: *Lobivia saltensis.*

Schickendántzii: *Trichocereus Schickendantzii.*

Schreìteri: *Lobivia Schreiteri.*

Schwantèsii: listed name.

Shelhàsei: *E. Eyriesii* var.

Silvéstrii. Globular, simple or clustered, to 4 in. high and 3 in. diam.; ribs 12–14; spines straight, subulate, yellow to brown but not white, radials 5–9, central 1: fls. white, 8 in. long. Argentina.

Spegazziniàna. Simple, 1 ft. high and 3½ in diam.. ribs 12–14; spines straight, radials 7–8, central 1 and ¾ in. long: fls. from middle of plant, white, 7 in. long. Argentina;

spiniflòra: *Acanthocalycium spiniflorum.*

thionántha: *Acanthocalycium thionanthum.*

triúmphans: probably *E. Eyriesii* or a hort. form of it.

tubiflòra (*E. Zuccarinii*). Simple or clustered, nearly globose, about 5 in. diam; ribs about 12; spines awl-like and black, to ½ in. long: fls. from side, 6–8 in. long, white inside. Brazil, Argentina. Var. **cristàta** is listed. Var. **paraguayénsis** (*E. paraguayensis*) is longer spined and usually produces more offsets.

tucumanénsis: *E. albispinosa.*

turbinàta (*E. gemmata*). Simple or clustered, globose; ribs 13 or 14; spines several and about ¼ in. long: fls. near top, about 6 in. long, jasmine-fragrant, white inside. Argentina.

umadeàve: probably *Pyrrhocactus umadeave.*

undulàta: hort. name for a form of *E. Eyriesii.*

válida: *E. Forbesii.*

violàcea: *Acanthocalycium violaceum.*

Wílkensii. Hybrid, probably between *E. Eyriesii* and *E. oxygona.*

Zuccarìnii: *E. tubiflora.*

ECHINOSPERMUM: *Lappula.*

ECHÌNUS (*Braunsia*). *Aizoaceæ.* Small shrubs or prostrate succulents allied to Mesembryanthemum, with lvs. united at base and solitary terminal fls.; stigmas 5. Native in S. Afr.

apiculàtus: *E. edentulus.*

echinàtus: listed name, probably *Delosperma echinatum.*

edéntulus (*E. apiculatus. M. edentulum*). To 4 in.: lvs. to ¾ in. long and ½ in, thick, united more than half way, velvety-pubescent: fls. rosy-magenta with white base, 1 in. across.

geminàtus (*E. Mathewsii. M. geminatum*). Sts. ascending, to 6 in. long: lvs. 3-angled, united to about middle, to ¾ in. long and ⅓ in. thick, glaucous: fls. rose, 1¼ in. across.

Máthewsii: *E. geminatus.*

Maximílianii (*M. Maximilianii*). Plant pubescent, sts. creeping and rooting at nodes: lvs. 3-angled, to ½ in. long and ¼ in. wide: fls. reddish.

ECHÌTES. *Apocynaceæ.* Twining shrubs with opposite simple lvs., salverform clustered fls. in purple, red, yellow, white, and fr. of 2 spreading follicles, the seeds with a tuft of hairs; native in trop. Amer. and one intro. to S. Calif.

tomentòsa. SAVANNAH FLOWER. Very hairy: lvs. oblong, to 4 in. long, lobed at base: fls. yellow with red center, 2 in. long, in long-stalked clusters. Trinidad, N. S. Amer.

ÉCHIUM. Vipers-Bugloss. *Boraginaceæ.* Bien. and per. bristly herbs, sometimes shrubs, with alternate simple lvs. and blue, purple, rose or white irregular fls. in coiled racemes that are sometimes aggregated into long showy spikes. The species are native in the Old World, but *E. vulgare* is extensively nat. in this country.

Some of the large Canarian species are much planted in California, and other kinds are grown elsewhere in warm regions and sometimes under glass; the names are yet misunderstood. All of them thrive in open sunny places. Propagated by seeds or the shrubby kinds by cuttings and layers.

Bourgæànum. Shrub to 11 ft.: lvs. linear, drooping: fls. rose, in dense pyramidal spikes. Canary Isls.

cándicans. White-hairy shrub to 6 ft.: lvs. lanceolate: fls. white or blue with white lines, in dense one-sided spikelets aggregated into a long spike. Madeira, Canaries.

créticum. Ann. to 2 ft., hairy: lvs. oblong to lanceolate: fls. brick-red, the spikelets in a loose cyme. S. Eu.

fastuòsum. Gray-hairy shrub to 6 ft.: lvs. lanceolate: fls. purple or dark blue with red stamens, the dense one-sided spikelets aggregated into a cylindrical spike. Eu., Canaries.

gigantèum. White-hairy shrub to 10 ft.: lvs. lanceolate: fls. white, the spikelets in a dense panicle, the stamens long-exserted. Teneriffe.

plantagíneum. Ann. or bien. to 3 ft., with stiff white hairs and no tomentum: lvs. oval to oblong-lanceolate, passing into broad-based bracts: fls. combined of blue and light purple, not pubescent outside but with hairs, the spikelets forming a long panicle. S. Eu. Var. **excélsum** is an improved form.

ròseum: listed name of hort. form possibly referable to *E. rubrum.*

rùbrum. Bien. to 3 ft., white-hairy: lvs. linear-lanceolate. fls. red, in narrow panicles, the stamens long-exserted. Eu., W. Asia.

símplex. Woody unbranched bien. to 10 ft.: lvs. ovate-lanceolate, large: fls. blue, in long spike-like panicles. Eu.

vulgàre. Blue-Weed. Blue-Devil. Bien. to 2½ ft., with stiff white hairs: lvs. oblong to linear-lanceolate: fls. blue or violet-purple, in narrow panicles, the stamens long-exserted. Eu., Asia.—Often a pernicious pasture weed.

Wíldpretii. Bien. to 3 ft., white-hairy: lvs. linear-lanceolate, sessile: fls. rose, in large terminal cymes, the stamens long-exserted. Canary Isls.

EDANTHE: *Chamædorea Tepejilote.*

EDDO: *Colocasia esculenta.*

EDELWEISS: *Leontopodium alpinum.*

EDGEWÓRTHIA. *Thymelæaceæ.* Two shrubs in Himalayas, China and Japan, somewhat like Dirca, bearing dense heads of fragrant little yellow fls. in advance of the foliage or with it: lvs. alternate and crowded at ends of branches, entire: fr. a drupe-like dry body. **E. papyrífera** (*E. chrysántha, E. Gardneri*), Paper-Bush, Mitsumata, is not hardy N. nor does it thrive in hot dry summers, but is intro. in N. Amer.: small shrub with tough branches: lvs. lance-oblong, to 5 in. long: fls. precocious, narrow-tubular, silky, to ½ in. or more long. China, Japan.—The bast is a source of soft tough paper.

EDRAIÁNTHUS. *Campanulaceæ.* Low tufted per. herbs, about a dozen species in Italy to the Caucasus, particularly in the Dalmatian-Balkan region, distinguished technically from Wahlenbergia in the irregular rather than loculicidal dehiscence of the caps., and otherwise by the small condensed habit, usually clustered or capitate fls. and elongated linear lvs. The generic name has been spelled Hedræanthus, but not originally.

The species are good spring- and summer-flowering rock-garden plants, showy when in full bloom. The flower-stems lop on the ground, making a clump 6–12 inches or more across, and rise at the end with the bunches of purplish or violet bloom that may stand 1–6 inches above the ground. They come readily from seeds. A few species bear the blossoms singly at apex of the many short stems ascending from the rosette (as in *E. dinaricus, E. Pumilio,* and *E. serpyllifolius*), but most of them carry their flowers in dense terminal heads so that the individual blooms are not clearly defined; these heads are closely attended by calyx-like bracts, and the length and shape of these bracts are important points in identification; the calyx-lobes themselves (underneath the bracts) are characteristic of the species and in *E. Kitaibelii* there is a tooth or minute auricle in their sinuses. Perhaps some of the named kinds are only variants.

carícinus. Very like *E. graminifolius* but the outer bracts (of the head) always thickly hairy and the head itself narrow.

caudàtus: *E. dalmaticus.*

croáticus. Like *E. graminifolius* but corolla not hairy; bracts very thick at base, otherwise smooth or nearly so.

dalmáticus (*E. caudatus. Wahlenbergia dalmatica*). Like *E. graminifolius,* but outer bracts always longer than the fls. and with narrow end; calyx-lobes short-triangular, broader than long. Dalmatia.

dináricus (*E. serpyllifolius* var. *dinaricus*). Fls. solitary at end of st., short-pedicillate: lvs. narrow-linear, hairy on upper surface: corolla-lobes sharp; calyx-lobes sharp, ciliate, about ½ as long as corolla; bracts about equalling fl. E. S. Eu.

graminifòlius (*Wahlenbergia graminifolia*). Tufted, condensed, 2–4 in. high: lvs. green, linear and mucronate, 1 in. or less long in the wild, ciliate or glabrous: heads few-fld. but broad; corolla hairy, particularly on margins of lobes; calyx-lobes about ½ length of corolla and bluntish; outer bracts not as long as fl. and mostly reflexed. Italy, Albania.—First named binomially by Linnæus, 1753, as *Campanula graminifolia.*

Kitaibèlii (*Wahlenbergia Kitaibelii*). Distinguished from the other capitate species by the presence of a tooth or small auricle between bases of the calyx-lobes; these lobes are long-acuminate, loosely hairy, and about ½ the length of the corolla-tube; bracts subtending calyx very broad-based and little if any exceeding the fl. S. E. Eu.

Pumílio (*Wahlenbergia Pumilio*). Low, condensed, 1–3 in. tall: lvs. very narrow, 1 in. or less long, mostly basal, more or less ciliate: fls. solitary, sessile (st. leafy up to the bracts); lobes of corolla acute; calyx-lobes about ½ as long as corolla and hairy. Dalmatia.

sérbicus. Marked by fls. in heads, calyx-lobes broad-triangular and as wide as long and very much shorter than corolla-tube, bracts always shorter than fl.-head. Serbia.

serpyllifòlius (*Wahlenbergia serpyllifolia. Campanula serpyllifolia*). Low, tufted but rather diffuse, to 3 or 4 in. high: lvs. many on the weak sts., spatulate but narrow, mostly 1 in. or so long: fls. bell-shaped, large, rich violet, pedicelled, with bluntish recurving lobes, forming around the outside of the mat of foliage; calyx-lobes broad, about ⅓ length of corolla, hairy. Dalmatia. In var. **màjor** the fls. may be 2 in. across and very showy, in spring.

tasmánicus: *Wahlenbergia tasmanica.*

tenuifòlius (*E. graminifolius* var. *tenuifolius. Wahlenbergia tenuifolia*). Less compact than *E. graminifolius,* and lvs. much longer: bracts broad-cordate at base and abruptly narrowed, the outer ones equalling the fl.-head. Croatia.

EDWINIA: *Jamesia.*

EEL-GRASS: *Vallisneria.*

EGG-FRUIT: *Lucuma nervosa.*

EGGPLANT (*Solanum Melongena* var. *esculentum*). Tender branching large-leaved herb, grown in the vegetable-garden for the edible fruits; sometimes known also as Guinea squash. The large fruits, in purple, white, and stripes, are cooked in various ways.

The eggplant is well at home in the southern states, the long season suiting it. Seeds may be sown in a plant-bed, and the young plants moved directly to the field. In the North, unless one has a greenhouse or warm hotbed, the growing of eggplants should be left to the professional gardener, as the young plants are very tender and should be grown without a check. The seed may be sown in the hotbed or greenhouse a month or more before warm weather, keeping a temperature of 65° to 70°. When the seedlings have made three rough leaves, they may be pricked out into shallow boxes, or, still better, into 3-inch pots. The pots or boxes should be plunged to the rim in soil in a hotbed or coldframe so situated that protection may be given on chilly nights. Do not set in the field until the season is permanently settled. The soil should be "quick" but not of such nature as to keep the plants growing too large or too late. Watch for the potato-beetle and flea-beetle. The plants are usually set 2–3 feet apart each way. A dozen plants are sufficient for the needs of a family, as each plant should yield two to six large fruits. The fruits are fit to eat at most stages of growth, from those the size of a large egg to their largest development. One ounce of seed will furnish 1,000–2,000 plants.

New York Improved Purple is a standard variety of eggplant. Black Pekin, Long Purple and Black Beauty are popular. For early, or for a short-season climate, New Hampshire Hybrid is desirable.

EGLANTINE: *Rosa Eglanteria.*

EHRÈTIA. *Boraginaceæ.* Trop. or semitrop. shrubs or trees with alternate dentate or entire simple lvs. and short rough hairs, small white fls. in terminal corymbs or panicles or perhaps solitary, and fr. a small drupe; sometimes planted for ornament and interest in the extreme S. U. S. Propagated by seeds and cuttings.

acuminàta: see *E. thyrsiflora.*

buxifòlia: *E. microphylla.*

ellíptica. Tree to 50 ft.: lvs. oval or oblong, to 2 in. long, undulate or serrate: fls. in corymbs to 2½ in. across. Tex. to Mex.

lævis. Variable shrub, or tree to 40 ft.: lvs. ovate, short-acuminate, to 5 in. long, serrate: fls. in corymbs 3 in. across. India.

macrophýlla. Tree, with elliptic or rhomboid pubescent or hairy lvs. to 8 in. long, serrate: fls. small, in compound panicles: fr. a berry ½ in. or more diam. India; planted in S. Calif.

microphýlla (*E. buxifolia*). PHILIPPINE-TEA. Shrub to 12 ft.: lvs. in clusters, obovate, to 2½ in. long, serrate: fls. solitary or 2–4 together. India to Malaya and Philippines.

thrysiflòra (*Cordia thyrsiflora. E. acuminata* of some). Tree to 50 ft.: lvs. obovate, to 7 in. long: fls. in panicles to 8 in. long. Formosa: fairly hardy N.

EICHHÓRNIA (*Piaropus*). *Pontederiaceæ.* Trop. American aquatic herbs with floating or submerged lvs. and showy fls. mostly borne in terminal spikes; grown in ponds and tanks. The water should not be more than about 1 ft. deep and good soil provided. Propagated by division.

azùrea. Lvs. broadly ovate to orbicular, the petioles not inflated: fls. lavender-blue with purple center. Brazil.

crássipes. WATER-HYACINTH. Floating extensively, with feathery roots: lvs. ovate to orbicular, the petioles much inflated at base: fls. large and showy, violet with blue patch on upper lobe having a yellow spot. Trop. Amer. and nat. in Fla. where it chokes the ponds and streams. Var. **màjor** has rosy-lilac fls.

paniculàta (*E. Martiana*). To 1 ft., rhizomes short and fleshy: basal lvs. cordate-ovate, apex acuminate, blade to 4 in. long with shorter petiole, cauline lvs. smaller: fls. pale violet to blue, with 5–15 in panicles to 4 in. long. Brazil.

EINKORN: *Triticum monococcum.*

ELÆAGNÀCEÆ. OLEASTER FAMILY. Trees or shrubs of Eu., Asia, N. Amer. covered with silvery or golden scales, having simple and entire lvs., bisexual, polygamous or diœcious polypetalous fls. with 2–4-lobed calyx, no petals, 4 or 8 stamens, 1-celled ovary, and fr. inclosed by the fleshy calyx, forming a berry-like or drupe-like body. There are only three genera, Elæagnus, Hippophaë and Shepherdia, and they are grown for ornament and somewhat for edible fr.

ELÆÁGNUS. *Elæagnaceæ.* Ornamental shrubs or small trees in many species, sometimes evergreen, with alternate lvs. covered with scales, inconspicuous perfect fls., and attractive drupe-like frs.; native in N. Amer., S. Eu., Asia.

The species grow in any well-drained soil and sunny location. Propagated by seeds, preferably stratified and sown the second spring, hardwood- and root-cuttings, layers, and grafting.

angustifòlia (*E. hortensis*). OLEASTER. RUSSIAN OLIVE. Very hardy, to 20 ft., deciduous, sometimes spiny: branchlets and under sides of lvs. silvery: fls. fragrant, 1–3 in axils of lvs., in June: fr. yellow and silvery, on very short stalks. Eu., W. Asia. Var. **orientàlis** has broader lvs. and larger fr. and var. **spinòsa** is more spiny.

argéntea: *E. commutata.*

commutàta (*E. argentea* of cult.). SILVERBERRY. To 12 ft., deciduous: lvs. silvery on both sides: fls. fragrant, 1–3 in axils, May–June: fr. silvery, on very short stalks. E. Canada to Minn. and Utah.

edùlis: *E. multiflora.*

Frùitlandii: a form of *E. pungens.*

glàbra. To 20 ft., evergreen, climbing or sarmentose: under sides of lvs. with brown scales: fls. fragrant, in autumn: fr. gray or rusty. Japan, China.

horténsis: *E. angustifolia.*

latifòlia. Variable, either erect or climbing, sometimes tree-like: lvs. ovate to elliptic or broader, obtuse or acute, to 5 in. long, silvery or rusty underneath: fls. many, clustered: fr. to 1½ in. long, red. India.

lóngipes: *E. multiflora.*

macrophýlla. To 12 ft., evergreen: lvs. silvery beneath, becoming dark shining green above: fls. fragrant, 4–6 in axils, in autumn: fr. red. Japan; to be grown far S.

multiflòra (*E. edulis. E. longipes*). GUMI. To 6 ft., deciduous: lvs. silvery beneath, also with brown scales: fls. fragrant, 1–2 in axils, Apr.–May: fr. scarlet, on slender stalks to 1 in. long, edible. Japan, China; hardy in the N. Leaf forms are known under the varietal names **críspa, ovàta** and **rotundifòlia.**

parvifòlia: *E. umbellata* var.

philippénsis. To 9 ft., with drooping branches: lvs. silvery beneath, slightly toothed: fls. axillary, often solitary: fr. red. Philippines.

púngens. To 15 ft., evergreen, usually spiny: lvs. silvery beneath dotted with brown scales, wavy-margined: fls. fragrant, in axillary clusters in autumn: fr. red, silvery and brown when young, short-stalked. Japan, China. Variegated forms are **aùrea,** lvs. margined yellow; **Fredericii** (var. *Fredericii variegata*), lvs. with yellow center; **maculàta** (*aureo-maculata*), lvs. with large yellow blotch in middle; **marginàta,** lvs. silver-edged; **nàna,** a dwarf form; **variegàta,** lvs. margined with yellowish-white. In var. **refléxa** the lvs. are very brown-scaly beneath and the margins not wavy; var. **Sìmonii** (*E. Simonii*), lvs. silvery beneath, sometimes variegated yellow and pinkish-white. Other listed vars. are **compácta** and **rotundifòlia.** The various leaf forms are often grown under glass; in the open hardy only far S.

refléxa: *E. pungens* var.

Sìmonii: *E. pungens* var.

umbellàta. To 18 ft., deciduous, branchlets covered with brown scales: lvs. silvery beneath: fls. fragrant, 1–3 in axils, May–June: fr. scarlet, silvery when young, short-stalked. Himalayas, China, Japan. Var. **parvifòlia** (*E. parvifolia*). Branchlets silvery: fr. silvery becoming pink. Himalayas.

ELÆIS. *Palmaceæ.* Monœcious tall feather-palms of trop. Afr., probably only a single species, unarmed except perhaps on the petiole and bracts and tips of rachillæ: spadices among the bases of the lvs. tightly packed in the center of the crown like bird nests, branched but short, some of them staminate and others pistillate; stamens 6: fr. a 1–3-seeded ovoid or obovoid drupe surrounded by spine-like bracts. See *Palm.*

guineénsis. AFRICAN OIL PALM. Trunk to 60 and more ft., much scarred: lvs. 10 15 ft. long, the lower ones drooping and some of the dead ones hanging, with very many ridged narrow pinnæ, green both sides: staminate head composed of many finger-like appressed spine-tipped branches 4–6 in. long; fruiting head 1 ft. long more or less:

fr. ovoid or ovoid-conic, about 1 in. long, red, orange or yellowish. W. and Cent. Afr.—Prized for the oil-bearing frs. and planted for ornament and interest in the western hemisphere; stands in S. Fla.; spontaneous in parts of the American tropics.

melanocócca: a fruit form of *E. guineensis;* see *Corozo.*

ELÆOCARPÀCEÆ. ELÆOCARPUS FAMILY. About 8 genera of trees and shrubs, allied to Tiliaceæ, native in tropics and semi-tropics of both hemispheres: lvs. alternate or opposite, simple: fls. unisexual or bisexual, polypetalous, often showy, in racemes or panicles, having 4–5 sepals and petals, or sometimes petals absent, numerous stamens, superior ovary: fr. a caps. or drupe. Aristotelia, Crinodendron, Elæocarpus and Muntingia are known to hort. in the U. S., all grown in the warmer parts of the country.

ELÆOCÁRPUS. *Elæocarpaceæ.* Trees native in the tropics and warm parts of the Old World, with alternate simple lvs., mostly bisexual fls. in axillary racemes, and small drupaceous frs.; sometimes grown for ornament in S. U. S., and in Calif. Propagated by cuttings, and by seeds when obtainable.

cyàneus. Small mostly glabrous tree: lvs. oblong or elliptic to nearly lanceolate, acuminate, to 4 in. or more, serrate: fls. in loose racemes: fr. with 1 seed to ½ in. long. Queensland.

dentàtus. To 60 ft., foliage mostly at ends of branchlets which are silky: lvs. leathery, linear-oblong to narrowly obovate, to 4 in. long, finely wavy-toothed, the margins recurved: fls. white, ½ in. across, drooping: fr. purplish-gray, ½ in. long. New Zeal.

Hookeriànus. Tree to 40 ft. with glabrous branchlets: lvs. narrowly linear to nearly orbicular and even pinnate-toothed on young parts, narrow-oblong or lanceolate and serrate or crenate on old plants: fls. greenish-white and drooping: fr. ⅓ in. long. New Zeal.

ELÆODÉNDRON. *Celastraceæ.* Trop. or semi-trop. trees and shrubs with simple leathery lvs., small greenish or white fls. in axillary clusters, and drupaceous fr.; grown in trop. or warm regions or under glass in the juvenile state. Propagated by cuttings.

capénse. Evergreen shrub: lvs. elliptic-ovate, margins revolute and slightly toothed: frs. red, to 1 in. long. S. Afr.

Laneànum. BERMUDA OLIVE-WOOD BARK. Evergreen tree to 45 ft.: lvs. oblanceolate, shallowly toothed: fls. diœcious: frs. yellowish-white, to 1 in. long. Bermuda.

orientàle (*Aralia Chabrieri* of gardens). FALSE OLIVE. Lvs. obovate, wavy-margined, in the juvenile state long and narrow with a dark red midrib: frs. about size of olive. Madagascar, Mauritius.

ELAPHOGLÓSSUM. *Polypodiaceæ,* Trop. ferns with creeping rhizomes and simple rather thick more or less tongue-like fronds; sori covering under surface of fronds. They are treated as warmhouse plants, requiring abundant moisture if drainage is good. See *Ferns.*

crinìtum (*Acrostichum* and *Hymenodium crinitum*). ELEPHANT-EAR-FERN. Fronds to 2 ft. long and 10 in. wide, on shaggy-hairy stipes 1 ft. long. W. Indies, Mex., Cent. Amer.—A striking plant.

ELAPHRIUM: *Pistacia Simaruba.*

ELATINOIDES: *Kickxia.*

ELDER: *Sambucus.* **Box-:** *Acer Negundo.*

ELECAMPANE: *Inula Helenium.*

ELEÓCHARIS. *Cyperaceæ.* Mostly per. rush-like plants, allied to Scirpus, adapted for planting on the edges of ponds or boggy places: lvs. commonly reduced to sheaths: fls. in solitary terminal spikelets. Originally spelled Heleocharis but corrected later.

aciculàris. Tufted, hair-like, to 8 in.: spikelets flattened, to ¼ in. long. N. Amer., Eu., Asia.

dúlcis (*E. tuberosa. Scirpus tuberosus*). CHINESE WATER-CHESTNUT. MA-HAI. Slender rush-like plant with narrow lvs. shorter than the articular culms, often not fruiting: plant produces a solid tuber or corm at base, 2 in. or less in diam., much eaten by Chinese and sold in their shops; propagated by offsets from the corm, in moist conditions. E. Asia, Pacific Isls.

tuberòsa: *E. dulcis.*

ELEPHANTS-EAR: *Colocasia, Enterolobium cyclocarpum.*

ELEPHANTS-FOOT: *Testudinaria elephantipes.*

ELETTÀRIA. CARDAMON. *Zingiberaceæ.* Per. herbs of 1 or more species native in India, the seeds of which are used medicinally and as spices. **E. Cardamòmum.** To 10 ft., with creeping rootstocks: lvs. to 2½ ft. long and 3½ in. wide: fls. white, the lip or staminodium margined with yellow and striped with blue, borne in bracts on panicles to 2 ft. long: caps. to ¾ in. long, containing aromatic seeds.—The plants succeed in moist shady places in warm climates. Propagated by division of roots and by seeds. See *Zingiberaceæ.*

ELEUSÌNE. *Gramineæ.* Tufted annuals with flat lvs. and spikelets in dense spikes borne in digitate terminal umbels or toward top of sts.; native in the Old World and grown for ornament and in some countries for grain. See *Grasses.*

barcinonénsis: *E. tristachya.*

coracàna. AFRICAN MILLET. To 4 ft.: lvs. to 1 ft. long and ¼ in. wide: spikes to 1½ in. long and ¼ in. broad, erect. Probably Asia and Afr.

índica. WIRE-GRASS. To 2 ft.: lvs. to 1 ft. long and ¼ in. wide: spikes to 4 in. long, spreading. Old World, but nat. in N. and trop. Amer.

oligostàchya: the plant grown under this name is *E. indica.*

tristàchya (*E. barcinonensis*). To 1 ft.: lvs. short, 1/16 in. wide: spikes to 1½ in. long and ⅓ in. broad. India.

ELISÈNA. *Amaryllidaceæ.* A small genus in the Andes of S. Amer., allied to Hymenocallis but differing in having a much shorter perianth-tube with longer linear lobes and the stamen filaments declined or recurved, not erect. One species, **E. longipétala,** is cult. To 3 ft.: lvs. linear, basal, about 2 ft. long: fls. white, lobes rotate, to 3 in. long, undulate and somewhat recurved at tip, scape 4–7-fld. Peru.

ELLIÓTTIA. *Ericaceæ.* One deciduous shrub, **E. racemòsa,** inhabiting sandy lands and pine woods in E. Ga. and S. C.: to 10 or 20 ft., sometimes tree-like: lvs. alternate, oblong to oblong-lanceolate, to 5 in. long, pointed, entire, glabrous above: fls. small, white, with 4 petals and 8 stamens, in slender terminal racemes. To be expected in grounds.

ELLIPTIC: a flat part or body that is oval and narrowed to rounded ends.

ELM: *Ulmus.* **Water-:** *Planera aquatica.*

ELMÈRA. *Saxifragaceæ.* One low herbaceous species, **E. racemòsa** (*Heuchera racemosa*), differing from the genus Heuchera in its simple racemose infl., leafy flowering branches, greenish-yellow fls., petals usually notched or pinnately divided, and fr. gaping widely at maturity between the 2 persistent styles. Wash.

ELODEA: *Anacharis.*

ELONGATE: lengthened; stretched out.

ELSHÓLTZIA. *Labiatæ.* Herbs or undershrubs grown for their dense spikes of small 2-lipped blue or lilac fls., usually aromatic; stamens 4, exserted: lvs. opposite, toothed.

Elsholtzias require a sunny position for the most success in blooming. Propagated by seeds sown in the spring, the shrubby types also by greenwood cuttings in summer. The species below are hardy North.

cristàta. Ann. to 1½ ft.: lvs. ovate to oblong, to 2 in. long: fls. light blue, in spikes to 3 in. long in terminal panicles. Asia.

Fárquhari: hort. name, probably of a form of *E. Stauntonii.*

Staûntonii. Shrub to 5 ft.: lvs. ovate-oblong to oblong-lanceolate, to 5 in. long: fls. lilac-purple, in dense one-sided spikes to 8 in. long terminating the branches. Sept.–Oct. N. China.

ELSOTA: *Securidaca diversifolia.*

ÉLYMUS. Wild Rye. Lyme-Grass. *Gramineæ.* Tall per. grasses of temp. regions around the world, the spikelets borne in dense terminal spikes; a few may be planted for ornament on banks and rear borders. See *Grasses.*

arenàrius. Sea Lyme-Grass. Dune-Grass. To 8 ft.: lvs. 1 ft. or more long and ½ in. wide, becoming involute, rough above: spikes to 10 in. long, awnless. Asia, Eu.—Used as a sand binder.

canadénsis. To 5 ft.: lvs. 1 ft. or more long and ¾ in. wide, rough: spikes to 1 ft. long, often nodding, awns to 2 in. long. N. Amer.

condensàtus. To 10 ft.: lvs. 1 ft. or more long and 1 in. wide, rough: spikes stout, to 15 in. long, awnless. W. N. Amer.

giganteùs. Erect per. to about 3 ft., with creeping rhizomes: lvs. rather stiff, to ½ in. broad: spikes to 15 in. long, with awn points. Russia, Siberia.

glaùcus. To 5 ft.: lvs. to 1 ft. long and ½ in. wide, nearly smooth: spikes to 8 in. long, awns to ¾ in. long. Ont. to B. C. and Calif.

móllis. Differs from *E. arenarius* (of which it is often considered a var.) in the pubescent spikelets.

virgínicus. To 3 ft.: lvs. to 14 in. long and ½ in. wide, rough: spikes to 7 in. long, awns to ½ in. long. N. S. to Fla. and Tex.

EMARGINATE: with a shallow notch at the apex.

EMBLIC: *Phyllanthus Emblica.*

EMBÒTHRIUM. *Proteaceæ.* A few shrubs and small trees of the southern hemisphere, one of which is intro. in Calif.: lvs. coriaceous, entire: fls. bisexual, showy, in dense racemes: fr. 1-celled many-seeded follicle. **E. coccíneum,** of Chile, is a shrub with oblong to elliptic alternate lvs.: fls. scarlet, about 2 in. long, with exserted red style.

EMÍLIA. *Compositæ.* Slender herbaceous annuals and perennials with alternate and basal lvs. and solitary or clustered rather small rayless heads in many colors; pappus of white soft bristles; mostly native in tropics of Old World. Two species, commonly confused, are grown as flower-garden annuals; of simple cult. in a sunny place.

coccínea: *E. sagittata.*

flámmea: *E. sagittata.*

sagittàta (*E. flammea. E.* and *Cacalia coccinea*). Tassel-Flower. Floras-Paintbrush. Ann. to 2 ft.: lower lvs. ovate, toothed, narrowly wing-petioled: heads red or scarlet, ½ in. across, in loose corymbs. Tropics. Var. **lùtea** (*Cacalia aurea*) has golden-yellow fls.—This is the usual species in gardens.

sonchifòlia (*Cacalia sonchifolia*). Ann. to 2 ft.: lower lvs. obovate, toothed or lyrate-pinnatifid: heads rose or purple, rarely white, ½ in. across, in loose corymbs. Tropics.

EMMENÁNTHE. *Hydrophyllaceæ.* Ann. herbs native in W. N. Amer., with alternate lvs., yellow fls. in terminal racemes and bell-shaped persistent corolla.

Seeds may be sown where the plants are to grow, or indoors if early bloom is desired, in open sunny exposure.

penduliflòra. Yellow- or Golden-Bells. Whispering Bells. To 1½ ft., but often only a few inches: lvs. pinnatifid into ovate segms.: fls. drooping, about ½ in. long, in summer. Calif., on slopes and deserts.

EMMENÓPTERYS. *Rubiaceæ.* One deciduous tree to 40 ft., adaptable to mild climates. Propagated by seeds and cuttings of soft wood under glass. **E. Hényri** has lvs. opposite, oval, to 6 in. long, entire: fls. yellow, funnelform, 1 in. long, in many-fld. terminal panicles: fr. a caps. to 1¾ in. long, often with 1 wing-like calyx-lobe persistent. Cent. China.

EMMER: *Triticum dicoccum.*

EMPETRÀCEÆ. Crowberry Family. Three genera of heath-like evergreen small shrubs in the northern hemisphere: lvs. alternate and crowded, linear: fls. bisexual or unisexual, regular, with 2–3 sepals or none, no petals, 2–3 stamens, superior ovary: fr. a drupe. In the sequence of orders this family stands near Euphorbiaceæ. Corema and Empetrum are sometimes grown for ornament.

ÉMPETRUM. *Empetraceæ.* A few shrublets, more or less procumbent or depressed, of the western hemisphere and N. Eurasia, sometimes transferred to grounds: fls. very small, solitary in the axils: fr. a little drupe. **E. nìgrum.** Crowberry. Spreading heath-like evergreen to 10 in. high: lvs. linear or nearly so, about ¼ in. long, margins revolute: drupe berry-like, black. Var. **purpùreum** has red or purple fr. Rocky places N. Y. to N. Calif. and northward, and in N. Eu. and Asia and mts. southward; adapted to rock-gardens.

ENCÈLIA. *Compositæ.* Herbs or subshrubs with alternate or opposite entire or toothed lvs. and rather showy heads of yellow ray-fls. and yellow or purple disk-fls.; pappus none or of awns; native from W. N. Amer. to Chile. Sometimes planted for ornament.

califórnica. Per., woody at base, to 4 ft., strong-scented: lvs. ovate to broad-lanceolate, to 2½ in. long: heads solitary, long-stalked, 2½ in. across, golden-yellow, disk purple; involucre white-hairy. Calif.

eriocéphala: *Geræa canescens.*

farinòsa. Shrubby, to 5 ft.: lvs. ovate, to 2½ in. long, often silvery-tomentose: heads in cymes, about 1 in. across, with yellow disk and rays; involucre slightly pubescent. Calif., Ariz., Mex.—The clumps are very showy early in season on deserts.

ENCEPHALÁRTOS. *Cycadaceæ.* African plants with stout trunks terminated by a cluster of stiff pinnate lvs.; about 20 species of which a few are grown for the ornamental foliage. For cult. see *Cycas,* from which the genus is separated by technical characters of fls. and frs., and pinnæ without midrib.

Áltensteinii (*Zamia Altensteinii*). Trunk to 6 ft. high and 1 ft. diam.: lvs. to 6 ft. long; lfts. thick, very spiny when young but on older plants often spineless, about 1 in. broad. S. Afr.

Híldebrandtii. Trunk to 20 ft. high and 1 ft. diam.: lfts. leathery, margins with 1–4 teeth on either side, tip spiny. Trop. Afr.

Laurentiànus. Trunk to 30 ft. high and 2½ ft. diam.: lvs. to more than 20 ft. long; lfts. leathery, margins with 6–10 teeth on either side, spiny-tipped, some of them to 16 in. long and 2 in. broad. Trop. Afr.

Lèhmannii. Trunk very large: lfts. pale green, to 7 in. long, entire or occasionally with 1 or 2 spines, tip spiny, petiole and rachis somewhat 4-angled. S. Afr.—The plants advertised as *Zamia Lehmannii glauca* and *Skinneri* probably belong here.

villòsus (*Zamia villosa*). Trunk entirely underground, woolly: lvs. to 6 ft. long; lfts. bright green, with spiny teeth and tips. S. Afr.

ENCHOLIRION: *Vriesia Saundersii.*

ENCHYLǼNA. *Chenopodiaceæ.* Little shrub allied to Kochia, native in Australia,

E. tomentòsa, adapted to planting in dry climates for its dense spreading habit and gray or silvery color: procumbent or horizontally much branched, to 3 ft. or more and making a broad mass: lvs. terete, ½ in. or less long: fls. small, solitary in axils, followed by fleshy red or yellow berry-like bodies.

ENCYCLIA, according to latest researches, is merely a well-marked section of the polymorphic genus *Epidendrum.*

ENDIVE (*Cichorium Endivia*). Hardy annual or biennial, grown for its rosette of leaves which are used as salad and for greens. It is grown mostly as a late summer, autumn and early winter product, more or less extending the season of lettuce.

Seedings should be started so that the plants will mature after the hot weather is past. The plants need protection from severe frosts by carefully lifting them and removing to a frame, where sash or cloth may cover them in freezing weather. The leaves, which constitute practically the whole plant, are blanched before being used, either by tying together or by standing boards on each side of the row, allowing the top of the boards to meet over the center of the row; in two to four weeks the interior leaves will be sufficiently blanched. If the foliage keeps wet inside, it is likely to decay; the leaves should be tied together only when dry, and it may be necessary to untie and open them after a rain, and a similar precaution is necessary in other methods of blanching. The rows should be 1½ or 2 feet apart, the plants 1 foot apart in the rows. One ounce of seed will sow 150 feet of drill more or less, before thinning or transplanting.

ENGELMÁNNIA. *Compositæ.* One per. herb native in dry soil Kans. to Mex., sometimes transplanted, related to Parthenium. **E. pinnatífida.** To 3 ft., hairy: lvs. pinnatifid into lanceolate toothed or entire lobes, to 8 in. long: heads 1 in. across, of yellow ray- and disk-fls., in corymbs.

ENKIÁNTHUS. *Ericaceæ.* Mostly deciduous shrubs with alternate or crowded finely toothed lvs. turning bright colors in autumn, fls. in drooping umbels or racemes in spring, and capsular frs.; native in Asia and fairly hardy in the N. They thrive in well-drained peaty soil, like many other plants of the Heath family. Propagated by seeds, cuttings or layers.

campanulàtus. To 30 ft.: fls. yellow or pale orange veined with red, bell-shaped, to ½ in. long. Japan. Var. **albiflòrus** has fls. white or nearly so; var. **Palibìnii** has narrower lvs. and red fls.

cérnuus. To 15 ft.: fls. white, bell-shaped with irregularly cut limb, ⅛ in. long. Japan. Var. **rùbens** has deep red fls.

chinénsis. Shrub or small tree, young sts. red: lvs. elliptic, with wavy-toothed margins, glabrous: fls. salmon-red, to ⅝ in. across. W. China.

defléxus. Shrub or tree to 30 ft., branchlets bright red: lvs. elliptic-obovate to oblong-lanceolate, to 3 in. long: fls. yellowish-red, veined darker, to ⅝ in. across. W. China. —Differs from *E. campanulatus* in ovary and style pubescent, not glabrous.

japónicus: *E. perulatus.*

perulàtus (*E. japonicus*). To 6 ft.: fls. before the lvs., white, urn-shaped, ⅓ in. long, the corolla gibbous at base. Japan.

subséssilis. To 10 ft.: fls. white, urn-shaped, ⅕ in. long, gibbous at base. Japan.

ENTELÈA. *Tiliaceæ.* One large-lvd. shrub or small tree to 20 ft., native in New Zeal. and planted in S. Calif. **E. arboréscens.** Lvs. alternate, cordate-ovate, to 9 in. or more long, toothed and often slightly 3-lobed: fls. white, 1 in. across, in cymes: fr. a bristly caps. 1 in. across. For *E. palmata* see *Sparmannia palmata.*

ENTEROLÒBIUM. *Leguminosæ.* Trop. American trees with 2-pinnate lvs., fls. in heads or clusters with prominent whitish, greenish or purplish stamens, and broad leathery pods which are usually bent or coiled inward; planted in the tropics as windbreaks or for ornament.

cyclocárpum. ELEPHANTS-EAR. CARO. Large broad-headed tree to 50 ft. or more: lfts. 20–30 pairs: stamens white: pods bent so as to form a complete circle, used as cattle feed in tropics. Jamaica, Venezuela.

Timboùva. Differs in its fewer lfts., 10–20 pairs, and the pods bent to form one-half or two-thirds of a circle. Brazil.

ENTIRE: margin continuous, not in any way indented; whole.

EOMÈCON. *Papaveraceæ.* The only species, **E. chionántha,** from China, is a rhizomatous herbaceous per. with white poppy-like racemose fls. 2 in. across on a slender branching scape 1 ft. or more tall: lvs. radical and long-stalked, cordate, to 6 in. long, sinuate: petals 4: spring-blooming and hardy at N. Y. City. Known as Snow-Poppy.

EORA: *Rhopalostylis.*

EPACRIDÀCEÆ. EPACRIS FAMILY. Shrubs and small trees of the southern hemisphere related to Ericaceæ and differing in technical characters. The family comprises about two dozen genera of which only Cyathodes, Epacris and Leucopogon are much known in cult.

ÉPACRIS. *Epacridaceæ.* Heath-like evergreen shrubs, seen now and then under glass and adapted to warm climates; native in Australia and New Zeal.: lvs. small and entire, scattered: fls. solitary in axils of lvs. or bracts, the short peduncle covered with imbricating bracts; corolla tubular, white, red, purple, mostly small but often showy. Treatment as for ericas.

hýbrida: listed name.

impréssa. To 3 ft., with many ascending pubescent branches: lvs. narrow-lanceolate and sharp-pointed, mostly under ½ in. long: fls. white or red; corolla-tube ½ in. or less long, differing in the several forms. Australia.

EPAULETTE-TREE: *Pterostyrax.*

ÉPHEDRA. MEXICAN TEA. JOINT-FIR. *Gnetaceæ.* Shrubs growing mostly in dry or desert regions around the world, with jointed green branches resembling the horsetail, scale-like or sheath-like lvs., unisexual fls. and red berry-like frs.

Occasionally planted in this country in dry locations as ground-cover or for the green stemmy clumps, as in regions where the native kinds grow. Mexicans and Indians make a medicinal tea from the branches. Propagated by division of clumps and by seeds, suckers and layers.

altíssima. Climbing to 25 ft.: lvs. to 1 in. long. N. Afr.

distàchya. Low or procumbent shrub to 2 ft.: lvs. scale-like, opposite. S. Eu., N. Asia. Var. **helvética** (*E. helvetica*) differs in technical fr. characters.

frágilis. Erect or climbing shrub, or sometimes prostrate: lvs. minute, opposite. Medit. region.

helvética: *E. distachya* var.

trifúrca. Erect, to 4 ft., pale green: scale-like lvs., mostly in 3's. Utah to Mex.

víridis. Erect, to 4 ft., bright green: awl-like lvs. opposite. Colo. to Calif. and Ariz.

EPHEMERAL: persisting for one day only, as flowers of spiderwort.

EPIBATERIUM: *Cocculus.*

EPICÁTTLEYA. *Orchidaceæ.* A small group of bigeneric hybrids between *Epidendrum* and *Cattleya,* most of which are known in the trade by vernacular names.

guatemalénsis. Parentage not known.

EPIDÉNDRUM. *Orchidaceæ.* Epiphytic orchids native in trop. Amer., with leaf-bearing pseudobulbs or leafy sts. and fls. mostly in terminal racemes or panicles, the sepals and petals commonly similar, the lip simple, bilobed or 3-lobed, with a distinct claw more or less united with column. They are plants of various habit, and require mostly intermediate temperature as for Cattleyas; see *Orchids* for cult.

arachnoglóssum. Sts. cylindric, leafy, 4–5 ft. long: lvs. ovate-oblong, obtuse, to 4 in. long, coriaceous: fls. rich violet or crimson with bright orange-yellow lip; sepals and petals small, elliptic-oblong; lip 3-lobed. Jan.–May. Colombia, Venezuela.

aromáticum (*Encyclia aromatica*). Pseudobulbs subglobular to pyriform, 1–3-lvd.: lvs. to 1 ft. long: fls. pale yellow to olive-green, fragrant, in many-fld. pendulous panicles to 3 ft. long. Apr.–June. Mex., Guatemala.

atropurpùreum (*E. macrochilum, Encyclia atropurpurea* and *macrochila*). Pseudobulbs ovoid-pyriform, 2–3-lvd.: lvs. to about 16 in. long: racemes (rarely branching) about 4–13-fld.; fls. 2–3 in. across; sepals and petals greenish-brown often tinged with purple; lip white or yellowish with purplish stripes. Dec.–Mar. Mex. to Panama, W. Indies, N. S. Amer.

aurantìacum: *Cattleya aurantiaca.*

aurìtum: *E. paleaceum.*

bicornùtum: *Diacrium bicornutum.*

bífidum (*E. papilionaceum*). Pseudobulbs oblong-ellipsoid, 2–3-lvd. at the apex: lvs. narrowly oblong, to 14 in. long: scape to about 4 ft. tall, simple or branched above, few-many-fld.; sepals spatulate-oblong, greenish or pale purple, petals narrower; lip 2-lobed, purple or white with purple streaks. Oct.–May, Aug. W. Indies.

Boothiànum (*E. erythronioides*). To 10 in. high: pseudobulbs clustered, ovoid to pyriform, 2-lvd.: lvs. to 7 in. long, oblong-spatulate: fls. few in loose racemes; sepals and petals yellow spotted with dark brown; lip yellow. S. Fla., W. Indies, British Honduras.

Boùndii. Hybrid between *E. Burtonii* and *E. radicans.*

Brassávolæ. Pseudobulbs ovoid to pyriform-cylindric, to 7 in. high, with 2 leathery lvs. to 9 in. long and 1¾ in. wide: fls. to 4 in. across, in 3–12-fld. loose racemes; sepals and petals narrow, yellow or greenish-yellow; lip white or pale yellow tipped with violet-red. Apr.–Sept. Cent. Amer.

Búrtonii. Hybrid between *E. O'Brienianum* and *E. ibaguense.*

ciliàre (*Auliza ciliaris*). Pseudobulbs to about 7 in. high, with 1–2 leathery lvs. rarely to 11 in. long: fls. in loose racemes; sepals and petals very narrow, yellowish-green; lip 3-lobed, white with 2 yellow spots at base, side lobes deeply fringed, mid-lobe very narrow. Blooms all year. Trop. Amer.

cochleàtum. Pseudobulbs to 10 in. long, with 2 or rarely 3 lvs. to 14 in. long: scapes commonly simple, loosely fld.; sepals and petals narrow, whitish-green; lip cochleate, dark purple with yellow radiating veins. Blooms all year. Trop. Amer.

conspícuum: *E. roseum.*

Cooperiànum. Sts. cylindric, leafy above: racemes drooping, many-fld.; fls. about 1½ in. across; sepals and petals yellowish-brown; lip rose. Nov.–May, Aug. Brazil, British Guiana.

dellénse. Hybrid between *E. radicans* and *E. xanthinum.*

diffórme (*E. latilabre*). Sts. cylindric: lvs. ligulate to oval: fls. to about 2 in. across, green, few to numerous in terminal umbellate racemes; lip much broader than long. Fla., Mex., Cent. Amer., S. Amer.

diùrnum (*E. virens. Encyclia diurna* and *virens*). Pseudobulbs ovoid-oblong, 2–3-lvd.: lvs. to 1½ ft. long: infl. to almost 3 ft. long, paniculate; fls. about 1–1½ in. across; sepals and petals green or greenish-yellow; lip white with purple streaks. May–July, Nov., Feb. W. Indies, Venezuela.

elongàtum: *E. secundum.*

erythronioìdes: *E. Boothianum.*

evéctum. Sts. slender, cylindric, to 5 ft., branched, leafy above: peduncle long, at the apex with a short dense raceme; fls. rose-purple, with fringed 3-lobed lip. Colombia.

fràgrans. Pseudobulbs variable, 1-lvd. at the summit, to 5 in. high: lf. rarely to 13 in. long: fls. fragrant, in short few- to several-fld. racemes; sepals and petals yellowish-white; lip white lined with violet. Blooms all year. Cent. Amer., W. Indies, S. Amer.

galtonénse. Hybrid between *E. Boundii* and *E. xanthinum.*

Godseffiànum: *E. osmanthum.*

graníticum: *E. oncidioides.*

ibaguénse (*E. ybaguense*). Sts. slender and tall, leafy above: lvs. very fleshy: infl. racemose at summit of long naked peduncle, densely-fld.; fls. orange and yellow; lip 3-lobed, toothed or fringed. S. Amer.

indivìsum: *Diacrium bicornutum* var.

invérsum. Pseudobulbs fusiform, to 6 in. long, with 2 leathery lvs. at the summit: lvs. 8¾ in. long: fls. in 7–12-fld. racemes, pale straw-color or white streaked with rose and with a rose spot on lip. Brazil.

kewénse. Hybrid between *E. evectum* and *E. xanthinum.*

lánipes. Sts. thick-cylindric, leafy above: panicles to 1 ft. long; fls. yellow with oblong-lanceolate sepals, filiform petals, and 3-lobed lip. Peru.

latilàbre: *E. difforme.*

Lindleyànum (*E. spectabile. Barkeria spectabilis*). Sts. cylindric or fusiform-cylindric: fls. racemose, rose spotted with darker color, about 1½–2 in. across. Mar.–Nov. Cent. Amer.

macrochìlum: *E. atropurpureum.*

nemoràle (*Encyclia nemoralis*). Pseudobulbs subglobular to pyriform, 2–3-lvd.: lvs. to 13 in. long: infl. racemose or paniculate, to about 40 in. high, loosely 8- or more-fld.; fls. large, to 4 in. across; sepals and petals lilac or violet; lip with deeper colored side lobes and whitish mid-lobe lined with violet. Apr.–July. Mex.

noctúrnum. Sts. cylindric, erect, to about 3 ft. tall: lvs. oval to oblong, to 6 in. long, obtuse, leathery: racemes very short, terminal, 2–3-fld.; fls. with greenish-yellow linear sepals and petals and white lip, very fragrant. Blooms all year. Trop. Amer.

O'Brieniànum. Hybrid between *E. evectum* and *E. radicans.*

odoratíssimum (*Encyclia odoratissima*). Pseudobulbs ovoid, 2–3-lvd.: lvs. to 16 in. long: infl. commonly paniculate, to 2 ft. long, loosely many-fld.; fls. about 1 in. across, greenish often marked with purplish. Jan.–Mar., May–Oct. Colombia, British Guiana, Brazil.

oncidioìdes (*E. graniticum. Encyclia oncidioides*). Pseudobulbs slender, pyriform or fusiform, to 8 in. long, 2–3-lvd.: lvs. oblong-ligulate, to 2 ft. long: panicles to 6 ft. tall, many-fld.; fls. 1–1½ in. across, fragrant; sepals and petals green or yellow with large red-brown blotch; lip white or yellow with red veins. Oct.–Aug. Cent. Amer., Trinidad, S. Amer.

osmánthum (*E. Godseffianum. Encyclia osmantha*). Pseudobulbs narrowly obpyriform, 1–2-lvd.: lvs. to about 15 in. long: infl. simple or branched, to 2 ft. long; fls. to 2 in. across; sepals and petals yellow or yellow-green streaked with red or purple; lip white marked with crimson. Sept.–Oct. Brazil.

paleàceum (*E. auritum*). Small plant with 1-lvd. ellipsoid pseudobulbs on creeping rhizome: lvs. narrow, to about 9 in. long, erect: infl. short, loosely several-fld.; fls. white to yellow, fragrant. Blooms all year. Cent. Amer.

papilionàceum: *E. bifidum.*

pentòtis. Pseudobulbs fusiform-cylindric, to 14 in. tall, 2-lvd.: lvs. ligulate: spike short, terminal, few-fld.; fls. yellowish or creamy-white, to about 3 in. across, fragrant; lip white striped with purple. Mar.–May, July? Cent. Amer., Brazil.

polybúlbon (*Dinema polybulbon*). Plant with long creeping and branching rhizome bearing 2-lvd. pseudobulbs: lvs. rarely to 2¾ in. long: fls. solitary; sepals and petals yellowish or brownish; lip snow-white with yellow markings. Sept.–Apr., June–July. Cent. Amer., W. Indies.

porphýreum. Sts. cylindric, leafy: lvs. elliptic-oblong: fls. in a panicle, purple to orange, petals linear, mid-lobe of lip dilated and bilobed. S. Amer.

prismatocárpum. Pseudobulbs pyriform to cylindric, to 1 ft. long, 2–3-lvd.: lvs. to 15 in. long: fls. in racemes to 14 in. long; sepals and petals yellow-green spotted with dark brown; lip 3-lobed, yellow-green at base, violet above. Dec.–Feb., May–Aug. Costa Rica, Panama.

radìcans (*E. rhizophorum*). Sts. cylindric, leafy, to 5 ft. long, commonly with long white roots among the lvs.: lvs. to 4 in. long: fls. about 1–1¾ in. across, in dense many-fld. racemes at the summit of a long peduncle; sepals and petals cinnabar-red; lip orange-yellow. Nov.–Aug. Cent. Amer.

raníferum. Sts. cylindric, to 5 ft. tall, leafy on terminal half: fls. 1–2 in. across, few to many in terminal drooping racemes; sepals and petals yellowish-green with dark reddish-brown spots; lip 4-lobed, white, greenish or lavender with margins of the lobes yellowish. Cent. Amer., S. Amer.

rhizóphorum: *E. radicans.*

rígidum. Sts. cylindric from a creeping rhizome, to 11½ in. tall: lvs. elliptic-oblong, to 3¾ in. long: racemes to 6 in. long; fls. small, green. Fla., trop. Amer.

ròseum (*E. conspicuum*). Pseudobulbs to almost 5 in. high, with 2 lvs. to 8 in. long: racemes 6–12-fld., to 20 in. long; fls. pale rose, almost 2 in. across. Brazil.

secúndum (*E. elongatum*). Sts. cylindric, leafy: lvs. ovate-lanceolate to elliptic-oblong, to 4½ in. long: peduncle long, slender, densely many-fld. at the apex; fls. rose-pink; sepals and petals oblanceolate, acute, more or less reflexed; lip 3-lobed, coarsely toothed. W. Indies, S. Amer.

Skínneri (*Barkeria Skinneri*). Sts. fusiform-cylindric, several-lvd.: racemes few- to many-fld.; fls. about 1–1½ in. across, dark rose or purple, the lip with yellow ridges. Oct.–Jan. Guatemala.

spectábile: *E. Lindleyanum.*

Stamfordiànum. Pseudobulbs fusiform to clavate, to 12 in. high, with 3–4 lvs. to 10 in. long: fls. in leafless lax panicles to about 24 in. long; sepals and petals yellow spotted with purple; lip white with yellow toothed mid-lobe. Nov.–June. Cent. Amer., Venezuela, Colombia.

stenophýllum: listed name.

tampénse. To about 32 in. high: pseudobulbs pyriform, 1–2-lvd.: lvs. narrowly linear-oblong, to 9½ in. long: fls. loosely paniculate; sepals yellowish-green tinged with brown, petals similar but browner; lip 3-lobed, white with magenta-purple lines, mid-lobe nearly orbicular, sometimes white or magenta. Apr.–July, Oct.–Dec. Fla., Bahama Isls., Cuba.

venòsum. BUTTERFLY ORCHID. Rhizome creeping: pseudobulbs slender, 2-lvd.: fls. in few-fld. racemes; sepals and petals green; lip 3-lobed, white, often with violet lines. Mex.

vìrens: *E. diurnum.*

virgàtum (*Encyclia virgata*). Pseudobulbs ovoid to pyriform, 2–3-lvd.: lvs. to 2 ft. or more long: infl. paniculate, to 7 ft. long; fls. up to 1¼ in. across; sepals and petals greenish stained with brown; lip whitish-yellow. Oct.–July. Mex. to Honduras.

vitellìnum. Pseudobulbs to 2 in. high, with 2–3 lvs. to 12 in. long: infl. loosely racemose or paniculate, several- to many-fld., to 1½ ft. long; fls. cinnabar-red, to 1½ in. across. May–Oct. Mex., Guatemala. Var. **màjus** has larger brighter colored fls.

xanthìnum. Sts. cylindric, leafy above, to 2 ft. or more high: infl. racemose, densely fld. at the apex of a long peduncle; fls. yellow and sometimes tinted with orange; lip 3-lobed and fringed. Brazil.

ybaguénse: *E. ibaguense.*

EPIGÆA. *Ericaceæ.* Evergreen perennials with woody creeping sts., clusters of delightfully fragrant flesh-colored fls. in very early spring; 2 species, N. E. Amer. and Japan.

The plants can be grown in the garden if given acid soil and shade, and their natural conditions imitated. Propagation by seed is much more satisfactory than by division; sow as soon as seed is ripe.

asiática. Differs in part from *E. repens* in its oblong acuminate or acute lvs. Japan.

rèpens. TRAILING ARBUTUS. MAYFLOWER. Sts. hairy: lvs. ovate, to 3 in. long, bright green: fls. white or pink, salverform, about ½ in. long. Newf. to Fla. and Ky.

EPILÒBIUM. WILLOW-HERB. *Onagraceæ.* Herbs or sometimes subshrubs with linear to willow-like to oblong lvs., mostly more or less weedy, rose-purple, white or rarely yellow small fls., and long narrow capsular frs.

Suitable for planting in damp places and wild-gardens. Propagated by seeds or division; some of them produce runners and rosettes. They are plants of minor horticultural importance.

adnàtum. Large, branched, erect, appressed-pubescent above: lvs. oblong, acute, serrulate, but some of them sessile and decurrent: fls. rose. Eu.

ampléctens. Per. to 2 ft.: lvs. opposite, oblong, fine-toothed: fls. purple, in racemes or spikes. Himalayas.

angustifòlium (*Chamænerion angustifolium*). FIREWEED. GIANT W. Per. to 8 ft.: lvs. alternate, lanceolate, to 6 in. long: fls. purple, 1¼ in. across, in long terminal racemes. Eu., Asia, N. Amer. Var. **álbum** has pure white fls.

boreàle. Branched per., becoming large, pubescent above: lvs. ovate to lanceolate, denticulate, to 3 in. long: fls. rosy, less than ¼ in. long, becoming abundant. Alaska.

chloræfòlium. Per. to 1½ ft., sts. decumbent below: lvs. opposite, ovate or ovate-oblong, to ¾ in. long, slightly toothed: fls. white or rose, ⅓ in. across, in axils of upper lvs. New Zeal.

coloràtum. Per., slender, much branching, 1–3 ft.: lvs. narrow-lanceolate, serrulate, 2–6 in. long: fls. very small but numerous, axillary, pink or white. Weedy plant in low ground and dry ditches, Me. to Kans. and S. C.

Dodonæi (*E. rosmarinifolium*). Per. to 3 ft.: lvs. scattered, linear, to 2½ in. long: fls. rose-purple, rarely white, crowded near ends of branches. Eu.

Fleìscheri. To 8 in.: lvs. lanceolate to linear-lanceolate: fls. deep purple, in few-fld. panicles. Eu.

Héctori. Sts. decumbent and rooting but becoming erect to 6 in. high: lvs. small, mostly opposite, oblong, to ½ in. long: fls. about ¼ in. diam., in upper axils. New Zeal.

hirsùtum. Per. to 4 ft., hairy: lvs. usually opposite, lanceolate, to 3 in. long: fls. purple, 1 in. across, solitary or in short racemes. Eu.; nat. in E. U. S.

Hórnemannii. Erect to 12 in., simple or nearly so: lvs. ovate or elliptic, nearly or quite entire, to 1½ in. long: fls. purple, about ¼ in. across, in upper axils. N. N. Amer., Eurasia.

Lámyi. Depauperate bien., stoloniferous, with low branched st.: lvs. lanceolate, small-toothed, rosulate in autumn: fls. purple, funnelform. Eurasia.

latifòlium (*Chamænerion latifolium*). Per. to 1½ ft.: lvs. alternate, lanceolate or ovate-lanceolate, to 2 in. long: fls. purple, to 2 in. across, in short leafy-bracted racemes. N. N. Amer., Eu., Asia.

linèare: name of doubtful application.

lùteum. Per. to 2 ft.: lvs. ovate or lanceolate-ovate, to 3 in. long, toothed: fls. bright yellow, petals ¾ in. long. Alaska to Wash.

macròpus. Decumbent or creeping per. with purplish sts. to 9 in. long: lvs. opposite, ovate or ovate-oblong, to ¾ in. long: fls. white, ⅓ in. across, few in the axils. New Zeal.

nummularifòlium. Creeping and tufted, the sts. to 8 in. long: lvs. opposite, orbicular, to ½ in. long: fls. pink or whitish, ⅙ in. across, axillary. New Zeal.

obcordàtum. Sts. decumbent, to 6 in. long: lvs. opposite, ovate, to ¾ in. long: fls. rose-purple, the petals to ¾ in. long, few in axils. Mts., Calif., Nev.

obscùrum. Very low per., stoloniferous: lvs. lanceolate, remotely small-toothed, sessile: fls. small, purple, funnelform. Eurasia.

parviflòrum. Erect per. to 1 or 2 ft., soft-pubescent, rosulate at base: lvs. lanceolate, dentate, sessile: fls. very small, purple or white. Eurasia.

ròseum. Much branched per. to 2½ ft.: lvs. mostly opposite, oblong, toothed: fls. white turning rose, small, petals about ⅓ in. long. Eu., Asia.

rosmarinifòlium: *E. Dodonæi.*

rubéscens. Stoloniferous per. to 1½ ft., simple, hairy above: lvs. lanceolate, sharply acute, 1½ in. long: fls. white, small. Colo., Utah.

EPIMÈDIUM. *Berberidaceæ.* Low per. herbs of the north temp. zone, with small pinnate lvs. and dainty racemes of small fls. in red, pink, white, yellow; the outer colored parts are interpreted as sepals, and the 4 inner ones as petals which are usually nectaries and sometimes produced into prominent spurs. The species and vars. are confused in cult. and plants may not belong to the names they bear. Recent studies indicate that the genus Aceranthus may not be generically distinct from Epimedium.

The plants are very suitable for rock-gardens and semi-shady locations. In sheltered spots under trees the foliage often remains all winter and leaves persist when dead. Any usual soil is satisfactory. Propagated by division.

álbum: *E. grandiflorum* var.

alpìnum. To 1 ft.: lvs. biternate: fls. red with yellow slipper-like nectaries and short spurs. Eu. Cult. apparently only in var. **rùbrum** (*E. rubrum*) with larger fls. and petals red outside and lvs. red-margined. May–June.

bicolòrum: hort. form with rosy-brown fls., probably of *E. alpinum.*

coccíneum: hort. form with red and white fls.

cólchicum: *E. pinnatum* var.

diphýllum: *Aceranthus diphyllus.*

élegans: *E. pinnatum* var.

eréctum: hort. name for a form with white fls.

grandiflòrum (*E. macranthum*). LONG-SPUR E. To 9 in.: lvs. triternate: outer sepals red, inner petals violet with white deflexed prominently projecting spurs 1 in. long. May–June. Japan. Var. **álbum** has white fls.; var. **níveum** (*E. niveum*), fls. pure white; var. **ròseum** (*E. roseum*), pinkish or pale rosy-red; var. **violàceum** (*E. violaceum*), spurs violet.

lácteum: listed form with creamy-white fls.

lilàceum: listed name.

macránthum: *E. grandiflorum.*

Musschiànum. JAPANESE E. Lvs. 1-ternate: fls. white or pale yellow, drooping, spurs or sacs very short and not prominent. Japan.—Perhaps not distinct from *E. grandiflorum.*

níveum: *E. grandiflorum* var.

Perralderiànum. Differs from *E. pinnatum* in lvs. only once ternate and lfts. more ciliate-toothed: lvs. marked with bronze when young. Algeria.

pinnàtum. PERSIAN E. Lvs. usually biternate: fls. bright yellow with short red spurs or nectaries. Apr.–July. Persia, Caucasus. Var. **cólchicum,** GOLDEN-FLEECE E., fls. brilliant yellow; var. **élegans,** June–Aug., larger and more numerous fls. than type.

ròseum: *E. grandiflorum* var.

rùbrum: *E. alpinum* var.

sulphùreum: hort. name, probably form of *E. pinnatum.*

violàceum: *E. grandiflorum* var.

EPIPÁCTIS. *Orchidaceæ.* Terrestrial erect orchids from shortened rhizomes, with leafy sts. and fls. in loose terminal racemes with conspicuous bracts, the sepals and petals similar, the lip free, 3-lobed, saccate at base. Sometimes grown in the wild-garden.

decípiens: *Goodyera decipiens.*

gigantèa (*Serapias gigantea. Amesia gigantea*). To 3 ft. high: lvs. to 8 in. long: fls. green and rose striped with red, about 1 in. across. June–Aug. W. N. Amer., Mex.

pubéscens: *Goodyera pubescens.*

rèpens: *Goodyera repens.*

tesselàta: *Goodyera tesselata.*

EPIPHRONÌTIS. *Orchidaceæ.* A group comprising hybrids between the genera Epidendrum and Sophronitis.

Veìtchii (*E. radicans* × *S. grandiflora*).

EPIPHYLLÁNTHUS. *Cactaceæ.* Forking plants, resembling Zygocactus in habit, with thick globular, cylindric or flattened joints not toothed and bearing areoles all around, often epiphytic, with or without spines: fls. irregular, slender, purple to white, stamens more or less exserted. Cent. Brazil, 3 species. See *Cacti.*

microsphǽricus (*Cereus obtusangulus*). At first erect, becoming much branched and more or less prostrate, joints slender and terete or obtusely angled, somewhat spiny or nude: fls. terminal, purple to rose.—Slow growing and often grafted on Zygocactus.

EPIPHYLLOPSIS: *Schlumbergera Gaertneri.*

EPIPHÝLLUM (*Phyllocactus*). *Cactaceæ.* Mostly epiphytic cacti, branches usually flattened and leaf-like and sometimes 3-winged; mostly no spines on mature plants: fls. large and showy, tube longer than limb, with many long stamens, white, red or yellow, nocturnal or diurnal. Some 16 species, as now understood, Mex. and southward, some of them known as house plants; there are a number of hybrids. See *Cacti.*

The epiphyllums are very useful as greenhouse and window-garden subjects and are frequently seen in summer on porches. They propagate readily by cuttings and are of simple requirements.

Áckermannii: *Nopalxochia Ackermannii.*

álbum supérbum: probably a garden hybrid.

angùliger. Branches many, the lower ones terete, but upper ones flattened and deeply toothed: fls. brownish-yellow outside and otherwise white, tube about 3 in. long and segms. about 2 in. Mex.

bélla: probably a garden hybrid.

bifórme: *Disocactus biformis.*

brasiliénse: garden hybrid.

Brídgesii: *Schlumbergera Bridgesii.*

Coòperi. Said to be a hybrid between *E. crenatum* and *Selenicereus grandiflorus* and characterized by fls. to 9 in. across, of variable color from white to golden-yellow.

crenàtum. Sts. about 3 ft. long, terete, becoming woody, strongly crenate, branches glaucous and often tip-rooting: fls. 4 in. and more across and tube of similar length, very fragrant, cream-colored or greenish-yellow. Honduras, Guatemala. Var. **spléndidum** is listed.

crispàtum: *Rhipsalis crispata.*

hermòsum: probably a garden hybrid.

Hoòkeri. Sts. 6–10 ft. long and more, joints rather thin and deeply crenate and 2–3 in. or more broad: fls. scentless, nocturnal, 8–9 in. long, yellow outside, petals white. Trinidad, Venezuela.

Jénkinsonii. Hybrid between *Heliocereus speciosus* and *Nopalxochia phyllanthoides* and has deep scarlet fls. to 4 in. across: fr. purple.

látifrons: *E. oxypetalum.*

lilácinum: garden hybrid.

Makoyànum: *Schlumbergera Gaertneri.*

nítidum: listed name.

oxypétalum (*E. latifrons*). Stout, to 10 ft. or more, with many thin flat branches to 4 in. or more broad and deeply crenate: fls. opening in evening and in full bloom about midnight, to 10 in. long, white, reddish outside, style white. Mex. to Brazil.—Much cult.

Pèacockii. Garden hybrid of which Heliocereus is believed to be one of the parents and said to have white to yellow fls. which are frequently spotted; very variable.

Pférsdorffii: garden hybrid.

phyllanthoìdes: *Nopalxochia phyllanthoides.*

phyllánthus. Sts. 3–4-angled when old, branches to nearly 3 in. wide, margin reddish, becoming woody, coarsely toothed: fls. white, to 1 ft. long, nocturnal, style red. Panama to Brazil and Peru.—Named variants have styles white, pink to brilliant red while others have lobes more sharply divergent from perianth-tube.

Pittièri. Branches to 18 in. long and 1½ in. wide, margin notched or toothed: fls. with outer perianth-segms. green, inner white, to 5 in. long, nocturnal, hyacinth-scented, style pink. Costa Rica.

ròseum: garden name, perhaps of a hybrid.

Russelliànum: *Schlumbergera Russelliana.*

Schlumbergeriànum: listed name.

speciòsum: probably a garden hybrid.

stenopétalum. Like *E. oxypetalum* (*latifrons*) but ultimate joints not acuminate as in that species: fls. fragrant, nocturnal but remaining open in morning, about 10 in. long, white, reddish outside, style pink or purplish. Mex.

stríctum. Plant to 6 or 7 ft. or more, joints 2–3 in. broad and serrate: fls. opening at night and closing before dawn, white, brownish or pinkish outside, tube 6 in. long, sepals recurved. Mex. to Panama.

truncàtum: *Zygocactus truncatus.*

Uràyi: probably a garden hybrid.

EPIPHYTE: air-plant; a plant growing on another or on some other elevated support.

EPÍSCIA. *Gesneriaceæ.* Trop. American herbs with opposite often unequal lvs., scarlet, whitish or purple fls. with frequently spurred corolla-tube and 5-lobed limb, and leathery frs. opening by 2 valves; grown under glass and for hanging-baskets and in pyramids; require partial shade; propagated by cuttings or division of sts.

chontalénsis. Sts. to 10 in. long, reddish-purple: lvs. ovate, to 4 in. long, marked with purple between veins: fls. pale lilac or white, to 2 in. across, solitary or clustered. Nicaragua.

coccínea. Lvs. metallic-green, to 4 in. long and 3 in. across. Probably Cent. Amer.

cupreàta. Sts. rooting at joints, drooping: lvs. oval, wrinkled and soft-hairy, tinged with copper or red: fls. scarlet, ¾ in. across, solitary. Nicaragua. Var. **viridifòlia** has fls. to 1 in. across and green lvs.—The best known species in cult.

fúlgida. Pubescent creeper: lvs. ovate, margins ciliate, rich dark green: fls. bright red, 1½ in. long, solitary. N. S. Amer.

metállica: hort. name, perhaps for a form of *E. cupreata.*

tessellàta (*Centrosolenia bullata*). Pubescent, of robust habit: lvs. to 1 ft. long and 6 in. wide, bronzy-green, veined with purple, and elevated between veins, wavy and ciliate: fls. pale yellow, about 2 in., long, in clusters. Peru.

EPITHELÁNTHA. *Cactaceæ.* BUTTON CACTUS. One very small globular cactus from W. Tex. and N. Mex. For cult. see *Cacti.* **E. micrómeris** (*Mammillaria micromeris*). Simple or cespitose, about 2¼ in. or less diam., depressed at top; tubercles small in many spirals; spines many and white: fls. near center of plant among wool and spines, whitish to light pink, about ¼ in. across. Var. **Gréggii** (*E.* and *Mammillaria Greggii*) differs only in its somewhat larger size and may not be distinct.—The names *E. fungifera*, *E. tuberosa* and *E. ungispina* are in the trade but are not known botanically.

EQUISÈTUM. HORSETAIL. *Equisetaceæ* (the only genus). Per. rush-like cryptogamous herbs with hollow jointed sts. and no proper foliage; lvs. reduced to sheaths at the joints; spores borne in terminal cone-like spikes; widely distributed and rarely transplanted in moist locations.

hyemàle. Evergreen, to 4 ft., sts. slender, furrowed and rough: spikes pointed. N. Amer., Eu., Asia.

præáltum (*E. robustum*). Evergreen, to 11 ft., sts. furrowed and rough: spikes with stiff point. N. Amer., Asia.

robústum: *E. prœaltum.*

variegàtum. Evergreen, sts. tufted, to 1½ ft. long, furrowed: sheaths variegated with black above: spikes with stiff point. N. N. Amer., Eu., Asia.

ERAGRÓSTIS. *Gramineæ.* Small or medium-sized ann. and per. grasses widely distributed in trop. and temp. countries, the small spikelets borne in open diffuse panicles; a few species are planted for the ornament of their delicate spray. See *Grasses.*

abyssínica. TEFF. Ann. to 3 ft.: lvs. to 6 in. long and $\frac{1}{12}$ in. wide: panicles 1 ft. or more long, with long hair-like ascending branches. N. Afr.

amábilis (*Poa amabilis*). Ann. to 1 ft.: lvs. to 4 in. long and ⅙ in. wide: panicles to 6 in. long, with slender spreading or ascending branches. India.—Some of the material cult. under this name is *E. suaveolens.*

capillàris. Ann. to 1½ ft.: lvs. to 10 in. long and ⅙ in. wide, rough above: panicles to 15 in. long, with hair-like spreading or ascending branches. N. H. to Ga. and Tex.—Some of the material cult. as *E. capillaris* is *E. mexicana.*

chloromèlas. Tufted per. to 1½ ft.: lvs. to 6 in. long and $\frac{1}{12}$ in. wide, convolute, glaucous: panicles to 8 in. long, stiff, with slender spreading branches. S. Afr.

cúrvula. Tufted per. to 2 ft.: lvs. to 1 ft. long and $\frac{1}{12}$ in. wide, convolute: panicles to 10 in. long, with slender branches erect or spreading. S. Afr. Var. **válida** has lvs. to 2 ft. long and ¼ in. wide.

élegans: *E. tenella.*

interrúpta: *E. tenella.*

japónica: *E. tenella.*

máxima. Ann. to 3 ft.: lvs. lanceolate: panicles to 9 in. long, with hair-like branches. Madagascar.—Plants grown under this name may be *E. suaveolens.*

mexicàna. Ann. to 2 ft.: lvs. to 8 in. long: panicles to 1 ft. long, the branches slender and spreading. S. Calif. to New Mex. and Mex.

obtùsa (*Briza geniculata*). Tufted per. to 1½ ft.: lvs. to 5 in. long and $\frac{1}{12}$ in. wide, usually involute: panicles to 4 in. long, with thread-like spreading branches. S. Afr.

pilòsa (*Poa pilosa*). Tufted ann. to 1½ ft.: lvs. to 5 in. long and $\frac{1}{12}$ in. wide: panicles to 6 in. long, branches spreading. Eu.; nat. in N. Amer.

suavèolens. Ann. to 3 ft., resembling *E. abyssinica* but with less spreading panicles and more compact spikelets. W. Asia.

tenélla (*E. elegans. E. interrupta. E. japonica*). Ann., erect, to 3 ft.: panicles narrow, somewhat interrupted, comprising about half the entire height with numerous minute spikelets. Japan.

unioloìdes. Ann., erect or spreading, to 1 ft.: panicle ovoid and open, to 6 in. long, the spikelets usually pink or purplish and somewhat like those of a Briza. India, Malaysia, China.

ERANTHEMUM (*Dædalacanthus*). *Acanthaceæ.* Trop. Asian herbs and shrubs with opposite simple lvs. and blue or rose tubular 5-lobed fls. in dense bracted spikes; one species grown in S. Fla. and under glass. It thrives in light rich soil with ample sunlight and water. Propagated by cuttings of young wood.

atropurpùreum: *Pseuderanthemum atropurpureum.*

bícolor: *Pseuderanthemum bicolor.*

Eldoràdo: a form of *Pseuderanthemum atropurpureum.*

nervòsum (*E. pulchellum*). To 4 ft.: lvs. ovate or oval, to 8 in. long, prominently veined, slightly toothed: fls. blue, 1 in. long and ¾ in. across, under pointed veiny bracts. India.—Commonly planted far S. and frequent under glass.

pulchéllum: *E. nervosum.*

reticulàtum: *Pseuderanthemum reticulatum.*

tuberculàtum: *Pseuderanthemum tuberculatum.*

ERÁNTHIS. WINTER ACONITE. *Ranunculaceæ.* Small per. herbs with short tuberous root, native in Eu. and Asia, having basal palmately dissected lvs., solitary yellow vernal fls. subtended by an involucre-like lf., and fr. composed of many follicles. They are very hardy and thrive in moist situations. Propagated by division of roots.

cilícica: *E. hyemalis* var.

hyemàlis. To 8 in.: lvs. long-stalked, 1½ in. across, cut into many linear or oblong segms.: fls. to 1½ in. across, with 5–9 petal-like sepals, in very early spring. Eu.; somewhat nat. in N. Amer. Var. **cilícica** (*E. cilicica*) has broader sepals ½ in. across.—Tubers may be planted in autumn as for tulips; plants are likely to persist.

pinnatífida. Distinguished by segms. of radical lvs. and involucre pinnatifid, and pedicelled fls. with ovate white sepals. Japan.

sibírica. Similar to *E. hyemalis* but only 3–4 in. high, with smaller fls. having 5 sepals. Siberia.

Tubergènii. Hybrid with large shiny golden-yellow fls.

ERCÍLLA. *Phytolaccaceæ.* Climbing evergreen shrubs with alternate entire lvs., pale purple fls. in many-fld. axillary racemes, and fr. a berry; sometimes grown in warm regions or under glass as a wall-cover as it climbs by aērial rootlets. Propagated by seeds and cuttings.

spicàta (*Bridgesia spicata*). Lvs. leathery, elliptic or ovate, to 3 in. long and 1½ in. wide: racemes slightly longer than lvs.: berries dark purple. Chile.

ERDÍSIA. *Cactaceæ.* S. American cacti with erect or drooping branches, few ribs having spiny areoles, and small short-tubed fls.

Meỳenii (*Cereus aureus. Cleistocactus aureus*). Sts. underground, sending up club-shaped unjointed branches to 8 in. tall and 2 in. diam.; ribs 5–8, about ½ in. deep, remotely wavy; spines many, unequal, to 2½ in. long: fls. yellow, to 1½ in. long: fr. reddish. N. Chile and Peru.

squarròsa (*Cereus squarrosus*). Sts. to 6 ft. long; ribs 8–9, areoles ½ in. apart; spines 15, to 1½ in. long, yellowish: fls. bright red, to 1½ in. long. Peru.

EREMÆA. *Myrtaceæ.* W. Australian shrubs, some of them intro. in Calif., differing from Calothamnus chiefly in the fls. solitary or few and nearly terminal rather than in lateral clusters or spikes: lvs. heath-like, flat, alternate, often crowded: stamens longer than petals and showy, the fls. red.

ebracteàta. Low bush, young parts somewhat hirsute: lvs. ⅓ in. or less long, linear: fls. 1–3 at a place, with few small bracts or none.

fimbriàta. Stiff coarse shrub, more or less hirsute: lvs. ½ in. or less long, lanceolate or elliptic: fls. solitary, surrounded by bracts.

violàcea. Hirsute shrub with nearly cylindrical linear acute lvs. and solitary twin or sometimes clustered fls. bearing violet filaments that are joined near the base.

EREMÓCHLOA. *Gramineæ.* Per. grasses of Asia and Australia, with one-sided spikelets borne in terminal narrow spikes; one species grown for lawns in the S. See *Grasses*.

ophiuroìdes. CENTIPEDE-GRASS. Creeping by runners and stolons: lvs. about 3 in. long and ¼ in. wide, bluish- or yellowish-green: racemes straight or somewhat falcate, cylindric and slender, glabrous, to 2½ in. long. China.

EREMOCÍTRUS. AUSTRALIAN DESERT KUMQUAT. *Rutaceæ.* One species, **E. glaùca,** in desert regions of subtrop. Australia, in this country resistant to cold and drought and promising beyond the regular citrus belt. It is a sharp-spiny shrub or small tree with very narrow xerophytic lvs. to 1½ in. long: fls. small, white, fragrant, solitary or 2 or 3 together in the axils: fr. light yellow, pyriform or oblate, about ½ in. diam., commonly 4-celled, mildly acid and edible. Works as a graft on Citrus, and vice-versa.

EREMÓSTACHYS. *Labiatæ.* Asian herbs with mostly basal toothed or cut lvs. and yellow 2-lipped fls. in many-fld. whorls in spikes; one species is known to hort.

laciniàta. To 2 ft. or more, hairy: lvs. 2-pinnate into lanceolate or linear segms.: fls. yellow or cream-colored, in spikes to 2 ft. long. Asia Minor.

EREMÙRUS. DESERT-CANDLE. *Liliaceæ.* Asian per. herbs with thick fibrous or cord-like roots, narrow basal lvs. forming tufts or rosettes and white, pink or yellow fls. in racemes terminating stately scapes usually several ft. high, the perianth-segms. almost distinct.

These plants are hardy in the North with winter protection. They are good in rich well-drained soil. Propagated by division or slowly by seeds. They are seen to good advantage against a background of foliage.

altàicus. Probably not more than to 4 ft.: lf. margins entire: fls. yellow, cylindrical to subcampanulate, pedicels jointed at apex, corolla-lobes somewhat incurved. W. Siberia.—Little known botanically.

aurantìacus. Similar to *E. Bungei* but with orange fls. and lvs. not so acutely keeled. Turkestan.

Búngei. Lvs. linear, 1 ft. long: fls. yellow or orange, in racemes to 5 in. long. Persia. Var. **perféctus,** an improved form with deep golden-orange fls. Var. **sulphùreus,** fls. sulfur-yellow.

Élwesii. Lvs. ovate-lanceolate, glaucous: fls. pink with deeper band down center. Habitat unknown. Var. **álbus** is listed.

himalàicus. Lvs. strap-shaped, to 1½ ft. long: fls. white, in racemes to 2 ft. long and 4 in. through. Himalayas.—The commonest species in cult.

Kaùfmannii. Distinguished by lvs. white-hairy on both sides and linear-filiform bracts. Turkestan.

Ólgæ. Lvs. narrow, to 1 ft. long and ¾ in. or less broad, rough on margins: fls. white with brownish midnerves, in a dense raceme. Turkestan. Var. **álbus** has white fls.

robústus. Lvs. narrow-strap-shaped, to 2 ft. long, glaucous: fls. bright pink, in racemes to 3 ft. long and 5 in. through. Cent. Asia. Var. **supérbus** is an improved form.

Shélfordii. A hort. form with coppery-yellow fls. tinged outside with red.

spectábilis. Lvs. lorate, to 1½ ft. long and 1 in. wide, slightly glaucous: fls. light yellow with orange stamens, in racemes 1½–2 ft. long and 2 in. through. Asia Minor.

taùricus. Lvs. often with minutely denticulate margins: fls. white, campanulate, pedicels not jointed at apex. Russia.

turkestánicus. Fls. reddish-brown margined with white, in racemes to 2 ft. long. Turkestan.

Tubergènii. Hybrid between *E. himalaicus* and *E. Bungei.*

Wàrei. Probably hybrid between *E. Bungei* and *E. Olgæ.*

ERÉPSIA. *Aizoaceæ.* Separated from Mesembryanthemum (which see for cult.): per., more or less woody, branches erect or ascending: lvs. opposite, 3-angled, sometimes serrate or toothed: fls. solitary or ternate, whitish, yellow or reddish; stamens hidden under staminodes. S. Afr.

compréssa (*M. compressum*). Lvs. to 1¼ in. long and ½ in. wide, punctate, somewhat glaucous and rough: fls. red, inner petals yellowish and short.

grácilis (*M. gracile*). Lvs. about 1 in. long, finely punctate: fls. red, 1¼ in. across, inner petals yellowish and short.

Hawórthii (*M. Haworthii. Lampranthus Haworthii*). To 2 ft.: lvs. glaucous and smooth, to 1½ in. long and ⅕ in. wide: fls. purplish, about 3 in. across.

heteropétala (*M. heteropetalum*). Lvs. somewhat compressed or flattened but 3-angled, glaucous, punctate, rough or cut on the keel, about 1 in. long: fls. pale red or whitish, ½ in. across, the petals unequal and shorter than calyx.

inclaùdens (*M. inclaudens*). Lvs. punctate, scimitar-shaped, with wide keel, green, 1 in. or less long, essentially entire: fls. rose or purplish, 1½ in. across, with broad petals, inner ones very short.

mutábilis (*M. mutabile*). Lvs. to ¾ in. long and ⅕ in. wide, gray-green, acute, keel entire: fls. rose, petals narrow or subulate, a little longer than calyx.

ÈRIA. *Orchidaceæ.* Trop. Asian orchids, commonly epiphytes, of various habit, with fls. in racemes or solitary, the lateral sepals forming with the column a spur or sac-like projection. Subjects for the warm greenhouse; see *Orchids*.

ancorífera. Plant small: similar to *E. flava* but with black anchor-shaped mark on lip. Sumatra.

barbàta. Pseudobulbs to 2 in. long, with 2–3 lvs. to 14 in. long: scape to 3 ft. high bearing several distant fls. on hairy sts.; fls. yellow striped with brownish-purple. Oct.–Nov. India.

bractéscens. Pseudobulbs to 7 in. long, with 2–3 lvs. to 10½ in. long: racemes many-fld., to 9½ in. long; fls. white or cream-color, sometimes with purple on lip. Feb.–July. Himalayas, Burma, Indo-China, Malaya, Philippines.

convallarioìdes. Pseudobulbs to 8 in. long, with 3–4 lvs. to 7¼ in. long: infl. a pendulous densely many-fld. raceme to 4½ in. long; fls. about ⅓ in. across, whitish with yellow on lip. Aug.–Oct. Himalayas, Burma, Indo-China, China.

coronària (*Trichosma suavis*). Sts. cylindric, to 10 in. high, 2-lvd. at summit: lvs. to 9¾ in. long: racemes loosely few-fld., nodding, little shorter than lvs.; fls. fragrant, white or whitish with yellow on the 3-lobed lip and purple streaks on side lobes. Aug.–Feb. Himalayas, China.

excavàta. Pseudobulbs in series, to about 2 in. long, with 4–6 lvs. to about 9 in. long: infl. a few-fld. raceme; fls. white with 3-lobed lip yellow with red side lobes. Himalayas.

ferrugínea. Pseudobulbs cylindric, 2–4-lvd.: lvs. leathery, to 8 in. long: scape to about 8 in. long; racemes several-fld.; fls. about 1 in. across; sepals green or white, petals rosy; lip pink or red. Mar.–June, Nov. Himalayas.

flàva. Pseudobulbs to 4 in. long, 2–5-lvd. near the apex: lvs. to 10 in. long: scapes white-tomentose, loosely fld.; fls. yellow, lip marked with purple. Himalayas. Var. **lanàta** has smaller fls. with purplish mid-lobe of lip.

floribúnda. Pseudobulbs cylindric to spindle-shaped, 3–7-lvd., to 18 in. high: lvs. oblong-lanceolate, to 13¾ in. long: infl. to about 6½ in. long, densely many-fld., pendulous; fls. rose-red to nearly white, to ⅜ in. across, column dark purple. Blooms all year. Burma, Malaya, Philippines.

lanàta: *E. flava* var.

monostàchya. Sts. cylindric: lvs. linear: fls. small, in long cylindrical racemes. Java, Sumatra.

obèsa. Pseudobulbs crowded, stoutly clavate to fusiform, to 3 in. long: racemes loosely few-fld.; fls. white with green at base of lateral sepals, and pale yellow lip. Feb.–Mar., July. Burma.

ERIÁNTHUS. PLUME-GRASS. *Gramineæ.* Robust per. grasses, sometimes grown as annuals, with long flat lvs. and spikelets with tufts of silky hairs at their base, borne in large terminal panicles; native in warm and temp. regions and ornamental as specimen plants. See *Grasses*.

alopecuroìdes (*E. divaricatus*). Per. to 10 ft.: panicle oblong, to 1 ft. long and to 3 in. broad, the branches slender and loose. N. J. to Fla. and Tex.

divaricàtus: *E. alopecuroides.*

Ravénnæ. RAVENNA-GRASS. To 12 ft.: lvs. to 3 ft. long and ½ in. and more wide, midrib paler: panicles to 3 ft. long, silky, dense and plume-like. S. Eu. to India.

saccharoìdes. To 10 ft.: lvs. to 2 ft. long and 1 in. wide: panicles 1 ft. or more long, loose. N. J. to Fla. and Tex., Cuba.

ERÌCA. Heath. *Ericaceæ.* Evergreen branchy shrubs or sometimes small trees, in very many species, with small needle-like or very narrow usually whorled lvs., small white, rose or yellow usually declined fls. that are mostly tubular, bell-shaped, urn-shaped, or globose, and capsular frs.; native in Eu. and S. Afr., particularly abundant in the latter country. Many Latin-named kinds occur in collections of fanciers, often representing variants and hybrids.

Heaths are grown somewhat in rock-gardens, but few of them are hardy in the North, also under glass for the profuse bloom. They are plants of attractive compact habit and slow growth. *E. carnea* and *E. vagans* are perhaps hardiest, standing in New York and central New England, but *E. cinerea* and *E. Tetralix* are nearly equally durable, and *E. scoparia* stands in middle regions. Heaths of many kinds are profuse bloomers and popular in the open in California, where they bloom in winter and early spring. They are particular as to soil in pot culture, preferring one of light peat and coarse sand. In the open, they are given a light or sandy soil; they do not stand well in limestone soils. Propagated by cuttings of young wood under glass, given good ventilation when rooted. New blooming wood may be produced by heading back after flowering.

abietìna: see note under *E. Patersonii.*

arbòrea. Tree H. To 20 ft., the sts. with long stout hairs: lvs. in 3's, glabrous: fls. white, ⅛ in. long, fragrant, in large panicles in winter or spring. Medit. region. Var. **alpìna,** slender erect tree to 3 ft.

atrórubens: *E. cinerea* var.

austràlis. To 4 ft.: lvs. in 4's, glabrous: fls. purplish-red, ⅓ in. long, in terminal clusters in spring. Spain, Portugal.

báccans. To 5 ft., erect, glabrous: lvs. in 4's, somewhat curved: fls. terminal in 4's, purple, the corolla narrowed at throat, about ¼ in. long. S. Afr.

Bergiàna (*E. cupressina. E. turrigera*). To 3 ft.: lvs. in 4's, rough, ciliate: fls. red, to ¼ in. long, in 4's. May–June. S. Afr.

blánda: *E. doliiformis;* the material cult. under the name *E. blanda* may be of hybrid origin.

Bowieàna. To 1 ft.: lvs. in 4's, glabrous: fls. white, tubular, to ¾ in. long, axillary. S. Afr.

cáffra (*E. urceolaris*). To 12 ft.: lvs. in 3's, gray-pubescent: fls. white or yellowish-white, ¼ in. long, in few-fld. clusters. S. Afr.

capénsis: listed name.

capitàta. To 15 in., branches more or less woolly: lvs. in 3's, obtuse, woolly underneath: fls. 1–3, greenish-yellow, globular, ¼ in. or less across. S. Afr.

cárnea. To 1 ft., the branches prostrate: lvs. in 4's, glabrous: fls. red, to ¼ in. long, in one-sided racemes to 2 in. long in early spring, the stamens exserted. Eu. Var. **álba,** fls. white; **coccínea,** fls. bright red; **grácilis,** a slender form; **ròsea,** a hort. form of *E. ventricosa;* **Vivéllii,** fls. light carmine-red.—Other forms bear hort. names.

Cavendishiàna. Hybrid between *E. depressa* and *E. Patersonii:* fls. yellow, tubular.

cerinthoìdes. To 3 ft.: lvs. in 4's–6's, pubescent and ciliate: fls. crimson or pink, tubular, to 1⅓ in. long, in umbels. S. Afr.

Charlesiàna, Charlesworthiàna: listed as a hybrid: fls. pale pink, tubular, ½ in. long.

ciliàris. Fringed H. To 1 ft., the branches prostrate: lvs. in 3's, ciliate: fls. rosy-red, ⅓ in. long, in terminal racemes to 5 in. long from July–Oct. W. Eu.

cinèrea. Twisted H. Sts. ascending to 2 ft., finely pubescent when young: lvs. in 3's, glabrous, glossy above: fls. white to purple, in umbels or terminal racemes to 3 in. long. June–Sept. W. Eu.; nat. in Mass. Var. **álba,** fls. white; **atropurpùrea,** fls. deep purple; **atrórubens,** fls. dark red; **fúlgida** (var. *coccinea*), fls. red; **ròsea,** fls. rose-pink.

coccínea. Erect to 3 ft., sts. densely pubescent: lvs. in 6's, glabrous: fls. bright red, to 1 in. long, in verticillate infl. crowded at ends of branches. S. Afr.

codonòdes: *E. lusitanica.*

compácta nàna: listed name for a dwarf pink-fld. heath.

concínna: *E. verticillata.*

cruénta. Erect, to 3 ft.: lvs. in 3's, pubescent when young: fls. blood-red, to 1 in. long, more or less tubular. S. Afr.

cupréssina: *E. Bergiana.*

darleyénsis (*E. mediterranea hybrida*). Hybrid between *E. carnea* and *E. mediterranea:* to 2 ft.: fls. red, ¼ in. long.

depréssa. Branches decumbent, with revolute lvs. in 3's: fls. white, small, terminal. S. Afr.

doliifórmis (*E. blanda*). To 1 ft.: lvs. in 6's, glabrous, ciliate: fls. rosy, tubular, ½ in. long, in umbels. S. Afr.

élegans: *E. glauca.*

glandulòsa. Erect, to 2 ft. or more: lvs. in 4's: fls. in 4's, white, corolla nearly tubular, usually pubescent or glandular, about 1 in. long. S. Afr.

glaùca (*E. elegans*). Erect glabrous plant to 3 ft.: lvs. in 3's, glaucous: fls. dull red to vivid purple, usually green-tipped or greenish along throat, to ½ in. long. S. Afr.

grácilis. To 1 ft.: lvs. in 4's, glabrous: fls. rosy, ⅙ in. long, in whorls of 4 at ends of branchlets. Feb.–Mar. S. Afr. Var. **autumnàlis** blooms in fall.

grandiflòra. Stout and erect, to 5 ft.: lvs. scattered or in 6's: fls. orange-red to bright yellow, corolla narrowed to base, about 1 in. long. S. Afr.

hibérnica: *E. mediterranea* var.

Hielìàna: see *E. hyemalis.*

hirtiflòra. To 2 ft.: lvs. in 4's, hairy: fls. pale purple, ⅙ in. long, rough-hairy, in 4's. S. Afr.

hyalìna: listed name, probably *E. hyemalis.*

hyemàlis (*E. Hieliana?*). To 2 ft.: lvs. in 4's, ciliate: fls. pink tipped with white, to 1 in. long, borne along the branchlets and forming a leafy raceme. Nov.–Feb. Origin unknown.

hypnoìdes: probably *Calluna vulgaris* var. *hypnoides.*

linnæoìdes. Supposed hybrid: fls. mostly in 4's, corolla clavate, white in upper part, purple at base.

lusitánica (*E. codonodes*). Spanish H. To 12 ft.: lvs. in 3's–5's or irregular, glabrous: fls. pink or white in var. **álba,** ⅙ in. long, profusely borne along branches from Feb.–Apr. W. Eu.

Mackàii (*E. Mackaiana*). Hybrid between *E. Tetralix* and *E. ciliaris:* fls. red, ¼ in. long. Var. **plèna** (var. *flore-pleno*) has double fls. Var. **Wátsonii** (*E. Watsonii*) has longer fls. in shorter racemes.

mediterrànea. To 10 ft.: lvs. in 4's–5's, glabrous: fls. deep red, to ¼ in. long, in short racemes in spring, the stamens exserted. W. Eu. Var. **álba** has white fls.; **hibérnica** (var. *glauca*), to 3 ft., lvs. glaucous; **nàna** is a low-growing form.

melanthèra. To 2 ft.: lvs. in 3's, glabrous: fls. rosy, ⅙ in. long, blooming profusely at ends of branches in winter, the stamens exserted. S. Afr.—Color forms are **purpùrea, ròsea** and **rùbra.**

mínima: perhaps *E. scoparia* var.

multiflòra. To 3 ft.: lvs. in 5's or 6's, glabrous: fls. pink, ⅕ in. long, in dense spikes, stamens exserted. S. Eu.

ovàta: name for a pink early-flowering form.

Pátersonii. The trade name probably belongs to *E. abietina,* which is an erect glabrous bush to 2 ft. high, imbricated lvs. to ½ in. long, and fls. yellow with orange limb. S. Afr.

persolùta: *E. subdivaricata.*

pilòsa: *E. villosa.*

pygmæ̀a: *E. sicæfolia.*

regérminans. To 2 ft.: lvs. in 6's, glabrous: fls. pink or red, ⅙ in. long, in dense spikes to 5 in. long. S. Afr. Var. **rùbra** is listed.—The plants usually cult. under this name are *E. hirtiflora.*

scariòsa. Erect, to 1½ ft.: lvs. crowded and mostly on short branchlets: fls. solitary, terminal, white or rosy, corolla tubular and inflated, about ⅛ in. long. S. Afr.

scopària. Besom H. To 10 ft.: lvs. in 3's or 4's, glabrous and shining: fls. greenish, 1/12 in. long, in long spikes. May–June. S. Eu. Var. **mínima** (var. *pumila*) is a dwarf form.

sessiliflòra. Erect, to 1½ ft., very leafy: lvs. scattered or in 6's: fls. in dense spike, bracts and sepals light colored or red, corolla greenish or yellowish, trumpet-shaped, about 1 in. long. S. Afr.

sicæfòlia (*E. pygmæa*). Suberect plant to 8 in. with ascending sts.: lvs. in 3's, glabrous and glossy: fls. dark purple, to ⅙ in. long. S. Afr.

strícta. Corsican H. To 9 ft., with stiff branches: lvs. mostly in 4's, glabrous: fls. rosy-purple, ¼ in. long, in terminal umbels in summer. S. Eu. Var. **erécta** is said to be of more upright and fastigiate habit than type.—The identity of the hort. *E. stricta* is in doubt.

subdivaricàta (*E. persoluta*). To 2 ft.: lvs. in 4's, glabrous: fls. rosy (var, **ròsea**) or white (var. **álba** or **albiflòra**), ⅙ in. long, in racemes in spring. S. Afr.

Tetràlix. To 2 ft., the branches prostrate: lvs. in 4's, ciliate, whitish beneath: fls. rose, ¼ in. long, in dense terminal clusters. June–Oct. Eu. Var. **álba** has white fls.; **móllis** (var. *mollis-alba*) is listed as a dwarf form with white fls.; **rùbra** has red fls.

translùcens. Hybrid between *E. tubiflora* and *E. ventricosa:* fls. rosy, ¾ in. long, tubular.

Trèhanii: catalogue name for a purple-fld. heath with gray foliage.

tubiflòra: a name variously applied to several species.

turrígera: *E. Bergiana.*

umbellàta. To 3 ft., sts. erect or ascending: lvs. linear, obtuse, imbricated, glossy: fls. flesh-colored to rose-pink, in terminal umbels of 3–6. W. Medit. region.

urceolàris: *E. caffra.*

vàgans. CORNISH H. To 1 ft.: lvs. in 4's or 5's, glabrous: fls. purplish-pink, ⅛ in. long, in leafy racemes to 6 in. long, the stamens exserted. W. Eu. Var. **álba** has white fls.; **aùrea** is listed as a yellow form; **grandiflòra** has larger fls.; **ròsea** has rose fls.; and **rùbra** has deeper red fls.—There are forms with hort. names.

Veìtchii. Hybrid between *E. arborea* and *E. lusitanica:* fls. white, borne profusely.

ventricòsa. To 6 ft.: lvs. in 4's, ciliate: fls. white, pink or red, to ⅔ in. long, in dense umbels in spring and summer. S. Afr. Var. **grandiflòra** has larger fls.

verticillàta (*E. concinna*). To 5 ft.: lvs. mostly in 4's–6's, glabrous: fls. rosy, tubular, ¾ in. long, forming dense leafy racemes. S. Afr.

villòsa (*E. pilosa*). To 1½ ft., sts. slender and ascending, pubescent: lvs. in 3's, usually pubescent: fls. white, to ⅙ in. long. S. Afr.

Vilmoreàna: probably *E. Wilmorei.*

viridipurpùrea. To 2 ft.: lvs. in 4's, glabrous: fls. red, 1/13 in. long, in clusters. S. Afr.

vulgàris: *Calluna vulgaris.*

Wátsonii: *E. Mackaii* var.

Webbiàna: supposed hybrid.

Wílliamsii. Hybrid between *E. Tetralix* and *E. vagans:* fls. rose, urn-shaped.

Wílmorei (*E. Wilmoreana*). Said to be a hybrid: fls. rosy tipped with white, tubular.

ERICÀCEÆ. HEATH FAMILY. Widely distributed hardwood shrubs and small trees with simple lvs., bisexual fls. mostly showy, with 4–5-parted calyx, 4–5-lobed gamopetalous corolla, 4–10 stamens, superior or inferior 2–5-celled ovary and 1 style, and fr. a caps., berry or drupe. The family furnishes many ornamental subjects and some, as the blueberry, grown for the edible frs. Some members of the family are the choicest broad-leaved evergreens. They are prevailingly plants of acid soils. Genera known to hort. are Andromeda, Arbutus, Arctostaphylos, Arctous, Befaria, Bruckenthalia, Calluna, Cassiope, Chamædaphne, Chiogenes, Cladothamnus, Daboëcia, Elliottia, Enkianthus, Epigæa, Erica, Gaultheria, Gaylussacia, Kalmia, Kalmiopsis, Ledum, Leiophyllum, Leucothoë, Loiseleuria, Lyonia, Menziesia, Oxydendrum, Pentapterygium, Pernettia, Phyllodoce, Pieris, Rhododendron, Rhodothamnus, Tripetaleia, Tsusiophyllum, Vaccinium, Zenobia.

ERICAMÈRIA. *Compositæ.* Evergreen shrubs often with heath-like foliage and yellow heads in terminal panicles or cymes, with or without rays; pappus of bristles; native in W. N. Amer. and sometimes planted.

ericoìdes (*Aplopappus ericoides*). MOCK-HEATHER. To 2½ ft.: lvs. crowded, cylindrical, to ⅙ in. long: heads to ⅓ in. long, with rays. Calif.

ERIGENÌA. *Umbelliferæ.* One tuberous nearly stemless per. herb, native Ont. to Minn. and Kans. **E. bulbòsa.** HARBINGER-OF-SPRING. To 9 in.: lvs. ternately decompound into oblong obtuse segms.: fls. white, in small usually compound umbels.

ERÍGERON. FLEABANE. *Compositæ.* Annuals and perennials of wide distribution, resembling wild asters: lvs. alternate or basal, entire or toothed or occasionally dissected: heads solitary or in clusters, rays mostly white, rose, violet or purple, disk-fls. yellow; pappus of soft bristles.

Erigerons are of easy cultivation in the border or wild-garden and for colonizing, and the low kinds in rock-gardens. Propagated by seeds, division or cuttings, the tufted perennial species best by division.

àcris (*E. umbellatus*). Per. or bien. to 2 ft.: lvs. spatulate to oblong, entire: heads in racemes or panicles, ½ in. across, rays purple short, a row of thread-like pistillate fls. inside the rays. N. N. Amer.

álgidus. Per. to 8 in.: lvs. mostly basal, spatulate or oblanceolate: heads solitary, 1 in. across, rays lavender or purple. Mts., Calif. to Colo.

Álliceæ. Per. to 1 ft., pubescent: lvs. lanceolate, entire: heads solitary, ½–1 in. across, rays purple or violet. Wash.

alpìnus. To 1 ft.: lvs. spatulate to linear, entire: heads usually solitary, ¾ in. across, rays purple varying to white. N. Eu., N. Asia, Rocky Mts.

aurantìacus. DOUBLE ORANGE DAISY. To 10 in.: lvs. spatulate-oblong: heads 1–2, about 1 in. across, rays orange-yellow. Turkestan.

aùreus. Per. to 4 in.: lvs. mostly basal, spatulate, entire, hairy: heads solitary, ½ in. across, rays yellow. B. C. to Alta.

austràle. Per. to 6 in.: lvs. mostly in basal rosette, obovate-oblong, to 1 in. long, subentire, obtuse or acute; st.-lvs. few, sessile, linear: heads usually solitary, rays probably pink. Chile.

bellidifòlius: *E. pulchellus.*

Bloòmeri (*E. filifolius* var.). To 6 in., strigose: lvs. basal, linear, to 4 in. long and ⅛ in. wide, numerous: heads to ½ in. across, ray-fls. absent. Ida. to Nev. west to Calif. and Ore.

cæspitòsus. Per. to 6 in., canescent: lvs. mostly basal, oblanceolate, to 4 in. long, obtuse: heads solitary, to 1 in. across, ray-fls. white to lavender-blue. Colo., Utah to Sask. and Yukon.

cànus. Per. to 10 in., appressed-canescent: lvs. narrowly spatulate-linear, to 4 in. long, entire, acute: heads 1–4, to ¾ in. across, ray-fls. purple or white. S. D. to Neb. south to New Mex. and Colo.

caucásicus. Per. to 10 in.: lvs. spatulate or oblong: heads 1–3, 1 in. across, rays rosy-purple. Caucasus.

Chrysópsidis. Per. to 4 in., white-hairy: lvs. mostly basal, spatulate: heads solitary, 1 in. across, rays golden-yellow. Ore.

cilícicus: *E. uniflorus.*

commíxtus. Similar to *E. flagellaris*, differing in its more densely hoary vesture. W. Tex. and New Mex.

compósitus. To 8 in.: radical lvs. crowded, usually 2-ternate into linear or spatulate segms.: heads solitary, ¾ in. across, rays white or purplish. Alaska to Calif. and Rocky Mts. Var. **trífidus** is said to have more finely cut foliage.

concínnus (*E. hispidissimus*). Per. to 1 ft., white-hairy: lvs. oblanceolate to linear, densely hirsute: heads to 1½ in. across, corymbose, ray-fls. pink to purplish. Colo. to B. C.

Còulteri. Per. to 2 ft.: lvs. obovate to lanceolate, slightly toothed: heads usually solitary, to 1½ in. across, rays white to purplish. Rocky Mts. to Calif.

divérgens. Ann. or bien. to 1½ ft., hairy: lvs. obovate to linear, the lower sometimes cut-toothed: heads solitary or in corymbs, ¾ in. across, rays violet to white, filiform. Wash. to Calif. and Neb.

dùbius: *Hysterionica montevidensis.*

elàtior (*E. grandiflorus elatior*). Per. to 2 ft.: lvs. ovate-lanceolate, entire: heads 1–3, to 1½ in. across, rays lilac or purple. Colo. to Wyo.

filifòlius. Per. to 2 ft., woody at base: lvs. filiform: heads ½ in. across, rays bluish, violet or white. B. C. to Ida. and Calif.

flagellàris. Sts. decumbent, rooting at tips: basal lvs. spatulate or oblanceolate: heads solitary, on naked peduncles to 4 in. high, to ¾ in. across, rays white or purplish. B. C. to S. D. and Mex.

Fléttii: listed name.

foliòsus. Per. to 2 ft., leafy: lvs. linear or lanceolate: heads in terminal corymbs, 1 in. across, rays purple. Calif. Var. **confìnis** is decumbent, to 8 in. high.

glabéllus. Per. to 1½ ft.: lvs. oblanceolate to linear-lanceolate: heads 1–3, to 2 in. across, rays violet or purple. Wis. to Rocky Mts.

glàber: listed name.

glabràtus. Per. to 8 in.: lvs. spatulate: heads usually solitary, to ¾ in. across, bright purple to white. Eu. Var. **ròseus** is listed.

glandulòsus. Per. to 6 in.: lvs. mostly basal, oblanceolate: heads solitary, 1 in. across, rays violet or purple. Colo., Wyo. Var. **màjor** is listed.

glaùcus. Beach Aster. Seaside Daisy. Per. to 10 in.: lvs. mostly basal, spatulate or oblong, entire: heads solitary, to 1½ in. across, rays lilac or violet. Pacific Coast.

grandiflòrus. Per. to 8 in.: lvs. lanceolate, hairy: heads solitary, rays purple to white, ⅓ in. long, involucres white-woolly. Canadian Rockies. Var. **ròseus** has rose-pink fls.

hispidíssimus: *E. concinnus.*

Howellii. Per. to 1½ ft.: lvs. obovate or ovate, clasping at base: heads solitary, ¾ in. across, white or rose. Mont. to Wash. and Ore.

hýbridus: hort. name of uncertain application.

hyssopifòlius. Per. to 15 in.: lvs. oblong to linear: heads solitary or several, ½ in. across, rays white or purplish. Newf. to Vt. and N. Mich.

intermèdius: hort. name, probably *E. speciosus.*

Karvinskiànus (*E. mucronatus*). Per. but blooming first year from seed, to 18 in. and some or all of the branches decumbent and more or less trailing: lvs. to 1 in. long, more or less toothed or lobed at apex: heads on solitary peduncles, to ¾ in. across, rays many and white or pinkish. Mex. and south.—Grown as a border or bed plant, usually under the name *Vittadinia* (which see).

Leìbergii. Per. to 6 in., hairy: lvs. spatulate to oblanceolate: heads solitary, rays violet. Wash.

leiomèrus. Per. to 6 in.: basal lvs. spatulate, glabrous: heads solitary, to 1 in. across, rays violet. Mts., Alta. to New Mex.

lineàris. Per. to 1 ft.: lvs. linear-filiform: heads solitary, ¾ in. across, rays purple, violet or white. B. C. to Calif.

macrànthus. Per. to 2½ ft.: lvs. oblanceolate to ovate: heads in corymbs, to 1½ in. across, rays very numerous, lilac or bluish-purple. Mts., Alta. to Ariz.

melanocéphalus. Per. to 6 in., sts. with purplish-black hairs: lvs. elliptic to narrowly oblong, to 1½ in. long: heads solitary, to ⅓ in. across, ray-fls. white or pinkish. Rocky Mts.

mèsa-gránde speciòsus: hort. name, referable probably to *E. speciosus.*

mexicànus: a listed name.

mucronàtus: *E. Karvinskianus.*

multiradiàtus. Himalayan F. From 6 in.–2 ft.: lvs. oblong or lanceolate, entire: heads solitary, to 3 in. across, rays very numerous, purplish. Himalayas. Var. **ròseus** is listed.

nànus (*E. poliospermus*). Per. to 4 in., hairy: lvs. linear-oblanceolate: heads solitary, ½ in. across, rays purple, violet or white. Mont. to Utah.

peregrìnus (*Aster peregrinus*). Similar to *E. salsuginosus*, differing in the less leafy sts. and in the involucre being sticky-pubescent and not villous. Alaska to Ore.

philadélphicus. Per. by offsets, to 3 ft.: lvs. spatulate or oblong, toothed or entire: heads in corymbose clusters, to 1 in. across, rays purplish-white. N. Amer.

pinnatiséctus. Tufted per. to 10 in.: lvs. 1–2-pinnatifid into linear segms.: heads ½ in. across, rays bluish-purple or violet. Mts., Wyo., Colo.

poliospérmus: *E. nanus.*

prostràtus: listed name.

pulchéllus (*E. bellidifolius*). Poor Robins Plantain. Per. by offsets, to 2 ft.: basal lvs. tufted, spatulate, entire or toothed: heads 1–6, to 1½ in. across, rays violet or purplish. Me. to Fla. and La.

pùmilus. Per. to 1 ft., hairy: lvs. oblanceolate to linear: heads several, ½ in. across, rays white. B. C. to Kans.

radicàtus. Per. to 4 in., densely tufted, hairy: lvs. oblanceolate to linear: heads solitary, to ¾ in. across, rays white. Mont. to Colo.

Róylei: an uncertain name, possibly *E. alpinus.*

salsuginòsus. Per. to 1½ ft.: lvs. spatulate to lanceolate, entire: heads solitary, to 1¾ in. across, rays purple or violet. Alaska to Calif. and New Mex. Var. **álbus** is listed. Var. **angustifòlius,** to 1 ft., upper lvs. linear-lanceolate.

símplex. Per. to 10 in., hairy: lvs. oblanceolate or spatulate: heads solitary, ½ in. across, rays purplish-pink or white. Mts., Mont. to Calif.

speciòsus (*Stenactis speciosa*). Per. to 2 ft.: lvs. lanceolate to spatulate, entire: heads in corymbs, to 1½ in. across, rays very numerous, dark violet. B. C. to Ore. near the coast. Hort. vars. are **grandiflòrus, màjor, ròseus, semiplènus, sempérvirens, supérbus.**

subtrinérvis. Per. to 2 ft., st. hairy: lvs. oblanceolate to ovate, lower ones to 4 in. long, all hirsute and 3-veined: fls. in corymbs, heads to 1½ in. across, rays white to violet or rose-purple. S. D. to Wash. south to Utah and New Mex.

Thómpsonii. Per. to 1½ ft.: lvs. spatulate-oblanceolate: heads solitary, long-peduncled, 1 in. across, rays white. Wash.

trífidus. To 4 in.: lvs. basal, 3-cleft, segms. entire or 2–3-lobed: heads solitary, ½ in. across, rays white or pale lilac. Alaska to Rocky Mts.

umbellàtus: *E. acris.*

uniflòrus (*E. cilicicus*). To 4 in.: lvs. spatulate to linear, basal tufted: heads solitary, ¾ in. across, rays purple or sometimes white. Arctic regions.

ursìnus. Per. to 6 in., densely tufted: lvs. linear-lanceolate: heads solitary, 1 in. across, rays purple or violet. Mont. to Calif.

Villársii. Bien. to 1 ft.: lvs. scabrous, 3–5-nerved, almost or quite entire: fls. rose-violet to purple, in corymbs. Eu.—Said to be a parent of *E. aurantiacus.*

ERINÀCEA. *Leguminosæ.* Dwarf deciduous shrub of Iberian Peninsula, hardy on Pacific Coast and S. U. S., armed with sharp stout spines, seemingly simple lvs. and blue fls. Propagated by seeds and greenwood cuttings under glass. One species, **E. púngens,** is known. Sts. to 1 ft., erect or ascending: lvs. spatulate to linear-lanceolate, white-tomentose: fls. blue to violet, in axillary clusters of 1–3: pod to ¾ in. long.

ERÌNUS. *Scrophulariaceæ.* A hardy tufted per. 3–4 in. high suitable for the steeper parts of the rock-garden and for margins; native in the mts. of W. and Cent. Eu. Erinus should be planted in partial shade and where there is exceptionally good drainage. Propagated by seed or by division. **E. alpìnus.** Lvs. spatulate, to ½ in. long, coarsely toothed: fls. ½ in. across, purple, 5-lobed, in racemes 2½ in. long. Vars. **álbus, carmíneus, cárneus** and **ròseus** are color forms. Var. **hirsùtus** (*E. hirsutus*) has hairy foliage and violet-red fls.

ERIOBÓTRYA. *Rosaceæ.* Several Asian evergreen trees and shrubs with alternate simple sessile lvs., white fls. in terminal panicles, and fr. a small pome; one is grown far S. for ornament and the edible fr. and is sometimes seen under glass. For cult. see *Loquat.*

japónica (*Photinia japonica*). Loquat. To 20 ft.: lvs. thick and stiff, obovate, to 1 ft. long, shining above, rusty-tomentose beneath: fls. fragrant, ½ in. across, in woolly panicles to 6 in. long: fr. pear-shaped, yellow, to 1½ in. long. China.—Sometimes called "Japan-plum." In var. **variegàta** the lvs. are variegated with white.

ERIOCAULÀCEÆ. Pipewort Family. Nine genera of mostly trop. aquatic or bog or wet-ground herbs, with tufted rush-like lvs. and small fls. in compact involucrate little heads; perianth of 2 series: fr. a 2–3-celled caps. Individual fls. are not distinguishable in the head without dissection. The genus Eriocaulon is rarely planted.

ERIOCAÙLON. Pipewort. *Eriocaulaceæ.* Per. herbs with grass-like basal lvs. and solitary woolly heads of small monœcious fls. borne on slender scapes; stamens twice as many as inner perianth-segms. One native species is advertised for the bog-garden.

decangulàre. Lvs. to 1½ ft. long and ½ in. across, longer than sheaths: heads about ½ in. across, white. Swamps, N. J. to Fla. and Tex.

ERIOCÉPHALUS. *Compositæ.* S. African branching aromatic shrubs, mostly silvery, one of which is intro. in Calif.: lvs. alternate or opposite or clustered, small and usually linear, simple or 3-parted: heads hairy-white and becoming woolly, with pistillate ray-fls.

E. africànus has linear or 3-lobed thick silky lvs. to 1 in. long and heads umbelled at ends of branches.

ERIOCEREUS: most of the plants ascribed to this genus are treated here under *Harrisia;* for *E. tephracanthus* see *Trichocereus tephracanthus: E. Palmeri* is a listed name.

ERIODENDRON ANFRACTUOSUM: *Ceiba pentandra.*

ERIODÍCTYON. *Hydrophyllaceæ.* Aromatic shrubs of W. N. Amer. with alternate leathery toothed lvs. and fls. in terminal panicles; allied to Nama, differing in caps. 4-valved, not 2-valved; may be planted in its native region.

califórnicum. YERBA SANTA. To 8 ft.: lvs. oblong or oblanceolate, to 4 in. long, white-tomentose between veins beneath, sticky-resinous above: fls. white or pale blue, ½ in. long. Calif., Ore.

crassifòlium. To 6 ft. or more: lvs. oblong to ovate, to 4 in. long, leathery, densely tomentose, margin wavy: fls. lavender, in cymes to 3 in. across. S. Calif.

Párryi (*Nama Parryi*). Subshrub to 8 ft., sts. coarse, erect, woody at base only, sticky-hairy: lvs. lanceolate, to 6 in. long, nearly entire to dentate, crowded: fls. purplish, crowded in numerous cymes forming a long narrow panicle. Mts. in S. Calif.—Plant ill-scented.

ERIÓGONUM. *Polygonaceæ.* Herbs or subshrubs native in W. N. Amer. in many species of varied habit, with basal, alternate or whorled lvs. and fls. borne in involucres in heads or umbels or sometimes solitary along the branches; sometimes transplanted from the wild, and requiring sunny positions and well-drained soil.

ánnuum. Ann. to 3 ft., white-woolly: lvs. oblong, to 2 in. long: fls. white, in flat-topped cymes. S. D. to Tex.

arboréscens. Shrub: lvs. linear or oblong, to 1¼ in. long, white-tomentose beneath, revolute: fls. rose, white-hairy at base, in heads in compound cymes. Santa Barbara Isls.

compósitum. Per. to 16 in., sts. scape-like: lvs. oblong-ovate, to 2 in. long, white-tomentose at least beneath: fls. cream or yellow, in heads borne in umbels. Wash. to Calif.

crassifòlium: *E. flavum.*

depréssum (*E. ovalifolium* var. *depressum*). Differs from *E. ovalifolium* in fls. cream-colored or grayish-white. Mont., Ore.

Doúglasii. Dwarf matted white-woolly per. to 10 in., sts. scape-like with whorl of lvs. in middle: lvs. spatulate to linear-lanceolate, white-tomentose beneath: fls. yellow, in solitary heads. Wash. to Calif.

elàtum. Dwarf hairy per. to 10 in., sts. woody at base: lvs. large, to 2 in. long or more, usually ovate or oblanceolate, white-woolly or entirely glabrous: fls. greenish-white to rose. Calif.

fasciculàtum. WILD BUCKWHEAT. To 3 ft., woody at base: lvs. clustered, oblong or linear, to ¾ in. long, densely white-woolly beneath: fls. white, in heads in simple or compound umbels. Calif., Nev. Var. **polifòlium** (*E. polifolium*). Per. to 2 ft., sts. white-hairy: lvs. oblanceolate, margins somewhat revolute: fls. white or pinkish, pubescent at base. S. Calif. to Utah and Nev.

flàvum (*E. crassifolium*). Per. to 8 in., white-tomentose, sts. scape-like: lvs. oblanceolate, to 2 in. long: fls. yellow, in umbels. Man. to Colo. Var. **Pìperi** (*E. Piperi*). To 1 ft., sts. slender depressed forming mats bearing rosettes of lvs.: lvs. lanceolate to spatulate, to 4 in. long, white-tomentose below and pale green above: fls. yellow, often tipped red, pubescent. Mts. of E. Wash.

gigantèum. Shrub to 8 ft.: lvs. ovate, to 2½ in. long, white-woolly: fls. white-woolly, in heads in dense compound cymes. Santa Barbara Isls.

gránde. Subshrub to 3 ft.: lvs. to 3½ in. long, oblong-ovate, margins undulate, green above, white-woolly beneath: fls. white. S. Calif. Var. **rubéscens** (*E. rubescens*), of low decumbent habit and red fls. Intermediate forms are not uncommon.

heracleoìdes. Per. to 3 ft., st. much branched with somewhat suberect branches: lvs. linear to narrowly orbicular, pale green, hairy: fls. pale straw or tipped with rose, in simple or compound umbels. Wyo., Ida., Utah and Ore. Var. **ròseum,** fls. rose-pink.

latifòlium. Per. to 2 ft.: lvs. ovate to oblong, to 2½ in. long, densely white-woolly at least beneath: fls. white or pink, in dense heads to ¾ in. across. Calif.

Lóbbii. Per. to 7 in., sts. with dense tuft of lvs. and peduncles scape-like: lvs. oval, to 1¼ in. long, white-woolly: fls. white, in umbels. Calif.

marifòlium. Per. to 1 ft.: lvs. oval or ovate, ½ in. long, white-woolly at least beneath: fls. yellowish, in umbels. Calif.

múlticeps. Per. to 6 in., with scape-like sts.: lvs. linear-oblanceolate, to 3 in. long, white-tomentose: fls. white or rose, in heads or rarely umbels. N. D. to Ida.

níveum. Per. to 16 in., white-tomentose: lvs. ovate or oblong, 1 in. long: fls. white or rose, in umbels. B. C. to Ida.

nùdum. Per. to 2 ft.: lvs. all basal, ovate or oblong, to 2 in. long, white-tomentose beneath: fls. white, sometimes yellow or pink, in branched panicles. Ore., Calif.

ochrocéphalum. Per. to 6 in., sts. scape-like: lvs. oblanceolate or ovate, to 1¼ in. long, silvery-tomentose: fls. yellow, in heads. Ore., Calif., Nev.

ovalifòlium. Per. to 3 in., forming dense mat with scape-like sts.: lvs. ovate, to ⅓ in. long, white-tomentose: fls. bright yellow turning purplish, in dense heads. B. C. to Calif.

parvifòlium. Shrub to 3 ft.: lvs. ovate to oblong, to ½ in. long, densely white-woolly beneath: fls. white or pink, in heads or umbels. Calif.

Pìperi: *E. flavum* var.

polifòlium: *E. fasciculatum* var.

polyphýllum. Per. to 6 in., sts. scape-like: lvs. basal, spatulate, to 1 in. long, white-tomentose beneath: fls. deep yellow, in umbels. Alta. to Ore.

pyrolæfòlium. Tufted per. with scape-like sts. to 3½ in.: lvs. oval, to 1 in. long, leathery: fls. white or pinkish, in small umbels. Wash. to Calif. Var. **coryphæum** is more tomentose with narrower lvs.

racemòsum. Per. to 2½ ft., st. sparingly branched, white-tomentose: lvs. to 2½ in. long, orbiculate to elliptical, sessile or nearly so, white-tomentose beneath: fls. white or pink. Colo., Utah, Nev., N. Mex.

rubéscens: *E. grande* var.

sphærocéphalum. To 8 in., branches decumbent: lvs. verticillate, narrowly oblanceolate, to 1¼ in. long, white-hairy beneath, margins revolute: fls. yellow, lobes oblanceolate. Wash., Ida., N. Calif.

stellàtum: *E. umbellatum* var.

subalpìnum. SULPHUR PLANT. Per. to 1 ft.: lvs. orbicular or spatulate, to 2½ in. long, petioled, white-tomentose beneath: fls. pale straw-colored to yellow sometimes becoming rose-colored with age. Mts. of Colo., Mont.—Closely related to *E. umbellatum* and by some not considered distinct from it.

sulphùreum. Considered a subspecies of *E. latifolium* differing in its yellow fls. N. Calif.

thymoìdes. Much branched shrub to 1 ft.: lvs. linear to spatulate, to ½ in. long, white-woolly, margins revolute: fls. pink to purplish, lobes broad and rounded. E. Ore. and Wash.

tomentòsum. Per. to 3½ ft., st. not much branched: lvs. elliptical, sessile, glabrous above: fls. white or reddish. S. C. to Fla.

Torreyànum: *E. umbellatum* var.

umbellàtum. Per. to 1 ft.: lvs. basal, obovate or oval, to 2½ in. long, white-tomentose beneath: fls. deep yellow, in umbels. Wash. to Wyo. and Calif. Var. **stellàtum** (*E. stellatum*) has compound umbels. Var. **Torreyànum** (*E. Torreyanum*) has lvs. spatulate and glabrous.

vimíneum. Ann. to 2 ft. or less, sts. much branched: lvs. to ¾ in. long, orbicular, white-tomentose beneath: fls. white or pink, in glabrous infl. N. W. U. S.

víneum. Low per., sts. somewhat decumbent: lvs. orbicular, to ½ in. long, white-tomentose beneath: fls. white to rose, in rather dense heads. Ore., Calif. and Nev. —Similar to *E. ovalifolium* and by some authors considered a variation of it.

ERIOGYNIA: *Petrophytum Hendersonii.*

ERIÓPHORUM. COTTON-GRASS. *Cyperaceæ.* Per. sedges native in bogs in the northern hemisphere, with linear lvs. and fls. with perianth of soft white or brown bristles giving a cottony appearance; sometimes planted along the edges of ponds or in bog-gardening for the cotton-like heads on stiffish sts.

angustifòlium. To 2 ft.: lvs. to ⅛ in. wide, flat except the tip: spikelets 2–12, in terminal umbels, the white bristles 1 in. long. Eu., Asia, N. N. Amer.

callíthrix. To 1½ ft., tufted, the sheaths inflated: lvs. filiform: spikelets solitary, bristles white or red-brown. N. Amer., Asia.

Chamissònis. Sts. to 2½ ft., solitary or tufted, terete or triangular, erect, stoloniferous: lvs. usually shorter than sts., triangular-channelled, those of sterile shoots rarely to 4 ft. long: spikelets solitary. N. N. Amer., Eu. and Asia.

latifòlium. To 1 ft.: lvs. about ¼ in. wide, flat: spikelets several, in terminal umbels, the white bristles 1 in. long. Eu.

vaginàtum. To 1½ ft., tufted: lvs. mostly reduced to sheaths: spikelets solitary, the numerous white bristles 1 in. long. Eu., N. Asia.

virgínicum. To 4 ft.: lvs. flat, narrow-linear, rough-margined, those of involucre to 6 in. long: spikelets several or many, bristles brownish. Newf. to Fla. and Neb.

viridicarinàtum. Differs from *E. angustifolium* in thinner lvs. and more numerous spikelets with white or yellowish-white bristles. N. N. Amer.

ERIOPHÝLLUM. *Compositæ.* Ann. or per. herbs or subshrubs native in W. N. Amer., with alternate white-tomentose lvs. which are entire or divided, and heads of yellow ray- and disk-fls.; pappus of scales or lacking; sometimes placed in gardens in dry regions.

cæspitòsum (*Bahia lanata*). Per. to 1½ ft.: lvs. deeply 3–5-lobed, to ¾ in. long, green above: heads usually solitary, to 1¼ in. across. Calif.

confertiflòrum. Golden Yarrow. Per. to 2 ft.: lvs. divided into linear segms., to 1 in. long, tomentose on both sides: heads in terminal clusters, ¼ in. across. S. Calif.

lanàtum. Per. to 1½ ft., white-woolly: lvs. deeply divided into 3–7 oblong or linear segms.: heads mostly solitary, rays deep yellow, ½ in. long. B. C. to Ida. and Calif.

leucophýllum. Per. to 12 in., branching from base, woolly-tomentose: lvs. oblanceolate, 3-cleft or lobed, occasionally pinnate-incised or entire: heads solitary, long-peduncled. Calif. to Alaska.

multiflòrum. To 16 in., loosely woolly: lvs. oblong-spatulate, pinnatifid, segms. acute: heads about 1½ in. across. Ore.–Mont.

pedunculàtum. Per. to 1½ ft.: lvs. oblong-lanceolate, to 2 in. long, entire, tomentose on both sides. Ida.

stæchadifòlium. Subshrub to 3 ft.: lvs. linear, to 1¾ in. long, entire or rarely few-toothed, green above: heads in dense corymbs. Calif. Var. **artemisiæfòlium.** Lvs. pinnately cut into entire or pinnate lobes.

Wállacei. Ann. to 4 in., densely woolly: lvs. spatulate or obovate, to ½ in. long, usually entire: heads solitary, ⅓ in. across. Calif., Utah, Ariz.

ERIÓPSIS. *Orchidaceæ.* S. American epiphytes with strong pseudobulbs bearing 2–4 plicate lanceolate lvs. and yellow or brownish fls. in lateral racemes, the sepals and petals similar, the lip 3-lobed. For cult. see *Orchids.*

rutidobúlbon. Pseudobulbs 2–3 in. long, 2–3-lvd. near the apex: fls. about 1½–2 in. across; sepals orange-yellow with red-purple margins, lip with white violet-spotted mid-lobe. Feb.–Aug., Oct. Colombia.

ERIOSỲCE. *Cactaceæ.* Short-columnar or globular cacti from Chile and Argentina characterized by campanulate fls. whose ovary and perianth-tube is covered with acute scales and wool; fr. dry and spiny.

ceratístes (*E. Sandillon. Echinocactus ceratistes* and *Sandillon*). To 3 ft. high and 1 ft. or more thick, very woolly at top; ribs 21–35, areoles large and 1 in. apart; spines 11–20 and to 1½ in. long: fls. at top of plant, yellowish-red, to 1½ in. long. Chile.

korethroìdes (*Echinocactus* and *Echinopsis korethroides*). Simple, globose or short-cylindric, to 1 ft. thick; ribs 15–20 or more; radial spines 12–20 and 1 in. long; centrals 4 and yellowish-brown: fls. red, to 3 in. long. Argentina.

Sandíllon: *E. ceratistes.*

ERIOSTÈMON. *Rutaceæ.* Evergreen shrubs, chiefly Australian: lvs. simple and entire, alternate, often bearing large glands: infl. axillary or terminal, the fls. white, pink, blue: fr. of 5 (or fewer) mostly distinct elastic carpels. Two species are listed in Calif.

myoporoìdes. Glabrous stout shrub, with glandular tubercles often very marked: lvs. narrow-obovate to narrow-lanceolate, to 4 in. long, mucronate: fls. white or pink, the petals about ⅓ in. long. Queensland to Victoria.

spicàtus. Heath-like shrub to 2 ft., glabrous or nearly so: lvs. almost needle-like, ½ in. or less long: fls. blue or pink; petals about ¼ in. long. W. Australia.

ERITRÍCHIUM. *Boraginaceæ.* Small depressed mostly hispid per. herbs with alternate simple lvs. and small blue fls. borne in racemes or cymes; sometimes planted in rock-gardens.

argénteum: *E. elongatum* var.

barbígerum: *Cryptantha barbigera.*

elongàtum. Similar to *E. nanum* from which it differs in its woolly pubescence and slightly smaller corolla. Ida., Ore. south to New Mex. and Utah. Var. **argénteum** (*E. argenteum*) differs in its nutlet margins toothed. Colo.

Hoẁardii. To 5 in. high: lvs. linear-oblanceolate, brownish-strigose: fls. dark blue, to ⅜ in. across. Mont., Wyo. and Wash.

nànum. Densely white-woolly tufted plant, fl.-sts. to 3 in. high: lvs. elliptic to oblanceolate or linear, to ⅜ in. long: fls. small but sky-blue and brilliant, with yellow eye, to ¼ in. across. Alps.

stríctum. Per. to 10 in., appressed-silky: lvs. linear, to 1½ in. long, sessile: fls. blue, to ¼ in. across, in branched racemes to 3 in. long. W. Himalayas.

ERLÁNGEA. *Compositæ.* African herbs or shrubs allied to Vernonia and differing chiefly in technical characters of the achene and pappus; *E. tomentosa* is sometimes seen in the greenhouse.

cordifòlia (*Gutenbergia cordifolia*). Erect pubescent herb: lvs. ovate, nearly sessile to clasping and somewhat cordate, serrulate, to 3 in. long: heads purple or lavender, about ⅓ in. diam. Trop. Afr.—Reported in Calif.

tomentòsa (*Bothriocline Schimperi* var. *tomentosa*). Shrub to 5 ft.: lvs. oblong to ovate-lanceolate, to 5 in. long, toothed, white-tomentose beneath, scented: heads to ⅔ in. across, in flat-topped panicles, of mauve or lilac disk-fls. Trop. Afr.

ERÒDIUM. Heronsbill. *Geraniaceæ.* Herbs with lobed or pinnately dissected lvs., fls. in axillary umbels having 5 fertile stamens, 5-celled ovary and styles coiled at maturity; grown in the border or rock-garden and some sorts for forage. Some species have become weedy.

Erodiums thrive in dry sunny positions in loamy soil. Propagated by seeds and division. *E. cicutarium*, *E. moschatum* and *E. Botrys* are forage plants in California.

absinthioìdes (*E. olympicum*). Per. to 8 in.: lvs. bipinnate: fls. violet, rarely rose or white, ¾ in. across. Asia Minor. Var. **amànum** (*E. amanum*) has gray-pubescent foliage and white fls. Var. **Sibthorpiànum** is smaller with short lvs.

amànum: *E. absinthioides* var.

Billardièri: listed name.

Bótrys. Ann., prostrate or sometimes erect, white-pubescent: basal lvs. lobed, st.-lvs. pinnatifid: fls. violet. Medit. region; nat. in W. U. S.

chamædryoìdes. Per. to 3 in.: lvs. round-ovate, wavy-margined, ⅓ in. long on long petioles: fls. white veined with rose. Balearic Isls., Corsica. Var. **ròseum** has pink fls. with veins of deep rose.—A compact desirable rock-garden plant propagated by cuttings or division; partial shade.

cheilanthifòlium. Per. to 4 in.: lvs. all basal, bipinnate, gray-tomentose: fls. white veined with rose, to ¾ in. across. Mts. of S. Spain and Morocco.

chrysánthum. Tufted per. to 5 in., silvery: lvs. bipinnate, the st.-lvs. few: fls. yellow, ½ in. across, in umbels of 2–3 fls. Greece.

cicònium. Ann. to 2 ft., hairy: lvs. bipinnate: fls. purplish-blue, large. S. Eu.

cicutàrium. Alfilaria. Red-stem Filaree. Ann. to 1½ ft.: basal lvs. in rosettes, the lfts. pinnatifid: fls. purple or pink, about ¼ in. across. Medit. region; nat. in U. S.

córsicum. Per. to 6 in.: lvs. ovate, undivided or only slightly lobed: fls. pink veined with rose, ¾ in. across. Corsica, Sardinia.

daucoìdes. Per. to 4 in.: lvs. all basal, pinnate: fls. rose, ½ in. across. Spain.

geifòlium. Per. to 10 in.: lvs. simple, ovate-orbicular, to 8 in. long, remotely 3-lobed, obtusely dentate, sparsely short-pubescent: fls. white with purple-red stamens, to ½ in. across petals unequal, umbel of 5–8 fls.: fruiting beaks to 2¼ in. long. Algiers.

gruìnum. Ann. or bien. to 1½ ft.: lvs. somewhat lobed, margins crenate-dentate: fls. violet-blue, about ⅔ in. across: fr. to 3½ in. long at maturity. Sicily, N. Afr. to Persia.

Guicciárdii. Tufted per. to 8 in., silvery: lvs. pinnate, to 2 in. long, white-pubescent, upper ones sessile: fls. rose-pink, to ⅝ in. across, in umbels of 5–7 fls. N. Greece.

guttàtum. Shrubby per. to 6 in.: lvs. simple, oval, blade to ½ in. long on long petiole, faintly lobed, silky: fls. pink, in umbels of 2–3 each. S. W. Medit. region.

hýbridum. Hort. hybrid of *E. Manescavii* and *E. daucoides*: similar to *E. Manescavii*, but differs in more finely dissected foliage and smaller paler fls.

Kolbiànum. Hybrid between *E. supracanum* and *E. macradenum*: fls. pale rose with darker veins.

macradènum. Per. to 1 ft.: lvs. all basal, pinnate: fls. light purple with dark spots, about ⅓ in. across. Pyrenees. Var. **ròseum** is listed with rose-pink fls.

Manescàvii. Per. to 1½ ft.: lvs. all basal, pinnate: fls. rosy-purple, to 1½ in. across. Pyrenees.

moschàtum. White-stem Filaree. Musk-Clover. Ann. or bien. to 1½ ft.: lvs. pinnate: fls. rose-purple. Eu.; nat. in U. S.

olýmpicum: *E. absinthioides.*

pelargoniflòrum. Shrubby per. to 1 ft.: lvs. simple, ovate-cordate, remotely lobed, pubescent above, obtusely dentate: fls. white, the 2 upper petals pink spotted at base. Asia Minor.

petræum. Per. to 6 in.: lvs. all basal, bipinnate, long-petioled: fls. veined with red. Pyrenees.

romànum. Per. to 8 in.: lvs. all basal, pinnate: fls. purplish, ½ in. across. Medit. region.

ròseum: hort. name, possibly *E. chamædryoides* var.

supracànum. Per. to 4 in.: lvs. all basal, bipinnate, silvery: fls. pink veined with rose, ½ in. across. Pyrenees.

texànum. Tufted ann. to 1 ft., pubescent: lvs. ovate, palmately lobed or divided, long-petioled: fls. purple. Tex. to Calif.

tordylioìdes. Ann. or bien., 4–20 in. high, sts. solitary or few, ascending: basal lvs. pinnate, oblong to ovate-oblong, lanate; lfts. very broadly ovate, terminal ones becoming confluent: fls. probably rose-purple: fr. with beak about 1½ in. long. N. Afr.

trichomanifòlium. Per. to 5 in.: lvs. all basal, bipinnate: fls. violet veined with rose, ⅓ in. across. Syria.

Wilkommiànum. Hybrid between *E. cheilanthifolium* and *E. macradenum.*

EROPHILA: see *Draba verna.*

ERPETION RENIFORME: *Viola hederacea.*

ERÙCA. *Cruciferæ.* Ann. and bien. erect more or less Brassica-like herbs of few species in Eu. and W. Asia, one sometimes grown as a salad plant: lvs. large-toothed or pinnatifid: fls. whitish, yellow, purplish, in long terminal racemes: fr. an oblong to long-linear pod or silique.

sativa. Rocket-Salad. Roquette. Half-hardy ann., branching, to 2½ ft., with scattered hairs: fls. to 1 in. long, whitish or cream-yellow with purplish veins: pods 1 in. or more long, flat-beaked, erect and appressed. S. Eu.—Grown in the vegetable-garden for salad. The foliage is strong-tasting, and therefore it should be kept tender by continuous growth and frequent cutting; best results are obtained from lvs. in fit condition in spring and autumn, as in summer the plant runs quickly to seed. Seed is sown in open ground as soon as weather is settled, and lvs. fit for use should be had in two months or less.

ERVATÀMIA. *Apocynaceæ.* Shrubs or small trees, one of which is much planted far S. for ornament, differing from Tabernæmontana in technical characters, native in Old World tropics.

coronària (*Tabernæmontana coronaria*). Crape-Jasmine. Clavel de la India. Large much branched glabrous shrub: lvs. oblong-lanceolate to elliptic, abruptly acuminate, entire, to 8 in. long: fls. waxy-white, very fragrant, to 2 in. across. Var. **flòre-plèno,** with double fls., is the usual form. India; widely spread in trop. and warm countries.

ERVIL: *Vicia Ervilia.*

ERXLEBENIA: *Pyrola minor.*

ERÝNGIUM. Eryngo. *Umbelliferæ.* Mostly per. herbs with spiny-toothed lvs. which are simple and variously lobed or divided, small white or blue fls. in dense bracted heads or spikes, and ovoid frs. without ribs.

Planted in borders and rock-gardens. They thrive in sunny positions in light rich soil. Propagated by seed sown as soon as ripe, and by division.

agavifòlium. To 6 ft.: lvs. sword-shaped, coarsely spiny-toothed: heads 2 in. long, subtended by long ovate bracts. Argentina.

alpìnum. To 2 ft.: lower lvs. triangular-cordate, the upper round and often 3-lobed or palmately cut, tinged with blue: fls. blue or white, the heads 1¼ in. long, subtended by long finely divided bracts. Eu. Var. **atroviolàceum** is listed.

amethýstinum. To 1½ ft.: lvs. obovate, 2-pinnate: fls. blue, the heads ½ in. long, subtended by long lanceolate bracts. Eu.—The plant grown under this name may be *E. planum.*

aquáticum (*E. yuccæfolium*). Button Snakeroot. Rattlesnake Master. To 6 ft.: lvs. long-linear, rigid, parallel-veined, the margins bristly: fls. white or pale blue, the heads about ¾ in. long, subtended by short bracts. E. U. S.

Bourgàtii. To 1½ ft.: lvs. nearly orbicular, palmately 3–5-parted and lobed, stiff, spiny-toothed: fls. blue, the heads ½ in. long, subtended by long spiny-tipped bracts. Medit. region.

cærùleum. To 3 ft.: lvs. ovate or oblong, heart-shaped at base, undivided or 3-lobed or -parted: fls. blue, the heads less than ½ in. long, subtended by very long stiff bracts. Orient.

cœléstinum: an unidentified trade name; possibly referable to *E. amethystinum.*

gigantèum. To 6 ft.: lvs. ovate or triangular, heart-shaped at base, the st.-lvs. 3-lobed: fls. blue or pale green, the heads to 4 in. long, subtended by long, rigid, much-cut bracts. Caucasus.

Heldreìchii. To 1½ ft.: basal lvs. twice ternate, to 12 in. long, segms. prickly, overlapping, pale below and bluish-green above: fls. in subglobose heads about ½ in. long. Syria.

Leávenworthii. To 3 ft.: lvs. oblanceolate or palmately parted, very spiny: fls. blue or white, the heads to 2 in. long, subtended by long spiny bracts. Kans. to Tex.

marítimum. Sea-Holly. To 1 ft., glaucous-blue: lvs. fleshy and stiff, broadly ovate, 3-lobed, with coarse spiny teeth: fls. pale blue, the heads to 1 in. long, subtended by bracts similar to lvs. but much smaller. Eu.

Oliveriànum. To 3 ft.: lvs. broadly ovate, heart-shaped at base, the upper st.-lvs. palmately 4–5-parted: fls. blue, the heads 1½ in. long, subtended by stiff linear bracts. Hybrid of uncertain parentage.

plànum. To 3 ft.: lvs. oval to oblong, heart-shaped, the st.-lvs. 3–5-lobed or -parted: fls. blue, the heads ½ in. long, subtended by narrow rigid bracts. Eu., Asia. Color forms listed are **azùreum** and **ròseum.**

prostràtum. Prostrate, rooting at nodes, much branched: lvs. oval or oblong, entire or few-toothed or st.-lvs. sometimes 3-parted: heads ¼ in. long, dense, subtended by narrow reflexed bracts. Ky. to Fla. and Tex.

Sérra. To 4 ft. or more: lvs. sword-shaped, spiny-toothed: fls. whitish, the globose heads ½ in. across, subtended by lanceolate bracts. Brazil.

Spinálba. To 16 in., whitish-green: lvs. leathery and stiff, broadly ovate, 4–5-parted, with coarse spiny teeth: fls. blue, the heads 2 in. long, subtended by stiff spiny-pointed pinnatifid bracts. Alps of Eu.

virginiànum. To 3 ft.: lvs. linear or linear-oblong, upper spiny-toothed or rarely laciniate: heads ½ in. long, subtended by long reflexed bracts. N. J. to Fla. and Tex.

yuccæfòlium: *E. aquaticum.*

Zabélii. Hybrid between *E. alpinum* and *E. Bourgatii:* to 1½ ft.: heads about 1 in. long.

ERÝSIMUM. Blister-Cress. *Cruciferæ.* Ann., bien. and per. herbs of many species mostly in temp. regions as the genus is traditionally defined, some of them flower-garden subjects related to wallflowers and stocks, mostly with yellow but sometimes lilac or blue fls. The group is closely related to Cheiranthus, differing only in technical characters.

The plants in cultivation are hardy and of simple requirements; perennials raised from seeds sown the year before bloom is wanted; annuals, seeds usually sown where plants are to stand, for summer bloom. They should have sunny exposure.

Alliònii: see *E. asperum.*

arkansànum: *E. asperum, E. murale.*

ásperum (*E. arkansanum. Cheirinia aspera*). Per., 1–3 ft., erect, pubescent: lvs. lanceolate or narrower, entire or lower ones remotely dentate, to 4 in. long: fls. orange to yellow: mature pods slender and spreading, 2–4 in. long. Widespread in N. Amer. Var. **perénne** is shorter with more slender sts. and lemon-yellow fls. Mts., Calif.—The cult.

plant known as *Cheiranthus Allionii* apparently belongs here. Often erroneously grown as *E. Perofskianum.* See *E. murale.*

aurantìacum. Sts. usually simple: lvs. linear-lanceolate: fls. with white claw and orange-yellow limb. S. E. Eu.

aùreum nànum: see *E. murale.*

canéscens. Bien., gray-canescent, to 3 ft., much branched: lvs. linear-lanceolate, entire: fls. yellow. E. Eu., Caucasus.

capitàtum. Coast Wallflower. Bien. to 1½ ft., erect and leafy, simple or branching, lightly pubescent: lvs. linear to narrow-oblong, entire or dentate, to 3 in. long: fls. cream-color, yellowish, or white. Calif. to Wash.

cuspidàtum. Bien., rigid, simple or somewhat branched above, somewhat hairy: lvs. oblong, lower ones lyrate: fls. yellow. S. E. Eu., S. W. Asia.

elàtum (*Cheirinia elata*). Bien. to 3 ft.: lvs. linear, deeply wavy-toothed to nearly pinnatifid: fls. bright yellow. S. D. to Wash. and Calif.

helvéticum: *E. ochroleucum.*

hieracifòlium (*E. Wahlenbergii*). Bien. to 3½ ft.: lvs. oblong-lanceolate, entire or toothed: fls. bright to pale yellow, to ⅝ in. across, pedicels shorter than calyx. Eu.

insulàre. Per., sts. much branched from base: lvs. linear, to 2½ in. long: fls. yellow. Isls. off Calif.

Kotschyànum. Per., cespitose, pale green, st. simple, to 5 in. or less: lvs. crowded, narrow-linear to awl-like, denticulate: fls. yellow-orange. High mts., Asia Minor.

linifòlium (*Cheiranthus linifolius*). Per. making low clump 1 ft. or less high, grayish, much branched, shoots decumbent: lvs. linear, entire or toothed: fls. lilac or mauve. Spain. Var. **bícolor** is listed as having both pink and white fls. on the same plant.

muràle. Bien., perhaps per., but may be grown as ann., dwarf and compact, 20 in. or less high, very leafy, the lvs. very little if at all toothed: fls. golden-yellow, in compact racemes that lengthen in fr.: pods erect, short and thick, 1½ in. or less long. Eu.—An old garden plant of indefinite botanical history; sometimes grown as *E. nanum, E. arkansanum nanum compactum* and *E. Perofskianum.* See *E. pulchellum.*

nànum: see *E. murale.*

nivàle (*Cheirinia nivalis*). Tufted per. to 10 in.: lvs. dense, narrowly oblanceolate to linear, to 2 in. long: fls. bright yellow, to 1 in. across: pods to 2 in. long. Mts., Colo.

ochroleùcum (*E. helveticum*). Per. to 1 ft., with yellowish creeping sts.: lvs. oblong-lanceolate, toothed, pubescent: fls. pale yellow, fragrant. Eu.

pachycárpum. Per. to 2 ft., stout, with appressed hairs, branched, sts. angled: lvs. lanceolate, sinuate-dentate, stalked: fls. orange-yellow. Himalayas.

Perofskiànum. Ann. to 2 ft., erect, simple or little branching, grayish-pubescent: lvs. lanceolate or narrower, entire or remotely toothed, to 3 in. long: fls. yellow or orange, showy. Beluchistan, Afghanistan.—A good flower-garden subject, but the per. plants sold under this name are likely to be *E. asperum* or *E. murale.*

podocárpum: hort. name, possibly for a low form of *E. asperum.*

pulchéllum. Per., cespitose or many-headed, green, from a few inches to 2 ft. high, sts. simple: lvs. oblong-spatulate, toothed or lyrate, upper ones narrow and deeply toothed: fls. deep orange: pod erect-spreading, slender. Greece, Asia Minor.—The plant grown under this name may be *E. murale.*

pùmilum. Per., 6 in., sts. simple and angled: lvs. mostly radical, lance-linear, entire, those on st. 3–5: fls. sulfur-yellow, slightly fragrant. Mts., Eu.

purpùreum. Per. with procùmbent woody sts., flowering sts. to 6 in.: lvs. narrow-linear, the lower pinnate, upper toothed or entire: fls. purple. Asia Minor.

repándum. Ann., somewhat appressed-hairy, to 1 ft. or more: lvs. lanceolate, entire or remotely toothed, to 2½ in.: fls. small, yellow. S. E. Eu. to India.

rupéstre. Per., low, woody at base: lvs. spatulate or oblong, somewhat toothed, somewhat pubescent: fls. few, yellow. Greece. Var. **aurantìacum** is listed.

suffrutéscens. Beach Wallflower. To 2 ft., woody, much branched: fls. pale yellow or cream-colored. Calif., along coast.

torulòsum, Bien. to 1½ ft., st. usually unbranched: lvs. mostly basal, spatulate, to 3½ in. long, coarsely dentate to nearly entire: fls. yellow, to ⅝ in. across, in terminal raceme: pods to 3½ in. long. N. W. Amer.

Wahlenbérgii: *E. hieracifolium.*

ERYTHÈA. *Palmaceæ.* Six species, as now recognized, of Mexican hermaphrodite fan-palms of mostly low or medium stature, unarmed except on petioles of some species, most of which are planted in S. Calif.: allied to Brahea (from which it was separated) but distinguished by technical characters of fls. and seeds, by the primary branches of the spadix attended by spathes, larger fls. and mostly much larger fr., and in most cases filaments in lf.-sinuses very few or none. For cult. see *Palm.*

armàta (*Brahea* and *Glaucothea armata. B. glauca*). Mexican Blue Palm. Stout robust palm to 40 ft. or more, the trunk naturally covered by a dense "petticoat" or shag as in Washingtonia: lvs. waxy-blue, in a heavy crown, deeply cut into about 50 segms.; petiole bearing strong curved white teeth or spines: spadix very long and extending much beyond lvs., bending over: fr. globose, about ¾ in. long, fleshy. Lower Calif.

Brándegeei. Tall, reaching 125 ft., and in nature generally shedding the old foliage: lvs. about 3 ft. long, dark green above and pale-glaucous underneath, cut to middle or somewhat beyond into segms. about 1 in. or less broad and cleft 1–4 in. deep at apex, the ends eventually hanging; petiole glabrous, 3–5 ft. long, with many marginal irregular spine-like teeth mostly less than ¼ in. long: fr. about ½ in. diam. Southern part of Lower Calif.

edùlis (*Brahea edulis*). Guadalupe Palm. Trunk stout and columnar, to 30 ft., becoming naked, ringed with scars: lvs. 3 ft. long, green both sides but paler underneath; segms. 70 or 80, extending ⅓ to ½ depth of blade, 1½ in. or less broad, deeply cleft at apex, with few fibers in sinuses; petiole nearly or quite destitute of spine-teeth or else short and not very sharp: spadix not much if any exceeding petiole when in bloom: fr. globose, black, 1 in. more or less diam., hanging in an elongated cluster, the pulp sweet; seed about ¾ in. diam. Guadalupe Isl., Lower Calif.—Commonly planted in S. Calif.

élegans. Small tree as seen in cult.: lf.-blade thinly glaucous on both surfaces; segms. extending about half way down, shortly bifid at apex; petiole armed: spadices prominent: fr. with crust-like exterior at maturity, nearly globular, uniformly colored, often more or less pyriform. Sonora, N. Mex.

ERYTHRÆA: *Centaurium.*

ERYTHRÌNA. Coral-Tree. *Leguminosæ.* Trees or shrubs or sometimes herbs, commonly thorny, with lvs. of 3 broad lfts., showy red or reddish or yellowish, nearly papilionaceous fls. in racemes, and elongated pods constricted between the seeds.

Grown for ornament in warm countries or the herbaceous kinds under glass; showy when in bloom, which usually precedes the foliage. Some species are planted as shade in coffee and cocoa plantations under the name "immortèlles"; the flowers are cooked and eaten; the seeds are made into necklaces; some species also have medicinal and poisonous properties. Propagated by seeds and cuttings. The herbaceous kinds are propagated by root-division and the woody sorts from cuttings of growing wood.

arbòrea: *E. herbacea* var.

arboréscens. Low tree, the branches prickly: lfts. to 1 ft. long and broad: fls. in short dense racemes: pods to 9 in. long, curved. Himalayas.

cáffra. Tree to 60 ft., having small prickles: much like *E. Corallodendrum* but calyx 2-lipped or splitting. S. Afr.

Corallodéndrum. Tree to 20 ft., prickly or unarmed: lfts. rhombic-ovate: fls. with standard never opening, scarlet, in loose racemes: pods to 4 in. long, the seeds scarlet and mostly with black spot. Trop. Amer.

Crista-gállii. Cockspur C. Shrub or small tree, the petioles and often midribs spiny: lfts. ovate-oblong to oblong-lanceolate: fls. with standard erect, crimson, in loose racemes. Brazil.

flabellifórmis. Shrub or small tree with spiny branches: lfts. usually broader than long: fls. in dense short racemes: pods to 1 ft. long. S. Ariz., New Mex., Mex.

fúsca. To 8 ft., the bark brownish, prickly: lfts. lanceolate: fls. brownish-red, in terminal racemes, the calyx split. Cochin-China.

glaùca. Tree to 60 ft., prickly at least when young: lfts. ovate, pale or glaucous beneath, leathery: fls. with orange standard and brown wings tipped with crimson, in racemes to 8 in. long: pods to 10 in. long. Trop. Amer.

herbàcea. Sts. herbaceous, to 4 ft., the petioles usually prickly: lvs. triangular, often angled: fls. with standard closed, scarlet, in few-fld. racemes to 2 ft. long: pods to 5 in. long. N. C. to Fla. and Tex. Var. **arbòrea** (*E. arborea*) is a shrub or tree with shorter racemes.

índica. Tall broad tree, unarmed or sometimes with small black prickles: lfts. broadly ovate: fls. deep red or scarlet, in dense racemes, the standard erect, the calyx splitting down the back, appearing mostly when tree is leafless: pods to 1 ft. long. India, Malaya. Var. **pícta** (*E. picta*) has spotted or variegated lvs. and is grown under the names *E. Parcellii* and *E. marmorata*.

insígnis. Tree, somewhat prickly: lfts. ovate, immature ones tomentose: fls. scarlet, in short dense racemes. Origin unknown.

marmoràta: *E. indica* var. *picta*.

micrópteryx: *E. Poeppigiana*.

pállida. Similar to *E. Corallodendrum* but with fls. pale or salmon-red. Trop. Amer.

Parcéllii: *E. indica* var. *picta*.

pícta: *E. indica* var.

Poeppigiàna (*E. micropteryx*). Bucare. Tree to 60 ft., prickly: lfts. ovate: fls. with erect standard, cinnabar-red, in short racemes. Probably Peru.

poiánthes. To 50 ft., sts. spiny becoming spineless: lvs. ternate, lfts. ovate to rhombic-ovate, to 6 in. long, obtuse, entire, petiole jointed at base: fls. red, often striped or suffused white, to ¾ in. across, in erect racemes: fr. torulose, apex acuminate. Portugal.

poinoìdes: listed name.

retùsa: catalogue name of Mexican form said to have clear bright red bloom.

setòsa. To 2 ft., sts. herbaceous, prickly: lfts. to 5 in. long, acute, usually glabrous: fls. bright red, in short dense racemes on very long peduncles. Mex.

speciòsa. To 12 ft., bushy, prickly: lfts. 3-lobed, long-acuminate: fls. crimson, in pubescent racemes. W. Indies.

velùtina. Tree to 30 ft., spiny: lfts. roundish or triangular, tomentose beneath: fls. orange-red, the standard erect, calyx split: pods to 5 in. long. Trop. Amer.

ERYTHROCHÆTE PALMATIFIDA: *Ligularia japonica*.

ERYTHRÒNIUM. Adders-Tongue. Trout-Lily. *Liliaceæ.* Bulbous spring-blooming herbs with 2 basal lvs., which are often mottled, and attractive nodding fls. solitary or in racemes terminating the scape, the perianth-segms. distinct.

Planted in wild-gardens or rockeries. They prosper in shady or partially shady places in well-drained soil rich in leaf-mold; a winter mulch is beneficial. Propagated by seeds, or by offsets planted 3–5 inches deep.

álbidum. To 1 ft., producing offsets: lvs. green or mottled: fls. white, pink or purplish, 1½ in. long, the segms. recurved. Ont. to Ga. and Tex.

americànum. To 1 ft., producing offsets: lvs. mottled with brown and whitish: fls. yellow, to 2 in. long, the segms. recurved. N. S. to Fla. and Ark.

califórnicum. Fawn-Lily. To 1 ft.: lvs. strongly mottled: fls. creamy-white, 1¼ in. long, stigma lobed, filaments filiform and anthers white. Calif. Var. **bícolor,** fls. white and chrome-yellow, fragrant.

citrìnum. To 8 in.: lvs. mottled: fls. lemon-yellow to white, 1¼ in. long, the segms. recurved. Ore., Calif.—Differs from *E. Howellii* in having a pair of somewhat inflated appendages at inner base of segms.

déns-cànis. Dogs-tooth Violet. To 6 in.: lvs. mottled with reddish-brown: fls. rose or purple, 1 in. long, the segms. recurved. Eu., Asia.

giganteùm: *E. oregonum*.

grandiflòrum. To 2 ft.: lvs. not mottled: fls. bright yellow, 2 in. long, the segms. strongly recurved. B. C. to Ore. and Utah. Var. **robústum** grows near the sea-level. Var. **álbum** has white fls. with yellow center. Var. **Smíthii** is smaller with pink fls.—Material in the trade under this name but having mottled lvs. is likely to be *E. oregonum*.

Hártwegii: *E. multiscapoideum*.

Héndersonii. To 1 ft.: lvs. mottled: fls. purple, 1¼ in. long, strongly recurved. S. Ore.

Howéllii. To 1½ ft.: lvs. mottled: fls. pale yellow with orange center. S. Ore.

idahoénse. To 10 in.: lvs. not mottled, oblanceolate, to 5 in. long, abruptly acute: fls. 1–3, greenish to cream-white and yellow within, anthers white, stigma lobed. Boundary of Ida. and Wash.

Jóhnsonii: *E. revolutum* var.

klamathénse. To 10 in.: lvs. shining yellow-green, not mottled: fls. milk-white, yellow at base, 1 in. long, segms. strongly recurved, appendages present, stigma not lobed, on short club-shaped style. Ore.

montànum. To 1½ ft.: lvs. not mottled: fls. white, orange at base, 1½ in. long, segms. slightly recurved. Wash., Ore.

multiscapoídeum (*E. Hartwegii. E. Purdyi*). To 6 in., producing offsets: lvs. not mottled: fls. white or cream with yellow center, stigma distinctly lobed, style slender and long. Calif.

obtusàtum. Similar to *E. parviflorum* but with smaller bulb, obtuse lvs. and purple instead of yellow anthers. Wyo. to Mont.—Plants so named in trade may be *E. grandiflorum*.

oregònum (*E. giganteum* of hort.). To 1 ft.: lvs. lanceolate to oblong-lanceolate, to 6 in. long, acute, mottled on upper surface: fls. white or creamy-white, segms. to 2 in. long, filaments strongly dilated. N. Calif. to B. C.

parviflòrum. To 1 ft.: lvs. not mottled: fls. bright yellow, about 1 in. long, the segms. strongly recurved. Colo. to Utah.—Probably only a small-fld. form of *E. grandiflorum*.

præcox: *E. revolutum* var.

Púrdyi: *E. multiscapoideum*.

purpuráscens. To 1 ft.: lvs. not mottled: fls. light yellow tinged with purple, ⅔ in. long. Calif.—Distinguished from *E. klamathense* by absence of inflated perianth appendages.

revolùtum. To 1 ft.: lvs. mottled: fls. white or lavender, turning purple, stigma lobed, filaments dilated. B. C. to Calif. Var. **Jóhnsonii** has lvs. mottled with dark brown and dark rose fls., and by some not considered distinct from typical form. In var. **præcox** the lvs. are mottled with mahogany color and fls. creamy-white. Var. **albiflòrum** (var. *Watsonii*) has white fls. banded at base with maroon.

Smíthii: *E. grandiflorum* var.

tuolumnénse. To 1 ft.: lvs. shining yellow-green, not mottled: fls. deep yellow, greenish-yellow at base, 1¼ in. long, stigma not lobed, style filiform. Calif.

Wátsonii: *E. revolutum* var. *albiflorum*.

ERYTHROXYLÀCEÆ. Coca Family. Two trop. genera of shrubs or small trees with alternate lvs., small regular fls. and fr. a 1- or 2-seeded drupe; only Erythroxylon is cult. In the sequence of families it is placed near Rutaceæ and Zygophyllaceæ.

ERYTHRÓXYLON. *Erythroxylaceæ.* About 90 species, with the characters of the family; the lvs. of *E. Coca* yield cocaine, for which the bush is cult. in S. Amer. and eastern tropics. Sometimes grown in the open in the far S. or in economic greenhouse collections N. Under glass propagated by cuttings over bottom heat.

Còca. Coca. Cocaine-Plant. Shrub to 12 ft.: lvs. to 2½ in. long: fls. yellowish, ¼ in. across, not showy: drupe about ⅓ in. long, reddish, with furrowed stone. Nativity unknown, but probably W. S. Amer.

ESCALLÒNIA. *Saxifragaceæ.* Good ornamental shrubs of S. Amer., sometimes tree-like, mostly in the Andean region, evergreen, or some kinds deciduous (if so stated), well adapted to warmer parts of the country and a few of them north to Va. or farther: species 60 and more: lvs. alternate or clustered, simple, entire or serrate, often resinous-dotted and glandular: fls. more or less grossularia-like, fragrant, mostly in terminal racemes and panicles; fl.-parts mostly 5: fr. a many-seeded caps. The leading white-fld. kinds in cult. with us are *E. floribunda* and *E. montevidensis*, and others are *E. Grahamiana*, *E. illinita*, *E. leucantha*, *E. pterocladon* (tinted), *E. pulverulenta*, *E. revoluta*, *E. virgata* with intermediate effects in *E. Rockii* and *E. rubricalyx;* the remainder are pink, rose, or shades of red.

The escallonias thrive under the usual conditions of parks and yards, being rapid and free growers. They are sometimes trained as vines and on pillars. They have become well known in California, where they are prized for general adaptability as well as for the habit of blooming in autumn and early winter although the flowering of several species is nearly continuous in proper climates. Propagation may be by seeds, but the usual method in mild climates is by means of cuttings in a coldframe in autumn and transplanting to nursery in spring.

álba: *E. montevidensis*.

Berteriàna: *E. pulverulenta* var. *glabra*.

bífida: *E. montevidensis.*

donardénsis: listed name.

edinénsis. Hybrid of same or similar origin and character as *E. langleyensis.*

exoniénsis (*E. pterocladon* × *E. rubra*). To 20 ft., with sparingly glandular angled or ribbed branchlets: lvs. somewhat elliptic, to 1½ in., pointed, serrate, essentially glabrous: fls. rose-tinted or nearly white, in terminal panicles to 2 or 3 in. long.

floribúnda. Large bush or small tree, with somewhat viscid branchlets: lvs. oblong to narrowly obovate, to 4 in. long, mostly obtuse, long-tapering at base, entire or very finely serrulate, bright or glossy green above, sparingly dotted underneath: fls. white, ½ in. across, in long terminal rather narrow panicles, the petals long-clawed. Venezuela and down the Andean region.—See *E. montevidensis.*

franciscàna. Tall glandular and viscid shrub with erect branches and strong odor: lvs. thick, oblong, with short margined petiole, acute or obtuse at apex: fls. pink, in narrow viscid panicle. A garden form or hybrid, with the odor of slippery elm.

Fréytheyi: listed name.

glasneviénsis: listed name for a form with pinkish-white fls.

glutinòsa. Sts. leafy, glandular: lvs. cuneate-lanceolate, to ¾ in. long, serrate in part, leathery: fls. red, to 1 in. across, petals narrowly spatulate. Chile.

grácilis: the plant grown under this name appears to be *E. punctata.*

Grahamiàna. Erect shrub with more or less spreading branchlets which bear sessile glands: lvs. stiffish, elliptic or oblong, to 2 in. or more long, obtuse but mucronate, narrowed to base, serrate, glossy above: fls. white, in terminal narrow or pyramidal panicles. Chile.

illinìta. To 10 ft. or more, glabrous but young parts resinous and glandular, strong-scented: lvs. obovate or long-oval, to 2 in. or more long, obtuse or short-pointed, narrowed to base, glossy above, serrate: fls. white, in large bracted panicle. Chile.

Íngramii. Garden plant, perhaps hybrid between *E. macrantha* and *E. punctata,* the lvs. smaller than those of the former and fls. slightly smaller but similar in color (rose-red).

langleyénsis. Hybrid, probably *E. Philippiana* × *E. punctata:* to 10 ft., somewhat glandular, with spreading arching branches: lvs. small, 1 in. or less long, oval or obovate, sessile or nearly so, serrate, resinous underneath: fls. rose-carmine, about ½ in. across, in short racemes on lateral twigs.

leucántha. Very leafy large shrub: lvs. small, obovate, nearly or quite obtuse, finely serrate toward apex, glabrous, ½ in. or less broad: fls. small, white, many in very dense racemes. Chile.

macrántha. Compact spreading shrub to 10 ft., densely leafy: lvs. thick, broad-oval, to 3 in. long and one-half or more as broad, shining on upper side and bearing many prominent glands underneath: fls. crimson or rose-red, to ½ in. or more long, in short close more or less leafy panicles. Chile.—Common where escallonias are grown and often passing under other names.

microphýlla: listed name.

montàna. Shrub to 6 ft.: lvs. obovate-oblong to lanceolate, to ¾ in. long, more or less serrate: fls. white, about a dozen in a dense terminal raceme; petals nearly ½ in. long. Chile.

montevidénsis (*E. floribunda* var. *montevidensis. E. bifida. E. alba*). Much like *E. floribunda* but branchlets not viscid, lvs. mostly slightly emarginate at apex, fls. larger in a more rounded corymb-like cluster, the petals not narrowly clawed, stamens and pistils prominent. S. Brazil, Uruguay.—Variously understood, by some authors considered to be a geographical form of *E. floribunda,* but probably distinct.

organénsis. To 6 ft., very leafy, branchlets angled, glabrous but somewhat resinous or glandular: lvs. narrowly obovate to oblong, often red-margined, firm, to 3 in. long, obtuse, dentate: fls. rose-red, to ½ in. across, in short dense broad terminal cluster close to the lvs. Organ Mts., Brazil.

Philippiàna: *E. virgata* var.

pteroclàdon. To 10 ft. or more, pubescent, the branches thin-edged or winged: lvs. narrow-obovate, to 1 in. long (usually less), toothed, tapering to base, shining above: fls. white, in slender racemes to 3 in. long, the petals ⅓ in. long. Patagonia.

pulverulénta. Downy viscid shrub to 12 ft.: lvs. oblong, obtuse, tapering at base, to 4 in. long, fine-toothed, varnished above: fls. white, crowded in slender or tail-like raceme to 9 in. long. Chile. Var. **glàbra** (*E. Berteriana*) is nearly or quite glabrous.

punctàta (*E. rubra* var. *punctata*). Shrub to 10 ft., the young parts glandular-sticky and pubescent: lvs. oval or obovate, to 1 or 2 in. long, tapering both ends, toothed toward apex, strongly glandular underneath: fls. crimson, sometimes solitary but mostly in terminal corymbose glandular panicles, calyx glandular. Chile.

revolùta. To 25 ft. or more, white-pubescent: lvs. thick, obovate, to 2 in. long, apex obtuse or acutish, base tapering, toothed, margins revolute: fls. white, in dense terminal pyramidal panicles, the petals about ½ in. long. Chile.

Róckii (*E. macrantha* × *E. montevidensis*). Tall widely branched shrub: lvs. obovate, obtuse, tapering at base, to 2 in. long, glandular-serrate: fls. pale pink or white, in thyrse-like panicle to 12 in. or more long.

ròsea: a name of doubtful standing in hort., applied to rose-colored forms of different species or hybrids.

rùbra. Erect shrub to 15 ft., the young parts more or less glandular and viscid: lvs. oblanceolate to long-obovate, to 2 in. long, acute, tapering at base, serrate toward apex, nearly or quite glabrous and with few glands underneath: fls. red or crimson, about ½ in. across, in terminal panicles, the calyx typically not at all or very little glandular. Chile. Var. **glabriúscula** is listed.

rubrícalyx. Spreading shrub of medium size and rounded outline, with slender branches: fls. having white petals and red calyx, the petals forming a tube: lvs. like those of *E. Grahamiana,* and the plant perhaps a hybrid between that species and *E. rubra.*

sanguínea: hort. form of *E. macrantha.*

virgàta. Deciduous shrub to 8 ft., with aspect of Leptospermum, branchlets glabrous and very leafy: lvs. obovate to lanceolate, acute, tapering at base, serrate toward apex, to ¾ in. long, glabrous: fls. white, to ½ in. across, in leafy terminal racemes. Chile. Var. **Philippiàna** (*E. Philippiana*). Branches rugose: lvs. strongly acute, crowded-fasciculate in short very leafy branches. Chile. Considered by some authors as inseparable from the typical form.

viscòsa. To 10 ft., with drooping sticky resinous branches: lvs. obovate, to 3 in. long, obtuse or with short abrupt point, tapering to short petiole, clammy, serrate: fls. white, in rather loose large panicles, corolla ⅓ in. or less across. Chile.

ESCHSCHÓLZIA. *Papaveraceæ.* Herbs native in W. N. Amer. with much dissected lvs. and showy yellow solitary fls.; popular for the flower-garden. Many species that have been described are probably seasonal forms of *E. californica.*

Grown as annuals, the seeds sown where the plants are to stand in sunny exposure; in mild climates may be treated as winter annuals, and *E. californica* may live over winter after blooming.

álba: *E. californica* var.

aurantìaca: *E. californica* var.

cæspitòsa. To 9 in., the fl.-sts. exceeding the basal tufted lvs.: fls. yellow, to 2 in. across: fr. linear, to 3 in. long. Calif.

califórnica. California-Poppy. To 2 ft., very variable: fls. pale yellow to orange, to 3 in. across: fr. linear, to 4 in. long. Calif., Ore.; nat. in Eu. Var. **álba,** fls. cream-white. Var. **aurantìaca,** fls. orange. Var. **compácta,** a habit form. Var. **cròcea,** fls. deep orange. Var. **marítima** (*E. maritima*) has prostrate or ascending branches with lemon-yellow fls. to 2 in. across, segms. of st.-lvs. more densely crowded and caps. 1½–2 in. long. Var. **ròsea,** fls. salmon-pink.

cròcea: *E. californica* var.

marítima: *E. californica* var.

tenuifòlia. To 1 ft.: fls. light yellow, ½ in. long. Calif.

ESCOBÀRIA. *Cactaceæ.* Globose or cylindric and mostly cespitose cacti, juicy not milky, several species in Mex. and S. Tex.: tubercles grooved above, spines never hooked: fls. small, from top of plant. See *Cacti.*

bélla. Tufted, cylindrical, to 3 in. high, tubercled; radial spines several, to ⅜ in. long, whitish; centrals 3–5, to ¾ in. long, brown: fls. pink, to ¾ in. across, wheel-shaped, segms. linear-oblong, acute. Mex.

Cháffeyi: *Coryphantha Chaffeyi.*

chihuahuénsis. Globose to short-cylindric, spiny, short-tubercled; central spines longer and darker than radials: fls. purple, to ⅓ in. long, inner segms. acute. Mex.

dasyacántha (*Mammillaria dasyacantha*). Body globose, usually about 3 in. diam.; radial spines 20 or more, white and bristle-like; central spines about 9 and to ¾ in. long: fls. pinkish, 1 in. long. W. Tex., New Mex., Mex.

durispìna: *E. tuberculosa* var.

Llóydii. Similar to *E. tuberculosa* but central spines stouter and fls. greenish-white, the perianth-segms. not ciliate. Mex.

Muhlbaueriàna. Ovoid to subcylindrical, about 2 in. high, dark glossy green; tubercles about ⅓ in. high, ovoid-conical, soft, with nearly glabrous axils; radial spines 15–20, to ⅓ in. long, white tipped brown, radiating; centrals usually 6, to ⅝ in. long, grayish: fls. to 1 in. across, petals greenish-yellow with red stripe: fr. red, to ¼ in. diam. Mex.

múlticeps: probably *Mammillaria multiceps.*

Rúnyonii. Body globose, to 2 in. long, grayish-green, in clumps; radial spines numerous and white; central spines 5–7 and to ⅓ in. long: fls. pale purple, ½ in. long. Mex.

Sneèdii. Body cylindrical, to 2½ in. long and ¾ in. diam., in dense clumps; spines 20 or more, appressed and to ¼ in. long: fls. pink, ⅓ in. long. Tex.

tuberculòsa (*Mammillaria tuberculosa;* one of the plants known as *M. strobiliformis*). Body cylindric or becoming so, to 1 ft. or so high, usually in clumps; tubercles about ¼ in. long; radials numerous and white; centrals several and stouter: fls. light pink, 1 in. across. S. W. Tex., New Mex., N. Mex. Var. **durispìna** (*E. durispina*) has radial spines tipped red or brown, they are also more numerous and more brittle. Var. **rufispìna** has pink-tipped grayish spines.

ESCÓNTRIA. *Cactaceæ.* One cactus of S. Mex., separated from Cereus, the ovary bearing papery persistent scales rather than essentially naked: fls. small, yellow, diurnal. Apparently not often planted. See *Cacti.* **E. Chiotílla** (*Cereus Chiotilla*). Tree-like, numerously branched, to 20 ft. and more, ribs few; radial spines 10–15; centrals several, all similar: fls. near ends of branches, about 1 in. long.

ESMERALDA: *Arachnis Clarkei.* **Sanderiana:** *Vanda Sanderiana.*

ESPARCET: *Onobrychis viciæfolia.*

ESPINO CAVAN: *Acacia Cavenia.*

ESPOSTÒA. *Cactaceæ.* One columnar cactus from Ecuador. **E. lanàta** (*E. sericatus. Pilocereus Dautwitzii* and *Haagei. Cereus* and *Cephalocereus Dautwitzii*). To 15 ft., simple with spreading branches which are tipped with mass of hairs or bristles; ribs 20–25, areoles ¼ in. apart with numerous radial spines ¼ in. long and long white hairs: fls. pinkish, to 2 in. long, surrounded by wool.

ESTRAGON: *Artemisia Dracunculus.*

ETROG: *Citrus medica.*

EUANTHE: *Vanda Sanderiana.*

EUBOTRYS: *Leucothoë.*

EUCALÝPTUS. GUM-TREE. *Myrtaceæ.* Evergreen trees, or sometimes shrubs, much grown in warm and semitrop. climates for the valuable timber and oil, for ornament and fire-wood, some of them for bee pasture, mostly native in Australia, having simple entire lvs. alternate or opposite on young shoots and often polymorphous, white, yellowish or red fls. in umbels or heads, the petals and calyx-lobes united to form a lid or cap which opens transversely and falls off, revealing the numerous showy stamens; there are 300 and more species, and the understanding of them is a special study.

Eucalypts are grown from seed. The capsules should be gathered and placed on canvas sheets in the sun till the seeds fall out. Seed should be sown in June or July in flats, either one seed in a place or broadcast and the seedlings then transplanted. Screens or lath-houses should be provided for shade. These seedlings will be ready to set permanently by about the following February, when from 6–10 inches high. On heavy soils the trees for forest plantations should be set 6 by 6 feet or if irrigation is employed 4 by 8 feet; on light soils 8 by 8 feet is best. The stands should be cultivated for at least the first two years.

Many species besides those entered in this article have been introduced into North America, largely in California, for forest purposes, specimen planting, and for test, represented by such names as *E. acmenioides, annulata, buprestium, Caleyi, camphora, Consideneana, corrugata, decipiens, Drummondii, Flocktoniæ, fœcunda, gracilis, grandis, Guilfoylei, gummifera, leptophylla* (equals *uncinata*), *Le-Souefii, maculosa, Mortoniana, obtusifolia, oleosa, odorata, ptychocarpa, redunca, saligna, Smithii, Stowardii, tetragona, Todtiana, uncinata.*

álba. Bark rough, ash-colored: lvs. ovate-oblong to broadly lanceolate, pale and glaucous: fls. small, in few-fld. umbels: fr. ¼ in. across.

álbens: *E. hemiphloia* var.

alpìna. Shrub to 12 ft.: lvs. ovate to oblong, very thick: fls. rather large, solitary or few together: fr. to 1 in. across.

amplifòlia: a form of *E. tereticornis* having large round lvs. when young.

amygdálina. PEPPERMINT GUM. To 300 ft., with persistent fibrous bark: lvs. lanceolate, with peppermint odor: fls. rather small, in many-fld. umbels: fr. ¼ in. across. Var. **angustifòlia** (*E. linearis*) has very narrow lvs. and drooping branchlets. Var. **numeròsa** has more than 20 fls. in an umbel. Var. **régnans** (*E. regnans*), to 325 ft., lvs. broad-lanceolate.

angulòsa: *E. dumosa* var.

angulòsa var. **robústa:** *E. robusta.*

angustifòlia: *E. amygdalina* var.

astríngens. To 60 ft.: lvs. oblong to ovate-cordate and lanceolate on mature trees, to 5 in. long: fls. about 7 in long-peduncled umbel: fr. ovoid, about ⅓ in. long.

bícolor. BLACK BOX. To 40 ft., with persistent rough bark: lvs. lanceolate: fls. small, in few-fld. umbels forming panicles: fr. about ⅙ in. across.

Bláckeleyi. Tree to 40 ft. or more: lvs. ovate to lanceolate, to 7 in. long, midrib conspicuous: fls. small, 4–7 in loose umbels: fr. globular, somewhat tapered at base, ¼ in. across.

Bláxlandii. Similar to *E. capitellata* but with less stringy bark and young lvs. undulate with toothed margin.

Bosistoàna. BAIRNSDALE GRAY BOX. Lvs. narrowly lanceolate: fls. in few-fld. umbels.

botryoìdes. BASTARD MAHOGANY. BANGALAY. To 150 ft., with persistent rough furrowed bark: lvs. lanceolate: fls. rather large, nearly sessile: fr. ⅓ in. across.

cæ̀sia. Dwarf, with slender drooping branches: lvs. ovate-lanceolate or lanceolate: fls. pink, in clusters: fr. ¾ in. across.

calophýlla. Medium-sized tree, with rough corky deciduous bark: lvs. ovate-lanceolate, thick: fls. rather large, white or pink in var. **ròsea,** in umbels forming a terminal panicle: fr. to 1½ in. across.

capitellàta. Large tree, with furrowed fibrous bark: lvs. ovate-lanceolate, very thick and shining: fls. sessile, in umbels: fr. ⅓ in. across.

cinèrea. Medium-sized tree, the bark whitish and persistent: lvs. ovate to ovate-lanceolate, glaucous or mealy-white: fls. in clusters: fr. ¼ in. across. Var. **multiflòra** is listed.

citriodòra: *E. maculata* var.

cladócalyx (*E. corynocalyx*). SUGAR GUM. To 120 ft., with smooth deciduous bark: lvs. ovate-lanceolate to lanceolate: fls. ½ in. across, in 6–12-fld. umbels: fr. ¼ in. across.

clemondénsis: listed name.

coccífera. Small tree, the bark smooth and white: lvs. lanceolate, glaucous: fls. in clusters: fr. to ½ in. across.

constrícta: listed name.

cordàta. To 50 ft.: lvs. orbicular to ovate, often crenate, usually glaucous or mealy-white: fls. rather small, nearly sessile: fr. ⅓ in. across.

coriàcea. Tall tree, the bark deciduous, the inner bark smooth and whitish: lvs. ovate-lanceolate to lanceolate, very thick and shining: fls. in umbels: fr. ¼ in. across.

cornùta. YATE-TREE. Medium-sized tree: lvs. oblong or broadly lanceolate: fls. greenish-yellow, in dense heads, having a long horn-like lid: fr. ⅓ in. across.

coronàta: listed name.

corymbòsa. BLOODWOOD. Medium-sized tree, with persistent rough bark: lvs. lanceolate: fls. yellowish-white, fragrant, in panicled umbels: fr. ½ in. across.

corynócalyx: *E. cladocalyx.*

cosmophýlla. Shrub or small tree with smooth ash-colored bark: lvs. broadly lanceolate: fls. rather large, nearly sessile: fr. ⅔ in. across.

crèbra. NARROW-LEAVED IRONBARK. Bark deeply furrowed, persistent: lvs. lanceolate: fls. to ½ in. long, in panicles: fr. to ⅙ in. across.

crùcis. To 25 ft.: lvs. broadly lanceolate to ovate, to 2 in. long, acuminate to apiculate, glaucous: fls. in axillary umbels of 4–7: fr. to ⅝ in. diam.

desmodénsis. Shrub to 15 ft., branches drooping and pendulous, bark whitish: mature lvs. oblong to lanceolate, to 5 in. long, alternate, glaucous, leathery: fls. 7–15 in axillary umbels.

diversícolor. Karri Gum. To 100 ft. and more, the bark smooth and white: lvs. lanceolate: fls. in umbels: fr. ⅓ in. across.

dumòsa. Shrub or small tree to 30 ft.: lvs. lanceolate, to 4 in. long: fls. white or pink, on axillary peduncles. Var. **angulòsa** (*E. angulosa*) has angular branches; intermediate forms between it and the type are known.

elæóphora: *E. goniocalyx.*

eremóphila. Shrub or small tree, with smooth scaly bark: lvs. narrow-lanceolate: fls. with reddish lid to 1 in. long.

erythrocòrys. To 30 ft.: lvs. lanceolate or linear: fls. in clusters, with red lid: fr. 1½ in. across.

erythronèma. Small tree with rough reddish bark: lvs. lanceolate, thick and shining: fls. pink-red, in umbels: fr. to ½ in. across.

eugenioìdes. Resembling *E. piperita*, but with strongly fibrous bark, thicker not odorous lvs., and the rim of fr. flat or raised instead of depressed.

exímia. Mountain Bloodwood. Large tree, the bark brown or yellowish and scaly: lvs. falcate-lanceolate: fls. in panicles: fr. ½ in. across.

ficifòlia. Scarlet-flowering Gum. To 30 ft. or more, the bark dark and furrowed: lvs. ovate to lanceolate, thick: fls. white to pink and scarlet, to 1½ in. long, in panicles: fr. to 1½ in. across.

Forrestiàna. Shrub to 12 ft.: lvs. usually lanceolate, to 5 in. long, glaucous: fls. large, solitary, scarlet peduncles to 2 in. long, drooping: fr. 4-sided, to 1¾ in. long.

gigantèa: *E. obliqua.*

glóbulus. Blue Gum. To 300 ft., the bark deciduous, the trunk smooth grayish or bluish-white: lvs. lanceolate in mature trees, much broader and very glaucous on young ones: fls. 1½ in. across, solitary or few together: fr. to 1 in. across.—The commonest species in N. Amer. Var. **compácta** is a densely branched dwarf form.

gomphocéphala. Tooart-Tree. To 120 ft., with persistent rough bark: lvs. lanceolate, thick and shining: fls. in umbels, sessile: fr. ½ in. across.

goniócalyx (*E. elæophora*). Bastard Box. Tall tree with rough deciduous bark: lvs. lanceolate, pale green: fls. in umbels: fr. ⅓ in. across.

gróssa. Shrub: lvs. ovate to lanceolate, very thick and shining: fls. in clusters, large.

Gúnnii. Cider Gum. To 30 ft., with smooth whitish deciduous bark: lvs. ovate to lanceolate, thick and shining: fls. rather large, in umbels: fr. to ⅓ in. across.

hæmástoma. Large tree, the bark smooth and deciduous: lvs. falcate-lanceolate: fls. in umbels: fr. to ⅓ in. across. Var. **micrántha** (*E. micrantha*) has longer lvs. and smaller fls. and frs. Var. **capitàta** is listed.

hemiphlòia. To 90 ft., with rough persistent bark: lvs. lanceolate or broader, thick, often gray: fls. in panicles: fr. ¼ in. across. Var. **álbens** (*E. albens*) has glaucous or white-mealy lvs. and larger frs.

Léhmannii. Small tree, the bark rough and deciduous: lvs. ovate to oblong: fls. in dense heads, the lid to 1½ in. long: fr. ½ in. across.

leucóxylon. White Ironbark. Tall tree with smooth pale deciduous bark: lvs. narrowly lanceolate, grayish-green: fls. 1 in. across, in umbels: fr. ½ in. across. Var. **purpùrea** has bright purple fls. and var. **ròsea** pink fls.

lineàris: *E. amygdalina* var. *angustifolia.*

longifòlia. Woollybutt. To 200 ft., with rough persistent bark: lvs. lanceolate: fls. rather large, in umbels: fr. ½ in. across.

Macárthuri. Bark rough and woolly: lvs. lanceolate: fls. in umbels: fr. to ¼ in. across.

macrándra. Shrub or small tree to 30 ft.: lvs. ovate-lanceolate to narrowly lanceolate, to 4½ in. long, thick and coriaceous: fls. 8–20 in dense umbels: fr. to ⅓ in. across.—By some authors considered a variant of *E. occidentalis.*

macrocárpa. Shrub to 15 ft., usually white-mealy: lvs. cordate-ovate, thick and stiff: fls. solitary, orange to crimson, stamens 1 in. long: fr. to 3 in. across.

macrorhýncha. Tall tree, the bark dark gray, fibrous and furrowed: lvs. lanceolate: fls. in umbels: fr. to ½ in. across.

maculàta. Spotted Gum. To 150 ft., the bark deciduous in patches: lvs. lanceolate: fls. ½ in. long, in many-fld. panicles: fr. ½ in. across. Var. **citriodòra** (*E. citriodora*), Lemon-scented Gum, has lvs. with strong odor of lemon.

Màidenii. Tall tree, the bark smooth and whitish: lvs. narrow-lanceolate, chalky-white: fls. in umbels: fr. ¼ in. across.

marginàta. Jarrah. Tall tree, the bark persistent or flaking: lvs. lanceolate: fls. in umbels: fr. ½ in. or more across.

megacárpa. To 100 ft., the grayish-white bark smooth and deciduous: fls. in umbels: fr. to 1 in. across.

melliodòra. Honey-scented Gum. Yellow Box. To 150 ft., the roughish bark flaking off: lvs. narrowly lanceolate: fls. small, in umbels: fr. ¼ in. or less across.

micrántha: *E. hæmastoma* var.

miniàta. To about 10 ft.: lvs. oblong-lanceolate, thick and stiff, shining above: fls. solitary, very large, stamens white or red and ½ in. long: fr. to 3 in. across.

Muelleriana. Yellow Stringybark. Medium-sized tree with stringy bark and yellow inner bark: lvs. lanceolate, glossy: fls. in umbels: fr. ½ in. across.

numeròsa: *E. amygdalina* var.

nùtans. Shrub or small tree: lvs. suborbicular, to 2 in. long, alternate, glaucous, pellucid-dotted: fls. 3–7, with conspicuous purple or reddish filaments to ⅝ in. long: fr. nodding, to ⅝ in. long.

oblìqua (*E. gigantea*). To 300 ft., with persistent fibrous bark: lvs. ovate-lanceolate, very oblique, thick: fls. in umbels: fr. to ½ in. across.

occidentàlis. Flat-topped Yate. Small tree, the bark usually smooth and deciduous: lvs. lanceolate: fls. in umbels, the lid to ¾ in. long: fr. ⅓ in. across.

Òldfieldii. Shrub to 10 ft. with smooth deciduous bark: lvs. ovate-lanceolate, very thick: fls. in clusters, stamens dark colored: fr. ⅔ in. across.

ovàta. Medium-sized to tall tree: lvs. lanceolate or very broad: fls. small, in axillary clusters, the lid sometimes beaked.

paniculàta. Tall tree with hard deeply furrowed persistent bark: lvs. lanceolate: fls. in panicles or umbels: fr. ⅓ in. across.

pilulàris. Blackbutt. To 150 ft., with blackish-gray persistent bark: lvs. lanceolate: fls. in umbels: fr. ⅓ in. across.

piperìta. Peppermint Stringybark. Tall tree, with rough gray persistent bark: lvs. narrowly lanceolate, oblique, with peppermint odor: fls. in umbels: fr. ¼ in. across.

platyphýlla. Bark deciduous, smooth and white: lvs. ovate: fls. in umbels, on short thick stalks: fr. ⅓ in. across.

plátypus. Small tree with smooth grayish bark: lvs. oval, very thick and shining: fls. dull red or yellowish-white, in umbels with thick stalks: fr. ½ in. across.

polyánthemos. Red Box. Australian Beech. To 150 ft., the bark persistent: lvs. orbicular to ovate, grayish-green: fls. small, in many-fld. panicles: fr. ¼ in. across.

populifòlia. Poplar Box. Bark rough: lvs. ovate, shining and very dark green: fls. small, in panicled umbels: fr. very small.

Preissiàna. Spindly shrub to 10 ft.: lvs. elliptic-oblong, to 4 in. long, strongly pellucid-dotted: fls. in umbels, stamens yellow: fr. to ¾ in. across.

pulverulénta. Small tree: lvs. orbicular or ovate, glaucous or mealy-white: fls. in 1–3-fld. umbels: fr. ⅓ in. across.

punctàta. Leather-Jacket. To 100 ft., the smooth dark bark deciduous in flakes: lvs. narrowly lanceolate: fls. in umbels: fr. ⅓ in. across.

pyrifórmis. To 12 ft.: lvs. ovate-lanceolate or lanceolate, very thick: fls. to 3 in. across, in drooping clusters: fr. 2 in. across.

rariflòra. Tall tree, branches red: lvs. lanceolate to ovate: fls. in panicles or small umbels: fr. about ⅙ in. across.

régnans: *E. amygdalina* var.

resinífera. Red Mahogany. To 100 ft., with rough persistent bark: lvs. lanceolate, thick: fls. in umbels: fr. ⅓ in. across.

Rísdonii. To 50 ft., the smooth bark deciduous in patches: lvs. ovate or lanceolate, on young shoots opposite and united at base, glaucous: fls. in umbels: fr. ⅓ in. across.

robústa. Swamp Mahogany. To 100 ft., with rough persistent bark: lvs. ovate-lanceolate: fls. ¾ in. across, in umbels: fr. ½ in. across.

rostràta. Red Gum. To 200 ft., with smooth gray deciduous bark: lvs. narrowly lanceolate: fls. to ½ in. across, in umbels: fr. ¼ in. across.

rùbida. Resembling *E. viminalis* but with smooth white bark often having reddish patches.

rùdis. Desert Gum. To 100 ft., with rough gray persistent bark: lvs. lanceolate: fls. ½ in. across, in umbels: fr. ½ in. across.

salmonophlòia. Tall tree, bark smooth, salmon-colored, becoming red on drying: lvs. ovate to ovate-lanceolate, dull yellowish-green, becoming glossy at maturity: fls. small, in umbels: fr. about ⅛ in. across.

sepulcràlis: poorly understood species of questionable botanical standing.

siderophlòia. Broad-leaved Ironbark. To 100 ft., with deeply furrowed persistent bark: lvs. ovate-lanceolate to lanceolate: fls. in panicles: fr. ¼ in. across.

sideróxylon. Red Ironbark. Medium-sized tree with rough dark red or black persistent bark: lvs. narrowly-lanceolate, or young lvs. linear-lanceolate: fls. white or yellowish, in umbels: fr. ½ in. across. Var. **ròsea** has rose-colored fls. Var. **pállens** has rose-colored fls. and silvery-gray foliage.

Sieberiàna. Differs from *E. hæmastoma* chiefly in the dark furrowed bark.

spathulàta. Shrub to about 8 ft.: lvs. linear-lanceolate, to 3 in. long, obtuse, opposite, tapering toward base: fls. 4–8, in solitary and axillary umbels: fr. about ¼ in. diam.

Steèdmanii: listed name.

Strícklandii. Probably a shrub, branchlets glaucous: lvs. lanceolate, to 4 in. long, thick, stalked: fls. sessile in small clusters, about ¾ in. across, filaments red: fr. subcylindrical, more than ½ in. long.

Stuartiàna. Apple-scented Gum. Tall tree with rough fibrous bark: lvs. ovate-lanceolate to lanceolate: fls. in umbels: fr. to ⅓ in. across.

tereticórnis. Gray or Slaty Gum. To 150 ft., with smooth gray deciduous bark: lvs. broadly lanceolate: fls. ¾ in. across, in umbels: fr. ¼ in. across.

tetráptera. Small tree with sharply 4-angled branches: lvs. oblong-lanceolate, very thick: fls. very large, sessile and solitary: fr. 1 in. across.

torquàta. Lvs. lanceolate, leathery, grayish-green: fls. in umbels, base of calyx dilated into ring, stamens ½ in. long, reddish-orange.

urnígera. Bark smooth, pale brown, branchlets drooping: lvs. ovate to lanceolate, glaucous: fls. in 3-fld. umbels: fr. ⅓ in. across.

viminàlis. Manna Gum. To 300 ft., the branches pendulous: lvs. lanceolate: fls. ½ in. across, in umbels: fr. ¼ in. across.

virgàta. Shrub or small tree: lvs. lanceolate, shining: fls. in umbels: fr. to ½ in. across.

EUCEPHALUS: *Aster.*

EUCHARIDIUM: *Clarkia.*

EÙCHARIS. *Amaryllidaceæ.* Bulbous herbs from Colombia, with broad basal lvs. narrowed into petioles, and large beautiful chaste-white fls. in umbels terminating the scape, the perianth with cylindrical tube and spreading segms.

The Amazon-lily is grown out-of-doors in warm countries or in a greenhouse with the night temperature at about 65°. It succeeds in coarse fibrous soil and should be liberally watered except in the resting period. Protection from the sun should be given except in the winter months. Propagated by offsets in spring.

amazónica: *E. grandiflora.*

grandiflòra (*E. amazonica*). Amazon-Lily. Lvs. about 1 ft. long and 6 in. broad, the petiole 1 ft. long: fls. fragrant, to 3 in. across, on scapes 2 ft. high. Andes of Colombia.

EUCHLÆNA. Teosinte. *Gramineæ.* Broad-leaved grasses resembling maize and grown for forage in the S.: monœcious; staminate spikelets in terminal panicles; pistillate in axillary spikes inclosed in a husk from which the long styles protrude; grain or seed large; native in Mex. and Cent. Amer.

luxùrians: *E. mexicana.*

mexicàna (*E. luxurians*). Ann. to 10 ft. or more, very leafy: lvs. to several ft. long and 1–2 in. wide, midrib prominent: grain shining, ¼ in. long. Mex.

perénnis. Differs from *E. mexicana* in being per. and propagating by rhizomes. Mex.

EUCNÌDE. *Loasaceæ.* Ann. or bien. herbs of S. W. U. S. and Mex., allied to Mentzelia but differing in being armed with stinging hairs, the petals connate and not free and in technical characters of the ovary. Propagated by seed.

bartonioìdes (*Mentzelia gronoviæfolia*). Bien., much branched and usually spreading on the ground: lvs. ovate, laciniate or lobed: fls. bright yellow, opening only in full sun, on slender pedicels to 6 in. long: caps. opening by 5 valves at top. W. Tex. and Mex.

EÙCOMIS. *Liliaceæ.* S. African bulbous herbs with basal lvs. in rosettes and greenish or whitish fls. in racemes terminating the scape and tipped with a crest of leafy bracts, the perianth-segms. distinct. Of easy cult. in warm climates or in greenhouses in the N. Propagated by offsets.

comòsa (*E. punctata*). Pineapple-Flower. To 2 ft.: lvs. to 2 ft. long and 3 in. across, spotted with brown beneath: fls. green, ½ in. long.

punctàta: *E. comosa.*

undulàta. Lvs. to 1 ft. long and 1½ in. across, strap-shaped, undulate, with finely crenulate cartilaginous margins, strongly keeled beneath: fls. greenish, to ¾ in. across, with spatulate diverging segms., in dense raceme above which is a tufted crown of small lvs.

EUCÓMMIA, the only genus of *Eucommiaceæ,* which stands near Hamamelidaceæ and Rosaceæ. One deciduous tree from Cent. China, yielding rubber although difficult of extraction. **E. ulmoìdes.** To 60 ft.: lvs. alternate, elliptic to oblong-ovate, to 3 in. long, toothed, elm-like as the specific name implies: fls. unisexual, in Apr. before or with the lvs., without perianth, the anthers red: fr. a winged nutlet to 1½ in. long.—Hardy N. Propagated by seeds and cuttings of young wood under glass.

EUCRÝPHIA, the only genus in *Eucryphiaceæ.* A few species in Australia and Chile, by some authors formerly included in Rosaceæ and also in Saxifragaceæ and Hypericaceæ: evergreen shrubs or trees, sometimes partially deciduous, planted for ornament, intro. particularly in Calif.: lvs. opposite, simple or pinnate, bearing large white somewhat rose-like fls. in the axils: petals 4, large; stamens numerous and conspicuous: fr. a dehiscent caps.

Billardièri. Large glabrous tree, sometimes grown as a shrub: lvs. simple, oblong, obtuse, entire, whitish underneath: fls. to 2 in. across. Tasmania.

cordifòlia. Small tree or large shrub: lvs. simple, cordate and oblong, pubescent, crenate: fls. large. Chile.

glutinòsa (*E. pinnatifolia*). Tree to 20 ft.: lvs. pinnate, the 3–5 lfts. elliptic to lance-ovate, to 2 in. long: fls. 2 in. or more across. Chile.

pinnatifòlia: *E. glutinosa.*

EUGÈNIA (incl., *Jambosa, Myrciaria*). *Myrtaceæ.* Trop. and semi-trop. evergreen bushes and trees in many parts of the world and of very many species, in the western hemisphere native as far north as S. Fla.: lvs. opposite, simple, mostly firm and glossy: fls. commonly white, cream-colored or purple, solitary, racemose or paniculate, the stamens numerous and conspicuous: fr. a drupe-like yellow, red, purple or black berry, sometimes edible.

Eugenias are grown in Florida, California and similar climates for the ornamental habit, foliage, flowers and berries, and some kinds for the eatable fruits. They are of simple requirements, propagating by means of seeds, and by cuttings on a bench or in a frame. In California, *E. paniculata* and its variety are much planted, and in Florida also; the young growths are red-brown and showy, the winter color often brilliant; there is a form with variegated leaves.

apiculàta (*Myrtus Luma*). To 4 ft. or more: lvs. oval, to 1 in. long: fls. white, ½ in. across, in 3's: fr. black. Chile.

aromática (*Caryophyllus aromaticus*). Clove-Tree. Tree to 30 ft.: lvs. ovate-oblong, to 5 in. long: fls. pale purple, ¼ in. across, in terminal cymes, the dried fl.-buds comprising the cloves of commerce. Moluccas.

austràlis: *E. paniculata* var.

axillàris: probably *E. supraaxillaris.*

brasiliénsis: *E. Dombeyi.*

cauliflòra (*Myrciaria cauliflora*). Jaboticaba. Tree to 40 ft., upward-branching from near the ground and bearing clusters of fls. and fr. along the trunk and branches: lvs. lanceolate or somewhat broader, acuminate, to 4 in. long: fls. small, white: fr. globular, to 1 or 1½ in. diam., purple. S. Brazil, prized for the edible fr.—Has been tried in Fla. and S. Calif. Two or three related species are apparently known as jaboticabas.

coronàta. Shrub to 6 ft. with ovate or elliptic lvs. 1 in. or less long and not more than ½ in. broad: fls. solitary in axils of lvs., on pedicels ¼ in. or less long. Upper Guinea. —Reported in S. Fla.

Cùminii: *Syzygium Cuminii.*

Cúrranii. Tree to 50 ft.: lvs. oblong-elliptic, to 12 in. long: fls. in panicles often from tubercles on st.: fr. size of grape, edible. Philippines.

cyanocárpa. Glabrous tree with lanceolate willow-like lvs. to 3 in. long and tapering both ways from middle, strongly cross-veined, petiole very short: fls. to ¾ in. across, in terminal clusters: fr. blue. Australia.

Dómbeyi (*E. brasiliensis* of planters). Grumixameira-Tree. Tree to 50 ft.: lvs. oval to somewhat obovate, coriaceous, to 5 in. long: fls. solitary, white: fr. dark red becoming black, edible. Brazil.

edùlis (*Myrciaria edulis*). Lvs. willow-like, rusty-pubescent when young: fr. orange or yellow, the size of an apple, downy. Brazil.

eucalyptoìdes. Small tree or shrub: lvs. lanceolate, to 6 in. or more long, pointed: fls. in compact terminal cymes, the orbicular petals about ¼ in. across: fr. globular. Australia.

floribúnda (*Myrciaria floribunda*). Tree to 30 ft., glabrous: lvs. lanceolate to ovate-lanceolate, to about 3 in. long, long-acuminate: fls. white, sessile in lateral clusters: fr. red or yellow, to ⅓ in. diam. W. Indies.

Hoòkeri, Hookeriàna: *E. paniculata.*

Jambolàna: *Syzygium Cuminii.*

Jámbos (*Jambos vulgaris* and *J. Jambos. Caryophyllus Jambos*). Rose-Apple. Jambos. Broad tree to 30 ft.: lvs. long-lanceolate, tapering both ends, to 8 in. long: fls. greenish-white, to 3 in. across, the stamens very conspicuous, terminal and few together: fr. to 2 in. diam., greenish or yellow, employed in making preserves and confectionary. Trop. Asia; nat. elsewhere.

malaccénsis (*Jambosa malaccensis*). Malay-Apple. Pomerack. Tree to 30 ft. or more high, with thick heavy top: lvs. oblong to somewhat obovate, thick, to 12 in. long: fls. red-purple, 2 in. across, borne along branches, stamens much exceeding petals and covering the ground as they fall: fr. red, 2 in. long. India, Malaya.

Màto. Tree to 20 ft.: lvs. ovate to oblong-lanceolate, obtuse: fls. white, solitary in the axils, on stalks to ¾ in. long. Argentina.

Mìchelii: *E. uniflora.*

microphýlla: see *E. myriophylla.*

montícola. Shrub or tree to 30 ft.: lvs. ovate to lanceolate, to 1½ in. long, pale beneath: fls. small, in axillary clusters: fr. black at maturity, very small. W. Indies.

myriophýlla (*Myrciaria myriophylla*). Much branched bush: lvs. very narrow and crowded (at least on juvenile plants), to 1½ in. or more long, $\frac{1}{16}$ in. or less broad, entire, punctate, midrib obscure above but prominent underneath: fls. white, solitary on axillary peduncles. S. Cent. Brazil.—Grown in pots in its vegetative stage for decoration under the mistaken name *E. microphylla.*

myrtifòlia: *E. paniculata* var. *australis.*

operculàta: *Syzygium operculatum.*

paniculàta (*E. Hookeri* and *Hookeriana*, hort.). Small vigorous tree, mostly not continuous-blooming: lvs. oblong-lanceolate, to 3 in. or more long, prominently acuminate, tapering at base: fls. white or whitish with conspicuous stamens, about ½ in. across, in small clusters terminal and on the ends of short branchlets or long peduncles and therefore showing beyond the foliage: fr. rose-purple, to about ¾ in. diam., employed in jelly-making. Australia. Var. **austràlis** (*E. australis. E. myrtifolia*). Remaining more bushy and usually blooming more or less throughout the year: lvs. on young shoots oblong-acuminate but on flowering shoots prevailingly short-elliptic and obtuse or short-acute and about 2½ in. long or less: fls. not prominent beyond the foliage: fr. usually smaller.

Pitánga. Low shrub, young parts pubescent: lvs. elliptic-oblong or narrow-lanceolate, to 3 in. long: fls. solitary or in one form fascicled: fr. red, nerved, about ½ in. diam. Brazil, Argentina.

púngens. To 40 ft.: lvs. elliptic-oblong, to 3 in. long, spine-tipped: fls. solitary, the peduncles shorter than lvs.: fr. white-tomentose or puberulent, small. Brazil.

Smíthii. Tall tree: lvs. ovate to ovate-lanceolate, to 3 in. long: fls. white, small, in terminal panicles: fr. white or purplish. Australia.

supraaxillàris. Tree to 25 ft.: lvs. oval-oblong, to 5 in. long, shining, pale beneath: fls. in about 9-fld. racemes to ¾ in. long, supraaxillary. Brazil.

Úgni: *Myrtus Ugni.*

uniflòra (*E. Michelii*). Pitanga. Surinam-Cherry. Shrub or tree to 25 ft.: lvs. ovate to ovate-lanceolate, to 2 in. long: fls. white, fragrant, ½ in. across, solitary or few together: fr. deep crimson at maturity, 8-ribbed, edible. Brazil.

EULALIA: *Miscanthus.*

EULOBUS: see *Œnothera californica.*

EULÝCHNIA. *Cactaceæ.* Branched cacti with parallel spiny ribs and white or pinkish fls. having a very short tube; native in Chile.

iquiquénsis. To 25 ft. tall, often nearly spineless toward base; ribs 12–15; spines 12–15 at areole, usually about ½ in. long but the longest to nearly 5 in.: fls. white, to 3 in. long.

spinibárbis (*Cereus spinibarbis*). To 15 ft., much branched; ribs 12–13; spines about 20, usually ¾ in. long, the central to 6 in. long: fls. to 2 in. long, woolly.

EUÓNYMUS. Spindle-Tree. *Celastraceæ.* Shrubs or small trees, sometimes root-climbers or creepers, mostly of the north temp. zone, sometimes evergreen, with opposite simple lvs., small greenish or purplish bisexual fls. in axillary cymes, and capsular fr. having the seeds inclosed in an orange-colored aril.

Whether the name of this genus shall be spelled Evonymus or Euonymus is a question of varying practice. Botanical nomenclature begins with Linnæus, Species Plantarum, 1753, with which it is agreed to associate the generic descriptions of his Genera Plantarum, fifth edition, 1754. In the former work Linnæus spelled the name Evonymus, having taken it over from Tournefort, and in the latter Euonymus as if it were at that time a preference. In those days less importance was attached to such variables. There are good arguments for either spelling and neither one can be said to be "correct" as against the other, but Euonymus is generally preferred.

Many species and varieties are grown for ornament. Most of the species are hardy in the northern states. Ordinary soil and position are satisfactory. Propagated by seeds stratified and sown in spring, hardwood cuttings, the evergreen species under glass, and layers. Grafting is sometimes practiced with varieties and weak kinds, using strong kinds for stock.

acùtus: *E. Fortunei.*

alàtus (*E. Thunbergianus*). Deciduous shrub to 8 ft., the branches with corky wings: lvs. elliptic, finely toothed: fr. purplish. China, Japan. In var. **ápterus** (*subtriflorus*) the branches are not winged. Var. **compáctus** is a dwarf form.

americànus. Strawberry-Bush. Deciduous shrub to 8 ft.: lvs. ovate- to oblong-lanceolate, wavy-toothed: fr. pink. N. Y. to Fla. and Tex.

arboréscens: listed name.

atropurpùreus. Wahoo. Burning-Bush. Deciduous shrub or tree to 25 ft.: lvs. elliptic, pubescent beneath, finely-toothed: fls. purple: fr. scarlet. Ont. to Fla. and Mont.

britzénsis: listed name, probably a form of *E. Fortunei* var. *radicans.*

Bungeànus. Deciduous shrub to 15 ft.: lvs. elliptic-ovate or -lanceolate, finely toothed: fr. yellowish. China, Manchuria. Var. **péndulus** has drooping branches. Var. **semipersístens** is half-evergreen.

Carrièrei: a form of *E. Fortunei* var. *radicans.*

coloràtus: a form of *E. Fortunei.*

europæ̀us. Deciduous shrub or tree to 25 ft.: lvs. ovate to oblong-lanceolate, finely toothed: fr. pink. Eu. Var. **álbus** (var. *leucocarpus*) has whitish fr. Var. **hæmatocárpus** (var. *fructucoccineus*) has deep red fruit. Var. **lineàris** is said to have much narrower lvs. Var. **nànus** is a dwarf form.

fimbriàtus. Shrub or small tree: lvs. elliptic to oblong-obovate, to 4 in. long, abruptly acuminate, serrulate: fr. orange, covered with long pointed wings. Himalayas.

Fórtunei (*E. radicans* var. *acutus*). Evergreen shrub, trailing or climbing by rootlets: lvs. ovate-lanceolate, margins entire or nearly so: fr. greenish-white or pinkish. Cent. and W. China.—Recent investigations have shown the plants commonly grown as *E. radicans* to represent only variants of the above species and not a distinct species apart from it. Most of the hort. variants of what was *E. radicans* are now considered as forms of the same plant, although a few have been raised to equal rank and are also treated as varieties. A form of the typical element is **coloràtus** (*E. radicans* var. *coloratus*) with lvs. dark deep purple above and paler beneath in autumn and winter. Var. **radìcans** (*E. radicans*, *E. repens*) differs in its smaller and less pointed lvs. which are distinctly and sharply serrate, of thicker texture and has obsolete lateral veins; often confused with var. *vegetus*. Cent. Japan and S. Korea. Forms of this variety are **Carrièrei** (*E. radicans* vars. *Carrierei* and *erectus*) which is of a more shrubby and distinctly non-climbing habit with lvs. glossy dark green above, to 2 in. long and occasionally white-margined; **grácilis** (*E. radicans* vars. *argenteo-marginatus*, *argenteo-variegatus*, *pictus* and *roseo-marginatus*, *E. tricolor*) is a climbing plant with lvs. variously variegated with white, yellow, or pink or combinations of these; **mínimus** (*E. radicans* vars. *kewensis* and *minimus*), a sterile creeping plant with lvs. only to ⅝ in. long or less; **reticulàtus** (*E. radicans* var.), climbing or creeping form with large dark green lvs. variegated white along veins. Var. **végetus** (*E. radicans* var.), a low-spreading shrub to 5 ft. high or climbing with rootlets when supported, lvs. orbicular-oval to elliptic, more coarsely crenate and leathery than in var. *radicans* and with larger inflorescences: fr. orange; perhaps more common than the true var. *radicans*.

grandiflòrus. Half evergreen shrub to 15 ft.: lvs. obovate, to 4 in. long, margins wavy-toothed: fls. whitish, to ¾ in. across: fr. yellowish, scarlet within. Himalayas.

Hamiltoniànus. Small tree: lvs. lanceolate-oblong, finely toothed: fr. pink. Himalayas.

japónicus. Evergreen shrub to 15 ft.: lvs. oval, obscurely toothed, shining above: fr. pink. Japan; planted in southern states. There are many forms, a few of which are: **álbo-marginàtus,** lvs. with narrow white border; **argénteo-variegàtus,** lvs. edged and marked with white; **aùreus,** lvs. yellow when young; **aúreo-marginàtus,** lvs. edged with yellow; **aùreo-variegàtus,** lvs. blotched with yellow; **columnàris** is not distinct from *pyramidatus;* **compáctus variegàtus,** a low dense variegated form; **mèdio-píctus,** lvs. with yellow blotch in center; **microphýllus** (*E. pulchellus*), lvs. small; **pállens,** young lvs. pale yellow; **pyramidàtus** (var. *columnaris*), of columnar habit; **víridi-variegàtus** or "Duc d'Anjou," lvs. bright green variegated with yellow and green. Vars. **elegantíssimus** and **fértilis** are listed.

kewénsis: not distinct from a form of *E. Fortunei* var. *radicans* known as *minimus*.

kiautschòvica (*E. patens*). Partially evergreen shrub to 10 ft.: lvs. oval to obovate, wavy-toothed: fr. pink. China.

lanceifòlius. Deciduous shrub or tree to 30 ft.: lvs. lanceolate, wavy-toothed: fr. pale. China.

latifòlius. Deciduous shrub or tree to 20 ft.: lvs. oval to oblong, finely toothed: fr. rosy-red. Eu., W. Asia. Var. **plánipes** is *E. sachalinensis*.

Maàckii. Shrub or small tree: lvs. oblong, finely toothed: fr. pink. China, Manchuria, Korea.

magníficus: hort. name.

myrtifòlius: probably *E. japonicus* var. *microphyllus*.

nànus (*E. rosmarinifolius*). Deciduous shrub to 3 ft., sometimes procumbent: lvs. linear, usually entire, the margins revolute: fr. pink. Asia. Var. **turkestánícus** (var. *Koopmannii*) has broader non-revolute lvs.

obovàtus (*E. americanus* var. *obovatus*). Running Strawberry-Bush. Deciduous procumbent shrub to 1 ft., the branches rooting: lvs. obovate, finely toothed: fr. pink. Ont. to Ky.

occidentàlis. Deciduous shrub to 15 ft.: lvs. elliptic-lanceolate, to 4½ in. long, on short petioles, glabrous, serrulate: fls. purple or dark brown, 5-merous, to ½ in. across. Puget Sound to Calif.

oxyphýllus. Deciduous shrub or small tree: lvs. ovate to ovate-oblong, finely toothed: fr. dark red. Japan.

pàtens: *E. kiautschovica*.

péndulus. Small evergreen tree, branches drooping: lvs. oblong-lanceolate, finely sharp-toothed: fr. 4-winged. Himalayas.

plánipes: *E. sachalinensis*.

pulchéllus: *E. japonicus* var. *microphyllus*.

radìcans: see *E. Fortunei*.

rèpens: *E. Fortunei* var. *radicans*.

rosmarinifòlius: *E. nanus*.

sachalinénsis (*E.planipes*). Allied to *E. latifolius:* lvs. ovate-oblong, wavy-toothed: fr. 5-angled, purple. N. E. Asia.

Sieboldiànus. Lvs. elliptic: fr. 4-ribbed. Japan.—The plant usually cult. under this name is *E. kiautschovica*.

speciòsus: listed as very dwarf with dark green foliage.

Thunbergiànus: *E. alatus*.

trícolor: *E. Fortunei gracilis*.

végetus: *E. Fortunei* var.

verrucòsus. Shrub to 6 ft.: lvs. ovate, crenate-toothed: fr. yellowish-red, deeply 4-lobed. S. Eu., W. Asia.

Wìlsonii. Shrub climbing to 20 ft.: lvs. lanceolate, to 5 in. or more long, serrate: fls. many, yellowish, in cymes: fr. 4-lobed, with yellow aril. China.

yedoénsis. Deciduous shrub to 10 ft.: lvs. obovate, minutely toothed: fr. pink. Japan.

EUPATÒRIUM. Thoroughwort. Boneset. *Compositæ*. Mostly herbaceous perennials with opposite lvs. and heads in clusters or panicles, of purple, rose and white disk-fls. blooming in late summer and autumn; pappus of hair-like bristles; mostly native in Mex., W. Indies and trop. S. Amer.

Many tropical bonesets are very satisfactory in the greenhouse and others in the hardy border or wild-garden. Those grown under glass are given the same care as the florists stevia (Piqueria), being propagated usually by cuttings in winter or early spring. The hardy herbaceous types require the treatment of the average perennial and are increased by division or by seeds. The species most likely to be seen under glass are *E. glabratum*, *glandulosum*, *glechonophyllum*, *ligustrinum*, *riparium*, *sordidum* (*ianthinum*).

adenánthum: *E. glandulosum*.

adenóphorum: *E. glandulosum*.

ageratoìdes: *E. rugosum*.

álbum. To 3 ft., rough-hairy: lvs. oblong, to 4 in. long, coarsely toothed: heads white. L. I. to Fla. and La.—Suited to poor soil.

altíssimum. To 8 ft., grayish-pubescent: lvs. lanceolate, to 5 in. long, toothed or entire: heads white or pinkish. Pa. to N. C. and Tex.

americànum: *E. glandulosum*.

araliæfòlium. Shrub: lvs. oblong, to 8 in. long, entire, leathery and glabrous: heads white. Mex. to Guatemala.

aromáticum. To 2 ft., slightly pubescent: lvs. ovate, to 3 in. long, coarsely toothed: heads white. Mass. to Fla. and Miss. Var. **melissoìdes** has smaller nearly sessile lvs.

atrórubens. To 2½ ft., with red or purple hairs: lvs. ovate, to 1 ft. long, toothed: heads red or purple. Mex.

Brùneri. To 5 ft.: lvs. in whorls of 3, lanceolate, to 6 in. long, toothed, tomentose beneath, rugose: heads pink or rose. B. C. to Colo.

cannábinum. Hemp Agrimony. To 6 ft., pubescent: lvs. 3–5-parted into lanceolate coarsely toothed segms.: heads pale purple. Eu.

cinèreum. Shrubby: lvs. ovate-lanceolate, 3 in. long, toothed, white-tomentose beneath: pappus white. Trinidad.

cœléstinum (*Conoclinium cœlestinum*). Mist-Flower. To 3 ft., pubescent: lvs. triangular-ovate, to 3 in. long, coarsely toothed: heads light blue to violet. N. J. to Fla. and Tex.

conspícuum (*E. grandifolium*). Herb or shrub to 6 ft.: lvs. triangular-ovate, to 5 in. long, toothed: heads white. Mex., Guatemala.

dùbium (*E. verticillatum*). Joe-Pye Weed. To 8 ft. or more, st. speckled purple: lvs. ovate to narrow-ovate, mostly in 3's and 4's, to 8 in. long, broadly contracted at base: fls. purple, in convex or rounded panicles. Coastal plain, Mass. to S. C.—See *E. purpureum*.

élegans: *E. glabratum*.

Fràseri: *E. rugosum*.

glabràtum (*E. elegans*. *E. latifolium*). Shrub to 8 ft., sticky and nearly glabrous: lvs. ovate to oblong, to 2½ in. long, fine-toothed or entire, pale beneath: heads pale pink. Mex.

glandulòsum (*E. adenanthum*. *E. adenophorum*. *E. americanum*). Often decumbent, glandular-pubescent: lvs. ovate, coarsely toothed: heads pure white, ageratum-like. Mex.—Sometimes grown erroneously as *E. glutinosum*.

glechonophýllum (*Ageratum conspicuum*). Low branching subshrub, nearly glabrous: lvs. triangular-ovate, about 1 in. long, bluntly few-toothed: heads white. Chile.

glutinòsum: see *E. glandulosum*.

grandiflòrum: probably *E. atrorubens*.

grandifòlium: *E. conspicuum*.

iánthinum: *E. sordidum*.

incarnàtum. To 4 ft., pubescent: lvs. triangular-ovate, to 2 in. long, toothed: heads pink or pale purple. Va. to Fla. and Mex.

Lasseaùxii (*Ageratum* and *Conoclinium Lasseauxii*). To 2 ft., glandular-hairy: lvs. alternate, oblong-lanceolate, bluntly toothed: heads white changing to rose. Temp. S. Amer.

latifòlium: *E. glabratum.*

ligustrìnum (*E. micranthum. E. Weinmannianum*). Shrub to 15 ft.: lvs. oblong, to 3½ in. long, few-toothed, glandular below: heads white, often with deep rose pappus. Mex. to Cent. Amer.

macrophýllum (*Hebeclinium macrophyllum*). To 9 ft.: lvs. broad-ovate, to 8 in. long, pubescent, crenate, subcordate at base: heads white. Trop. Amer.

maculàtum. Joe-Pye Weed. To 6 ft., rough-pubescent, st. often spotted purple, not glaucous: lvs. ovate or ovate-lanceolate, often whorled, thick, coarsely toothed: heads pink or purple, in flat-topped infl., the florets 9–15. Newf. to B. C. south to Ill. and N. Mex.—Probably most of the stock planted as *E. purpureum* belongs here.

micránthum: *E. ligustrinum.*

occidentàle. To 1½ ft.: lvs. ovate, to 1½ in. long, toothed or nearly entire: heads pink or sometimes white. Wash. to Calif. and Nev.

odoràtum (*Osmia odorata*). Shrubby, to 2 ft. or partially climbing, pubescent: lvs. ovate or ovate-lanceolate, to 6 in. long, toothed: heads white to blue. Fla., W. Indies, S. Amer.

perfoliàtum. Common B. To 5 ft., pubescent: lvs. lanceolate, to 8 in. long, the pairs united at base around the st., rugose, fine-toothed: heads grayish-white varying to bluish-purple. N. S. to Fla. and Tex.

purpùreum. Joe-Pye Weed. To 10 ft., sts. mostly not speckled, glaucous: lvs. mostly in whorls, oval to lanceolate, to 1 ft. long, tapering at base, coarsely toothed: heads pink or purple, rarely whitish, in open convex infl., the florets 5–7. Me. to Fla., Okla. and Tex.—See *E. maculatum* and *E. dubium.*

ripàrium. Woody at base, 2 ft., sts. pubescent, reddish: lvs. lanceolate, to 4 in. long, toothed: heads white. Mex.

rugòsum (*E. urticæfolium. E. ageratoides. E. Fraseri*). White Snakeroot. To 4 ft., glabrous or hairy: lvs. ovate, to 6 in. long, coarsely toothed: heads white. N. B. to Fla. and La.

serótinum. To 8 ft., pubescent, much branched: lvs. ovate-lanceolate, to 6 in. long, coarsely toothed: heads white. Del. to Fla. and Tex.

serrulàtum. Shrub: lvs. lanceolate, to 2½ in. long, finely toothed, slightly glandular-pubescent: heads white. Brazil.

sessilifòlium. To 6 ft., nearly glabrous: lvs. lanceolate or ovate-lanceolate, to 6 in. long, sharp-toothed, sessile: heads white. Vt. to Ga. and Ala.

sórdidum (*E. ianthinum*). Shrub, the sts. densely reddish-tomentose: lvs. ovate to ovate-oblong, to 4 in. long, toothed: heads violet, fragrant. Mex.

speciòsum: *Liatris elegans.*

stœchadósmum. To 3 ft. or more, sts. not purple-spotted: lower lvs. trifoliolate, lfts. lanceolate, sharply and rather coarsely serrate, uppermost lvs. simple: heads few in loosely branched cymes. E. China and Japan.

Torreyànum. To 3 ft.: lvs. lanceolate, to 3 in. long, slightly toothed, sessile: heads white. Pa. to Fla. and Tex.

urticæfòlium: *E. rugosum.*

vernàle. Shrub, pubescent: lvs. oblong-ovate, to 5 in. long, toothed, grayish-tomentose beneath: heads white. Mex.

verticillàtum: *E. dubium.*

Weinmanniànum: *E. ligustrinum.*

EUPHÓRBIA. Spurge. *Euphorbiaceæ.* Herbs or shrubs or small more or less succulent trees of many classes and kinds (sometimes ranged in several genera), often cactus-like, with milky juice, simple lvs., fls. in cyathia (see *Euphorbiaceæ*), and fr. a 3-parted caps. The species are native in various parts of the world.

The succulent or cactus-like forms are grown in the greenhouse, and for hedges and specimen plants in the South; see *Succulents.*

The hardy herbaceous species are suitable for the border or rock-garden and thrive in any good garden soil. Seeds may be sown where the plants are to stand and then thinned to about 10 inches.

Poinsettias (*E. pulcherrima*) are propagated by cuttings, usually taken in early summer from young growth of stock that has been kept over winter. These cuttings afford bloom about Christmas time. They should be kept in pots in a temperature of about 65°. Where grown in the open poinsettias may be propagated from April on by canes about 3 feet long stuck in the ground. Other shrubby euphorbias are similarly handled.

The milky juice of most euphorbias is capable of producing a severe dermatitis much like that of poison ivy on susceptible individuals. Succulent ones should not be planted along edges of stocked pools inasmuch as secretions from broken roots may be fatal to the fish.

abyssínica. Large tree, branches leafless, succulent and spiny, becoming woody, sts. of young plants definitely 8-angled; spines to ½ in. long, sharp, weak, in groups of 5: fls. in crowded cymes: caps. deep crimson streaked white. Taranta Mt., Abyssinia.—Probably not in cult., although plants of this name are listed; some of them belong to *E. acrurensis* and *E. neglecta.*

acruénsis. Woody, spiny, succulent, tree-like, sts. of young plants 3–9-angled; spines to ½ in. long, gray with dark tips: fls. in cymes of 3 golden-yellow involucres on short peduncles. Abyssinia.—Reputed to have been distributed as *E. abyssinica.*

aggregàta. Tufted shrub 3 in. high with succulent angled sts. to 1¼ in. thick having strong yellow-brown to black spines: lvs. very small, soon falling: fls. sessile at tips of sts. S. Afr.

alcicórnis. To 10 ft., sts. with elevated rib-like lf.-bases usually 5-angled, fleshy, branches to ½ in. wide; spines dark colored, short, slender: bracts not conspicuously colored. Madagascar.

angulàris (*E. Lemaireana*). Shrub to 16 ft., branches constricted into joints to 8 in. long and 4½ in. thick, with 3 broad horny-margined wings; spines short: lvs. scale-like, central part deciduous: fls. in cymes. Trop. Afr.

antiquòrum. Shrub to 10 ft., branches to 2 in. thick, erect, jointed, flattened, the ribs somewhat dentate; spines to ¼ in. long: lvs. somewhat orbicular, small. India.—Occasionally used as a hedge plant and confused in the trade with *E. lactea.*

antisyphilítica. Candelilla. Shrub to 3 ft., branches numerous, slender, erect, spineless, almost leafless, simple or branched: involucres along sts. in small clusters. Mex.—Sts. and branches covered with a wax, used in manufacture of candles, soaps, polishes, lubricants and ointments.

aphýlla. Low much branched shrub with cylindrical gray-green sts. to 3 in. long: lvs. few, linear: fls. solitary or 2–3 at tips of sts., short-stalked. Canary Isls.

arbòrea: a synonym of *E. Tuckeyana*, not known to be in cult.; the catalogue description under *E. arborea* indicates that the plant in the trade is probably *E. antisyphilitica.*

atropurpùrea. Shrub to 6 ft.: lvs. oblanceolate, to 3 in. long, glaucous, clustered at ends of branches: fls. in umbels, the bracts dark purple. Teneriffe.

austràlis. Sts. prostrate, much branched, to 1 ft. long: lvs. ovate or nearly orbicular, ⅓ in. long, pubescent: fls. solitary in upper axils, with white or red petal-like appendages. Australia.

balsamífera. Much branched shrub with gray sts.: lvs. at tips of branches, linear-lanceolate, to 1 in. long: fls. solitary in the rosette of lvs., the bracts yellowish. Canary Isls.

biglandulòsa. To nearly 2 ft., not much branched: lvs. lanceolate, to 1½ in. long, fleshy, prickly-pointed: bracts turning pink, fls. in umbels. Asia Minor.

Bòjeri. Similar to *E. splendens*, differing in lvs. paler gray-green beneath, obtuse and not acute, and spines rarely branched at base. Madagascar.

bubalìna. Spineless shrub to 5 ft., branches glabrous, to ¾ in. thick, terete: lvs. lanceolate to oblanceolate, to 6 in. long, alternate, scattered: floral bracts green edged with red, deltoid, to ¾ in. long. S. Afr.

bupleurifòlia. Sts. spherical, to 9 in. high and 3 in. thick: lvs. clustered at tip of sts., lanceolate, to 6 in. long: fls. solitary on long stalks, bracts green. S. Afr.

cæruléscens. Succulent shrub with thick 4–5-angled jointed bluish-glaucous branches, spines to ½ in. long, and triangular scale-like lvs. S. Afr.—By some authors not considered distinct from *E. Ledienii.*

canariénsis. Shrub or tree to 20 ft., with thick 4–6-angled branches and small black spines, a few foliage lvs. Canary Isls.

candélla: listed name of succulent form.

Càput-Commelìnii: a listed name probably referable to *E. Caput-Medusæ.*

Càput-Medùsæ (*E. Commelinii*). Medusas Head. Branches snake-like, to 1 ft. long and 2 in. thick, from a thick globose st.: lvs. very small, soon falling: fls. solitary on short stalks. S. Afr. Var. **Gorgònis** is *E. Gorgonis* and var. **inérmis** is *E. inermis.* Vars. **màjor** and **mìnor** are listed.

cereifórmis (*E. polygonata*). Sts. to 3 ft. long and 2 in. thick, angular, branching, with needle-like spines: lvs. very small, soon falling: fls. solitary with small purple bracts. S. Afr.

Chamæsýce. Prostrate ann. with short thread-like sts.: lvs. roundish: fls. solitary, having whitish appendages. Medit. region.

clandéstina. With solitary unbranched sts. to 2 ft. tall, usually cylindrical, spineless, fleshy, covered with wart-like tubercles: lvs. to 1½ in. long, present in crown at apex, when in fl.: inner bracts purple, outer ones larger and greenish-yellow. S. Afr.

clàva. To 4 ft., sts. branching with age, branches erect with tubercles to ⅔ in. across: lvs. linear-lanceolate, to 5½ in. long, alternate, deciduous, on upper part of branches only: bracts green, very small. S. Afr.

Commelìnii: *E. Caput-Medusæ.*

corollàta (*Tithymalopsis corollata*). FLOWERING S. Per. to 3 ft.: lvs. oblong to linear: fls. in umbels, with white petal-like appendages. Ont. to Fla. and Tex.

crássipes. To 1 ft., plant-body globose-cylindric, nearly flat on top, to 6 in. long, usually half buried: rosette of lvs. to 8 in. across: fls. small and inconspicuous. S. Afr.

Cyparíssias (*Tithymalus Cyparissias*). CYPRESS S. Per. to 1 ft.: lvs. linear: fls. in many-rayed umbels, the bracts yellowish. Eu.; nat. in E. U. S., on banks and in cemeteries. —A good ground-cover, but may become a weed.

dendroìdes. Shrub to 7 ft., sts. much branched: lvs. linear-lanceolate, to 3 in. long, clustered at ends of branches: floral bracts greenish-yellow. Medit. region.

Dínteri. To 18 in. or more, branches cylindrical with 7–8 somewhat spirally compressed brown-horny spined margins; spines brown turning grayish-white, to ¾ in. long: lvs. minute, early-deciduous, deltoid, acute: fls. not seen. S. W. Afr.

Echìnus. Much branched shrub to 6 ft. or more, sts. 6-angled, branches ascending, lf.-bases united into ribs with spine shields fused along each rib into continuous horn-like ridge; spines to ½ in. long, red or gray. Morocco.

ellíptica. Stemless diœcious plant with tuberous root: lvs. linear to elliptic-lanceolate, to 8 in. long, petiole as long as blade, all basal and entire, dark bluish-green above. S. Afr.

enópla. To 2 ft., sts. erect, leafless, spiny, fleshy, to nearly 2 in. thick, usually 6–8-angled, grooves distinctly marked with irregular line down center; spines on ridges, to 1 in. long, purplish-brown to gray. S. Afr.

epithymoìdes (*E. polychroma*). Per. to 1 ft., forming attractive clumps: lvs. oblong, the floral ones often yellow: fls. in umbels. E. Eu.—Showy in the border.

esculénta. To 1½ ft., st. obconical, buried most of its length, to 8 in. across its flat or depressed crown, rosette of branches arising from crown to 18 in. across; branches terete and tapering, to 1 in. thick at base, spineless, essentially leafless, unbranched: fls. inconspicuous, violet-scented. S. Afr.—Branches sometimes roasted and eaten.

Ésula. LEAFY S. Per. to 3 ft., sts. usually unbranched except at infl., arising from rhizomes which bear numerous buds: lvs. linear-oblong, to ¼ in. wide, pale green: fls. greenish-yellow: seeds abundantly produced. Eu.; nat. in N. E. U. S., spreading westward to N. D. and Colo.—A troublesome weed, particularly on well-drained soils. Not known to be in the trade, but seed is offered by botanic gardens.

Eùstacei (*E. Hystrix* in part). To 9 in.; branches numerous, erect, crowded into compact succulent cushion-like structure to 6 in. tall and 1 ft. across, light green; spines many, white, solitary, to 2 in. long, rigid: lvs. oblanceolate, to ¼ in. long: bracts light green, becoming spine-like after flowering period: plants diœcious. S. Afr.

exígua. Ann. to 10 in., sts. erect or ascending: lvs. linear-acute: bracts green, in small cymes. Cent. Eu. and Medit. region.

Fálconeri: listed name.

fasciculàta. Sts. to 1 ft. high and 3 in. thick, solitary, cylindrical, covered with large tubercles bearing a stiff spine to 2 in. long: lvs. linear, to 1 in. long, soon falling: fl.-sts. arising from depressions back of spines. S. Afr.

fèrox. To 6 in., sts. in clumps to 2 ft. across, succulent, leafless, spiny, not much branched, to 2 in. thick, 9–12-angled; spines along ridges, close together, to 1¼ in. long, woody, brown to gray: involucre purple with small white dots. S. Afr.

Franckiàna. Succulent shrub to 3 ft. with 3–4-angled gray-green branches 1 in. thick bearing spines on the horny margins: lvs. scale-like, soon falling: fls. borne on margins between spines. S. Afr.?

Frickiàna: listed name, perhaps intended to be *E. Franckiana.*

fúlgens (*E. jacquinæflora*). SCARLET PLUME. Shrub to 4 ft.: lvs. lanceolate: fls. in cymes, with scarlet petal-like appendages. Mex.—Grown under glass N.

globòsa. To 3 in., the fleshy joints globose or club-shaped and about 1 in. diam.: lvs. very small, deciduous: involucre with green white-pitted lobes. S. Afr.

Gorgònis. Main plant globose, to 4 in. thick, with a crown of radiating cylindrical branches 1–2 in. long covered with small tubercles: lvs. very small, soon falling: fls. solitary in axils of tubercles, with purple-brown glands. S. Afr.—Lvs. and branches often become elongated and less fleshy in cult. when more moisture is available.

grandicórnis. To 6 ft., much branched, branches 3-angled, to 6 in. thick, angles wing-like with horny grayish margins; spines to 2½ in. long, grayish: lvs. scale-like: fls. sessile between spines. S. Afr.

grándidens. Tree to 30 ft. with trunk to 3 ft. diam., branchlets 3–4-angled, deeply toothed; spines small: lvs. minute, soon falling: fls. in 3-fld. cymes. S. Afr.

Grántii. Shrub to 10 ft.: lvs. strap-shaped, to 1 ft. long and 1 in. wide, somewhat leathery: fls. in umbels to 15 in. across. Trop. Afr.

handiénsis. Shrub to 3 ft. or more, leafless, succulent, monœcious; main st. woody, 8–12-angled, ridges with paired red to white spines to 1¼ in. long: fls. greenish, minute. Canary Isls.

havanénsis: *E. lactea.*

Hermentiàna. Shrub or small tree; branches erect, straight, fleshy, spiny, usually 3–4-angled, dark green with wavy white band down each face becoming obscure with age; edges somewhat toothed, bearing pairs of brown to gray spines to ¼ in. long: lvs. broadly oblong, to ½ in. long, early deciduous: fls. not seen. S. Afr.

heptagòna. To 2 ft., branching, sts. 5–10-angled, to 1¾ in. thick; spines to 1 in. long: lvs. very small, triangular-lanceolate, purple-brown: fls. solitary. S. Afr.

heterophýlla (*Poinsettia heterophylla*). MEXICAN FIRE-PLANT. Ann. to 3 ft.: lvs. variable, ovate to linear, entire, toothed or fiddle-shaped, the upper lvs. blotched with red and white: fls. in terminal clusters. Ill. to Fla., trop. Amer. —An acceptable flower-garden subject.

hóttentotæ. Succulent shrub to 6 ft., with main st. much branched at ground level; primary branches 5-angled, to 1¾ in. diam., ridges low, twigs usually 4-angled; spines to ⅕ in. long: fls. small, in short-peduncled cymes. S. Afr.

Hýstrix: a confused name; plants so listed are probably *E. loricata*, but may be referred to *E. Eustacei.*

inérmis (*E. viperina*). Resembling *E. Caput-Medusæ* but with branches ½ in. thick and involucres with woolly white hairs. S. Afr.

íngens. Tree to 30 ft., said to branch in a broadly obconical manner; branches succulent, usually erect, leafless, spiny; fl. branches with 4–7 winged angles bearing very minute or no spines: infl. a cyme, bracts light green. Transvaal, S. Afr.

Íntisy. Shrub with fleshy globose forked branches, gray-green and with numerous white dots: lvs. small, borne on protuberances. Madagascar.—Intro. in U. S. for test as a rubber-producing plant.

Ipecacuánhæ (*Tithymalopsis Ipecacuanhæ*). IPECAC S. Per. to 10 in., branched, from deep root: lvs. variable, linear to orbicular, entire: fls. in umbels, with inconspicuous green appendages. Conn. to Fla.

jacquinæflòra: *E. fulgens.*

láctea (*E. havanensis*). Cactus-like shrub or tree of candelabra form, the branches 3–4-angled with a marbled white band down the center, bearing short thick spines and no foliage lvs. E. Indies. Var. **cristàta** has crested branches. —Planted only in warm countries or under glass.

Láthyrus (*Tithymalus Lathyrus*). CAPER S. MOLE-PLANT. Ann. to 3 ft.: lvs. lanceolate, the floral ones ovate: fls. in umbels. Eu.; nat. in N. Amer.

Lediènii. Shrub to 6 ft., branches leafless, succulent, spiny, usually 4–7-angled; spines in pairs, to ¼ in. long, occasionally absent: cymes of bright yellow involucres. S. Afr.

Lemaireàna: *E. angularis.*

lignòsa. Shrub to 1½ ft., main st. top-shaped, mostly underground; branches numerous, many-forked, woody at maturity, forming dense cushion to 3 ft. across: lvs. present only on young branchlets, lanceolate, to ½ in. long: cymes greenish, terminal or axillary on long peduncles. Namaqualand Desert region, S. W. Afr.

loricàta (*E. Hystrix* in part). Shrub to 3 ft.; branches fleshy, terete, spiny and somewhat spirally tuberculate, with well developed lvs.; spines solitary, numerous, stiff, to 2 in. long, brown or gray: lvs. linear-lanceolate, to 3 in. long, obtuse: cymes green. S. Afr.—Often confused in cult. with *E. clava*, from which it differs by its larger sts. and more spiny branches and infl. Most of the cult. material of *E. Hystrix* belongs here.

mammillàris. To 3 ft., branches cylindrical, 8–17-angled, to 1¾ in. thick, spines ½ in. long, angles tubercled: lvs. scale-like: fls. with small purple bracts. S. Afr.

marginàta (*E. variegata. Lepadenia marginata*). SNOW-ON-THE-MOUNTAIN. Ann. to 2 ft.: lvs. ovate to oblong, the upper ones with white margins: fls. in umbels, with white petal-like appendages. Minn. to Tex.—Popular as a flower-garden subject.

Márlothii: *E. Montieri.*

mauritánica. Succulent spineless shrub to 4 ft., branches cylindrical, ¼ in. thick: lvs. to 1 in. long, soon falling: fls. in terminal umbels. S. Afr.

melofórmis. MELON S. Plant globose, unbranched, to 6 in. diam., with 8 spineless angles, transversely striped light and dark green: lvs. minute, soon falling: fls. in cymes at depressed apex. S. Afr.

mitrifórmis: catalogue name.

Montièri (*E. Marlothii*). To 2 ft., main st. unbranched to 1 ft., to 2 in. thick, fleshy, tuberculate; fl. branches slender, erect, not tuberculate: lvs. spatulate, to 6 in. long, glaucous-green: fls. green, in terminal cymes. Trop. Afr.

Mòrinii. Plant fleshy, sts. to 2 in. thick, green or grayish, sparsely hairy, rarely branched, ribs 5–8, about ⅜ in. high and as wide: lvs. ovate, to ¼ in. long; spines as long, few: bracts brownish-red. S. Afr.

Mùiri. To 1½ ft. or less, main st. below ground; branches erect, usually solitary or few, slender, fleshy, often with crown of small branchlets at or near top, spineless, tubercles abundant, large, usually white-tipped with persistent lf.-base: lvs. linear, to ½ in. long, erect, fleshy. S. Afr.

Myrsinìtes. Fleshy bien. or per., prostrate or decumbent at base, then ascending or erect: lvs. obovate, in spirals, sessile: fls. yellow, in umbels. Eu.

natalénsis. Per. to 2 ft., woody at base: lvs. linear, to ¾ in. long, deflexed, sessile: fls. in terminal umbels to 2 in. across. S. Afr. Var. **cristàta** is listed.—The name *natalensis* is sometimes applied to *E. similis.*

neglécta. Tree, branches succulent, becoming woody with age, usually 5–8-angled, wings conspicuous with swollen veins; spines in pairs, to ⅙ in. long: lvs. linear, to 1 in. long. N. Afr.—This plant often listed as *E. abyssinica.*

neriifòlia (*E. Nivulia*). Succulent tree or shrub, with 5-angled sts. and short spines: lvs. thick, obovate-oblong, to 5 in. long: fls. in cymes. E. Indies.

nicæénsis. Per. to 20 in., differing from *E. Esula* in having ovate to obovate lvs. subtending umbel and lanceolate to oblanceolate foliage lvs. N. Medit. region and Cent. Eu.; perhaps nat. in E. U. S.

Nivùlia: *E. neriifolia.*

nùbica. Shrub to 6 ft., branches spineless, terete, slender, glabrous: lvs. early deciduous with persistent bases remaining on sts.: fls. green, in terminal umbels. N. Afr.—Some of the material in trade as *E. Schimperi* belongs here.

nùtans. Ann., ascending or erect to 2 ft.: lvs. linear-oblong to ovate or falcate, serrate, often blotched or margined red. A common weed of fields and pastures in E. U. S., intro. in Calif.

Nyìkæ. Tree to 45 ft.; branches ascending, fleshy, spiny, leafless, 3–4-angled or nearly flat, angles thin-winged; spines to ⅓ in. long, gray: fls. green, minute, in almost sessile cymes. Mozambique.

obèsa. Similar to *E. meloformis* but with scars of fallen peduncles along angles more crowded. S. Afr.

officinàrum. Shrub, branches many-angled, spreading or erect; spines erect, to ½ in. long, stiff, yellow to gray with age: lvs. minute. N. Afr.

ornithòpus. Succulent and spineless little plant, branching near ground into cylindric tuberculate branches to 4 in. long, with long-jointed and short-jointed forms: lvs. rudimentary and soon falling: peduncles 1½–3 in. long, bearing cup-shaped green involucres. S. Afr.

palústris. Per. to 1½ ft., sts. not fleshy, glabrous: lvs. oblong, nearly entire: fls. in umbels, bracts bright yellow: caps. warty. Eu.

péndula. Sts. cylindrical, long and pendulous, ⅙ in. thick: lvs. minute. Supposed to come from S. Afr. but of doubtful identity; some of the stock may be a Sarcostemma, one of the Asclepiadaceæ.

pentagòna. Shrub to 10 ft., somewhat globose in habit; branches succulent, spiny, in whorls along sts. at ½–1½ ft. intervals, usually 5–6-acutely angled, green to gray, lighter line down each groove; spines solitary, scattered, to ½ in. long, light brown: lvs. linear, to ¼ in. long. S. Afr.

Péntlandii. Prostrate ann., sts. somewhat fleshy, branched, to 6 in. long: lvs. ovate-oblong, to ¼ in. long, obtuse, entire or dentate-ciliate toward apex: fls. inconspicuous. Bolivia.

Pférsdorfii. Low shrub, sts. terete, to 2½ in. thick, 9-angled, grooves very deep, much branched with age; spines to nearly 1 in. long. Afr.?

pilòsa. Per. to 1½ ft.: lvs. oblong: fls. in umbels. Eu., N. Asia. Var. **màjor** has golden-yellow foliage.—Differs from *E. palustris* in pilose vesture, fewer rays in umbel and caps. not warty.

polyacántha. Fleshy leafless shrub to 5 ft., spiny; sts. to 1½ in. diam., 4–5-angled, angles crenately toothed, spines about ¼ in. or less long, diverging, often curved: fls. small, in cymes. Ethiopia.

polychròma: *E. epithymoides.*

polýgona. Sts. to 2 ft. high and 4 in. thick, 10–20-angled, the angles slightly wavy and with small spines: lvs. very small, soon falling: fls. near top of sts. S. Afr.

polygonàta: *E. cereiformis.*

polygonifòlia. SEASIDE S. Prostrate ann. to 8 in., branches spreading radiately: lvs. opposite, linear-oblong, to nearly 1 in. long, entire, fleshy: fls. inconspicuous. R. I. to Fla. and sandy shores of the Great Lakes.

Pseudocáctus. Sts. 4-, seldom 5-, angled, to 2 in. thick, gray-green with yellow U-shaped marks, spines ½ in. long. Habitat unknown.

pteroneùra. Low shrub with jointed angled branches ⅓ in. thick, the lvs. soon falling. Mex.—Grown under glass N.

pugnifórmis. Very dwarf succulent plant, main st. subglobose, flat on top, with crown of spineless branches to 1½ in. long: lvs. linear-lanceolate, to ¼ in. long: fls. borne on main st. below branches with whitish-green glands. S. Afr.—Distinguished from *E. Gorgonis* by its longer lvs. and color of glands.

pulchérrima (*Poinsettia pulcherrima*). POINSETTIA. Shrub to 10 ft. or more: lvs. ovate to lanceolate, entire or lobed, the upper ones narrower and bright red (white, var. **álba**, or pink, var. **ròsea**) and constituting the showy part of the plant: fls. in cymes. Trop. Amer., Cent. Mex. Var. **pleníssima** has fls. transformed into red bracts.

ramipréssa: catalogue name.

Rangeàna: hort. name of invalid botanical standing.

Règis-Jùbæ. Similar to *E. atropurpurea* but with linear lvs. and yellow bracts. Teneriffe.

Reìnhardtii. Tree to 50 ft., trunk branching about 10 ft. from ground, to 1½ ft. thick, crown obconical and flat-topped; branches fleshy, leafless, spiny, glabrous, constricted into segms. to 1 ft. long: fls. greenish, in cymes: caps. globose, to ¾ in. across, cherry-red. Mozambique.

resinífera. Much branched shrub to 6 ft., sts. 4-angled, spines short: lvs. very small, brownish: fls. at tips of branches. Morocco.

rhipsalioìdes. Differs from *E. Tirucalli* in having ovate-lanceolate lvs. about ¾ in. long. Trop. Afr.

Royleàna. Similar to *E. canariensis* from which it may be distinguished by its involucres yellow and not brown.

Schímperi: a confused name; material so listed may be *E. nubica* or *E. scoparia.*

scopària. Tree to 25 ft., branchlets terete, fleshy, spineless and usually leafless, clustered about ends of larger branches: lvs., when present, linear, to ¾ in. long, clustered about ends of branchlets: sessile clusters of involucres at ends of branchlets. Abyssinia.

Scotànum (*E. venenata*). Prostrate shrub: lvs. fleshy, ternate, ovate-orbicular, emarginate, entire, petiole and primary veins villous: fls. in terminal and axillary trichotomous umbels. Mex.

segetàlis. Ann. or bien., rarely per., sts. decumbent or ascending, to 12 in. high: lvs. narrowly oblong, pale green: fls. inconspicuous. Coastal plant of W. Medit. region north to Scotland.

símilis. Tree to 30 ft., spiny, with 4–5-angled fleshy branches, the joints to 1½ ft. long: lvs. scale-like or sometimes to 3½ in. long, deciduous. S. Afr.

speciòsa: catalogue name.

spléndens. CROWN-OF-THORNS. Woody, the climbing sts. to 4 ft. long and armed with spines to 1 in. long: lvs. obovate, soon falling: fls. in cymes, the bracts bright red. Madagascar.—Grown under glass.

squarròsa. Fleshy herb to 8 in., sts. decumbent, unbranched, ridges obtuse and toothed: lvs. minute and soon falling: fls. in axillary cymes. S. Afr.

stellaespìna. Shrub to 2 ft.; sts. erect, branching at base, in clumps, fleshy, spiny, leafless, many-angled, grooves to ¼ in. deep, green without lighter bands, ridges toothed; spines solitary between the teeth, to ½ in. long, brown. Cent. Afr.

stellàta (*E. uncinata*). Somewhat prostrate tuberous-rooted succulent shrub; branches to 6 in. long, flattened, green with purple and gray mottling, concave above, leafless; spines minute, in pairs: fls. dull yellow. S. Afr.

strícta (*Tithymalus stricta*). Ann. to 2 ft.: lvs. ovoid to lanceolate: fls. in umbels. Eu.

submammillàris. Much branched shrub to 1 ft.; branches spiny, succulent, 7–10-angled, ridges toothed, grooves without lighter markings; spines solitary, to 1 in. long, between teeth: bracts purple, minute. S. Afr.

Sùsanniæ. Plant seemingly tufted but actually with a group of fleshy subterranean sts. whose tips only protrude above the surface and then usually in a ring-like arrangement; sts. globose-cylindrical, 1–1½ in. diam. with toothed ridges, apex hemispherical, the upper portion above ground:

lvs. present only on young shoots, reduced to apical bristles and soon falling: plants diœcious; fls. in small cymes, greenish. S. Afr.

tenuiràma. Similar to *E. grandidens*, but differing chiefly in spines about ⅜ in. long, not ¾ in. long. S. Afr.

tetragòna. Tree to 40 ft., trunk to 6 in. thick; branches 4–8-angled, to 2 in. thick, usually in whorls: fl. branchlets smaller, toothed ridges, sometimes spiny: bracts yellow. S. Afr.

Tirucálli. Milk-Bush. Indian Tree S. Shrub or tree to 30 ft., with a crown of slender irregular branches, leafless as the narrow lvs. soon fall: fls. in small clusters. Afr.—Grown in the open in S. Fla., under glass in the N.

tithymaloìdes. Suberect shrub to 6 ft.; younger sts. greenish, becoming whitish with age, glabrous, terete: lvs. ovate, to 3 in. long, leathery, alternate, deciduous: bracts red. Carribean region.

tridentàta. Succulent and spineless little plant; branches from the base to 6 in. long, cylindrical or tapering, with angled tubercles: lvs. ¼ in. or less long, soon falling: peduncles 3–4 at ends of branches, bearing 1 involucre and a pair of bracts. S. Afr.

trigòna. Erect shrub to 7 ft., sts. 3–5-winged, ascending and usually branching in 3's.: lvs. obovate, to ¾ in. long, fleshy, dark green, solitary between spines: fls. in short-peduncled cymes. India to Moluccas.

tùbiglans. Succulent per., sts. 2–5, 5-sided, to 6 in. long and ¾ in. diam.: lvs. triangular, early deciduous: fls. greenish-white, in clusters at ends of sts. S. Afr.

uncinàta: *E. stellata.*

válida. To 1 ft., st. unbranched, fleshy, leafless, spineless, somewhat globose in young plants and becoming more oblong with age, terete at base, 8-sided above, dull to purplish-green with irregular transverse bands of light green: fls. green, in cymes borne on lower more woody portion of st. S. Afr.

variegàta: *E. marginata.*

venenàta: *E. Scotanum.*

viperìna: *E. inermis.*

Wúlfenii. Subshrub to 5 ft.: lvs. linear, to 5 in. long, usually close together on younger branch ends: fls. greenish-yellow, in large dense terminal cymes. Dalmatia.

xylophylloìdes. Shrub or tree, much branched, sts. flat or 2-angled, ½ in. wide, slightly toothed: lvs. minute, soon falling. Madagascar.

EUPHORBIÀCEÆ. Spurge Family. A large and important assemblage of herbs, shrubs and trees, sometimes cactus-like, often with milky juice, of about 250 widely distributed genera. The fls. are of various forms, sometimes in cyathia, *i. e.*, an apetalous pistillate fl. is surrounded by several staminate fls. which consist of a single stamen jointed on the pedicel and all inclosed by a corolla-like involucre which often has petal-like appendages; ovary superior and commonly 3-celled: fr. usually a caps. This family includes many plants of economic importance, yielding rubber, edible roots and fruits, and having valuable medicinal and poisonous properties; there are also many ornamental subjects. In some cases, as poinsettia, the showy parts are colored bracts. Those genera cult. with us are Acalypha, Aleurites, Antidesma, Bischofia, Breynia, Cnidoscolus, Codiæum, Dalechampia, Daphniphyllum, Euphorbia, Glochidion, Hemicyclia, Hevea, Homalanthus, Hura, Jatropha, Mallotus, Manihot, Mercurialis, Pedilanthus, Phyllanthus, Ricinus, Sapium, Securinega, Stillingia, Synadenium, Xylophylla.

EUPHÒRIA. *Sapindaceæ.* Trop. Asian trees with alternate pinnate lvs., small regular fls. in panicles, and fr. covered with flattened tubercles; grown for the edible fr.

Longans withstand slight frost and also should be protected from the sun in summer; they thrive in protected places in southern Florida and southern California. Propagated by seed, layers and grafting.

Longàna (*Nephelium Longana*). Longan, Lungan. To 40 ft.: lvs. of 2–5 pairs of glossy elliptic to lanceolate lfts. to 1 ft. long: fls. yellowish-white, in terminal panicles: fr. yellow-brown, 1 in. across, with white juicy edible flesh. India.

EUPHRÀSIA. *Scrophulariaceæ.* Ann. or per. herbs of wide distribution in the temp. and subarctic regions of both hemispheres: lvs. opposite: fls. sessile or nearly so, in terminal spikes, with tubular 2-lipped corolla: fr. an oblong compressed caps., seeds conspicuously striate. Propagated by seeds.

Broẁnii: a confused name, sometimes referable to the following.

collìna. To 1 ft., much branched: lvs. oblong to linear-cuneate, to ½ in. long or more, somewhat toothed: fls. purplish-blue to white, rarely yellow, in long interrupted terminal spikes with fls. in opposite pairs. Australia.

EÙPLOCA. *Boraginaceæ.* Small ann. hispid herbs with alternate entire pubescent lvs. and white salver-shaped solitary fls., the corolla narrowed at orifice; one or two N. American plants sometimes united with Heliotropium.

convolvulàcea (*Heliotropium convolvulaceum*). To 1 ft.: lvs. lanceolate or ovate, to 1½ in. long: fls. ½ in. long, fragrant. Wash. to Calif. and New Mex.

EUPTÈLEA. *Trochodendraceæ.* Asian deciduous shrubs or trees with alternate toothed lvs., fls. in clusters before the lvs., without sepals and petals but with long red anthers, and fr. a samara.

These plants do best in loamy well-drained soil in rather moist positions. Propagated by seeds or by grafting on their own roots. The following stand in southern New England.

Franchètii. To 75 ft.: lvs. roundish-ovate, to 5 in. long, regularly toothed: frs. 1–3-seeded. Cent. China.

polyándra. Differs from above in the lvs. being coarsely and unequally toothed, and the frs. usually 1-seeded. Japan.

EUPRITCHÁRDIA (*Pritchardia. Styloma*). Pritchardia. *Palmaceæ.* Tall or middle-sized hermaphrodite unarmed fan-palms of the Pacific Isls.: lvs. heavy and large but pliant, cuneate-fan-shaped, strongly plicate: spadix among the lvs., short- or long-peduncled and the fls. in a more or less compact cluster at its end; fls. small, green, placed singly, elongated in bud; stamens 6: fr. globose or ellipsoid, small, 1-seeded. The pritchardias are striking palms of regular form, prominent in the Hawaiian, Samoan, Fiji and other archipelagoes; some of them thrive in protected places in S. Fla. and a few in S. Calif. The species known in the continental U. S. fall into the small-fruited (*E. pacifica*, *E. Thurstonii*) and the large-fruited (*E. Gaudichaudii*, *E. Martii*) groups. See *Palm* for cult. The generic name Pritchardia is a later homonym.

Gaudichaùdii. To 20 ft. and trunk 1 ft. thick: lvs. 3–4 ft. long, on the young plant bearing brown matted wool underneath but nearly or quite nude with age; segms. about 60 and 1 ft. long; petioles 2–3 ft. long: fr. spherical, to 1¾ in. diam. Hawaiian Isls.

Mártii. To 12 ft., trunk stout: lvs. with appressed ciliate scales underneath: fr. ovoid-ellipsoid or somewhat obovoid, to 1¾ in. long and 1⅜ in. thick. Oahu.

pacifíca. Trunk to 30 ft. and 1 ft. thick: lvs. to 4 ft. and more long, green both sides and with minute scales or with tubercles underneath; segms. about 90, extending about ⅓ the way down; petiole to 3 ft. or more: spadices shorter than lvs.: fr. globose, about ½ in. diam. Fiji. Widely distributed as a planted tree.

Thúrstonii. Slender: segms. thickish and stiff, glaucescent underneath and bearing elliptic scales; segms. about 70, reaching ⅓ to ½ the length of blade: spadices with much-elongated peduncles that hang below the lvs. and bear the compact cluster at the end: fr. about ¼ in. diam. Fiji.

EURÒTIA. *Chenopodiaceæ.* Small white-tomentose shrubs of Eu. and N. Amer., one rarely planted: lvs. alternate, entire: fls. unisexual, in small clusters borne in spikes.

lanàta. Winter Fat. To 2 ft.: lvs. linear, to 1¼ in. long, revolute: pistillate fls. with tufts of silvery-white hairs. Sask. to Calif. and New Mex.

EÙRYA. *Theaceæ* (*Ternstrœmiaceæ*). Evergreen shrubs or trees with alternate simple lvs., mostly diœcious fls. in axillary clusters, and berry-like frs.; suitable for greenhouse cult. or in the open in the S. For cult. see *Camellia.*

chinénsis. Distinguished from *E. japonica* by more finely toothed lvs. and young branchlets and terminal buds pubescent. China.—Some of the material passing as *E. japonica* belongs here.

emarginàta (*Ilex emarginata*). Branches covered with reddish-brown tomentum: lvs. thick and leathery, obovate, crenate, emarginate: fls. axillary: fr. usually in pairs. Japan.

japónica (*E. latifolia*). Lvs. toothed: fls. small, greenish-white. E. Asia. Var. **variegàta** has lvs. variegated with white.

latifòlia: *E. japonica.*

ochnàcea (*Cleyera japonica*). Lvs. entire: fls. creamy-white, fragrant: berries red. Himalayas to Japan. The lvs. are variegated in var. **variegàta.**

EURỲALE. *Nymphæaceæ.* One species, very prickly and spiny, somewhat similar to *Victoria regia* but the fls. much smaller and all stamens fertile. **E. fèrox.** Lvs. 1–4 ft. across, circular, purple and spiny-ribbed beneath, dark green and uneven above: fls. green outside, bright red inside, about 2 in. across, open by day, prickly outside: fr. many-seeded globular berry, seeds edible. India, China.—Treated as an ann.; propagated by seeds only, planted in rich earth as for nympheas, temperature 70–75° F. Hardy as far north as Philadelphia and St. Louis.

EURỲOPS. *Compositæ.* African shrubs of the Senecio tribe with alternate lvs. and solitary heads of yellow ray- and disk-fls.; pappus of caducous bristles. Suitable for planting in mild climates.

Athanàsiæ. To 4 ft., resinous: lvs. to 6 in. long, pinnately parted into linear-filiform lobes: heads terminal, on peduncles to 1 ft. long, the numerous rays to 1½ in. long. S. Afr.

pectinàtus. To 3 ft., soft whitish-pubescent: lvs. pinnatifid, to 3 in. long including petiole, lobes linear, obtuse, usually 8–10 pairs: heads terminal, on peduncles to 6 in. long. S. Afr.

EÙSCAPHIS. *Staphyleaceæ.* One deciduous shrub to 10 ft., native in Japan and China and not fully hardy in the N. Propagated by seeds and cuttings of green wood under glass. **E. japónica** (*E. staphyleoides*). Lvs. pinnate, of 7–11 ovate-lanceolate toothed lfts. to 3 in. long: fls. yellowish-green, in terminal panicles to 5 in. across: fr. of 3 reddish leathery pods ½ in. long.

EÙSTOMA. *Gentianaceæ.* A few N. American glaucous herbs with opposite lvs. and white or blue bell-shaped fls. in panicles or solitary, with keeled calyx, 5- or 6-lobed corolla, and many-seeded capsular fr.; sometimes grown in the flower-garden.

Russelliànum (*Lisianthus Russellianus*). Prairie Gentian. Ann. erect herb to 3 ft.: lvs. ovate to oblong, to 3 in. long: fls. pale purple, about 2 in. across and 2 in. long, erect or flaring. Neb. to Tex.—Showy plant but not often seen in cult.; sometimes treated as bien., the well established seedlings being carried over winter in a frame.

EÙSTREPHUS. *Liliaceæ.* Australian vine-like plants woody at base, having alternate lvs. and fls. clustered in axils of upper lvs., the perianth-segms. distinct and fringed. Of easy cult. under glass or in the open in warm climates. Propagated by division or seeds.

latifòlius. Lvs. linear-lanceolate, to 4 in. long: fls. white or light blue, ¼ in. long: fr. an orange-colored berry about ½ in. across.

EÙSTYLIS. *Iridaceæ.* One species, a bulbous herb, sometimes included in Nemastylis but differing in technical characters of stamens and frs. **E. purpùrea** (*Nemastylis purpurea*). To 2 ft.: lvs. linear, to 2 ft. long, plicate: fls. 2–3 to a spathe, purple with color markings, to ¾ in. long, the outer perianth-segms. longer than inner. Tex., La.—For other names, see *Nemastylis.*

EUTÁXIA. *Leguminosæ.* Australian nearly or quite glabrous shrubs, one intro. in Calif.: lvs. small and opposite: fls. yellow, papilionaceous, mostly axillary and solitary or few together. **E. empetrifòlia** (*E. diffusa*) is a heath-like bush with lvs. about ¼ in. or less long: fls. ¼ in. or less long, each one with a pair of leaf-like bracts at base: pod to ¼ in. long.

EUTÉRPE. *Palmaceæ.* Feather-palms of trop. Amer., perhaps 40 species, unarmed, monœcious, with branched spadices below the lvs.: trunk solitary or plant gregarious: fls. white, sessile, in 3's and the middle one pistillate or one of them often abortive; stamens 6, distinct: fr. globose, small, with thin outer flesh or a shell. Probably none of the species is established within our territory.

EUTHAMIA: *Solidago.*

EUTOCA: *Phacelia.*

EVEA: *Cephaelis.*

EVENING-SNOW: *Gilia dichotoma.*

EVERGREENS: see *Conifers.*

EVERLASTING. Immortelle. Plants used for "dry bouquets" for winter decoration, comprising various kinds that retain their form and color when dried; usually the flowers have chaffy or papery parts. Most of the common everlastings are members of the Compositæ, as Ammobium, Anaphalis, Antennaria, Helipterum, Helichrysum, Xeranthemum. One common kind, Gomphrena, is an amaranth. Limonium, of the Plumbaginaceæ, is much used. Cut before the flowers are fully expanded, with long stems, and hang in an airy shady place to cure. Various dry fruits are used with everlastings, as Physalis, Lunaria. Many of the grasses are also employed for dry bouquets, as well as teasels, cat-tails and many other plants from the wild. All the foregoing plants are of simple culture.

EVÒDIA. *Rutaceæ.* Trees or shrubs, often somewhat Rhus-like, native in E. Asia, Australia and Polynesia, with opposite simple or compound aromatic lvs., small unisexual fls. in cymes or panicles, and fr. of 4–5 carpels.

Some species (as those here described) are hardy in the North and others are greenhouse subjects. Propagated by seeds, cuttings of half-ripened wood, and root-cuttings.

chinénsis: catalogue name.

Dániellii. Small tree: lvs. of 7–11 lfts.: fls. white, in terminal corymbs to 6 in. across. N. China, Korea.

Hénryi. Tree to 35 ft.: lvs. of 5–9 lfts.: fls. whitish, in panicles to 2½ in. across. Cent. China.

hupehénsis. Similar to *E. Henryi* but lvs. light green beneath and fls. smaller in panicles to 6 in. across. Cent. China.

EVÓLVULUS. *Convolvulaceæ.* Prostrate or erect herbs or sometimes shrubs, having small alternate lvs. and small blue, rose or white axillary fls. 5-angled or -lobed; native in warm regions.

bocasànus. Herb to 2 ft.: lvs. lanceolate, to 2 in. long, sessile: fls. bright blue with white center, ½ in. across. Trinidad, Venezuela.

Nuttalliànus. Per. to 10 in., silky-hairy: lvs. oblong or oblanceolate, ½ in. long: fls. pink, ½ in. across. S. D. to Ariz.

EVONYMUS: *Euonymus.*

ÉXACUM. *Gentianaceæ.* Old World herbs with opposite, simple and entire lvs. and blue or white wide-open fls. solitary or in forking cymes; corolla 4- or 5-lobed: fr. a 2-valved caps. Grown under glass or out-of-doors in warm regions. Propagated by seed.

affìne. Bien. to 2 ft.: lvs. to 1½ in. long, ovate: fls. bluish. ½ in. across. Socotra. Var. **atrocærùleum,** fls. dark lavender with golden-yellow stamens.

macránthum. Bien. to 2 ft.: lvs. to 3 in. long, oblong: fls. purplish-blue, ringed with yellow in throat, 2 in. across. Ceylon.

tères. To 4 ft., sts. subquadrangular: lvs. lanceolate, to 3½ in. long, 3-nerved: fls. blue. India.

tetragònum. To 4 ft., sts. quadrangular: lvs. broadly lanceolate, to 5 in. long, 5-nerved: fls. azure-blue. N. India to China.—Not known to be in cult., but confused with *E. teres.*

zeylánicum. Ann. to 2 ft.: lvs. 3 in. long, oval-oblong: fls. blue, 1½ in. across. Ceylon.—Differs from *E. macranthum* in the lobes of corolla obtuse rather than pointed.

EXOCHORDA. Pearl-Bush. *Rosaceæ.* Asian spirea-like deciduous shrubs with alternate lvs., white fls. in terminal racemes in spring, and fr. a 5-angled caps. with winged seeds.

Pearl-bushes are very ornamental and hardy North, prospering in sunny positions in well-drained soil. Propagated by seeds, by layers, and by cuttings of soft wood.

Álbertii: *E. Korolkowii.*

Giráldii. To 15 ft.: lvs. elliptic, to 2½ in. long, petioles to 1 in. long, often red: fls. 1½ in. across; stamens 20–30. China. Var. **Wílsonii** has fls. to 2 in. across and green petioles.

grandiflòra: *E. racemosa.*

Korolkòwii (*E. Albertii*). To 12 ft.: lvs. oblong, to 3 in. long, petioles ½ in. long: fls. 1½ in. across; stamens 25. Turkestan.

macrántha. Hybrid between *E. racemosa* and *E. Korolkowii.*

racemòsa (*E. grandiflora*). To 10 ft.: lvs. elliptic to oblong-obovate, to 2½ in. long, petioles to ½ in. long: fls. to 2 in. across; stamens 15. China.

Wílsonii: *E. Giraldii* var.

EXSERTED: sticking out; projecting beyond, as stamens from a perianth; not included.

EYE: the marked center of a flower; a bud on a tuber, as on a potato; a single-bud cutting.

F

FABIANA. *Solanaceæ.* Heath-like small or medium shrubs grown in greenhouses and in the open in mild climates for the numerous small white tubular fls.: lvs. very small, narrow and crowded: native in S. Amer., one grown in S. Calif. where it blooms at different seasons. Easily increased by cuttings taken in Aug.

imbricàta. To 8 ft., much branched: lvs. very numerous, scale-like, overlapping: fls. borne singly but in great numbers on the ends of the short branches, ½ in. long, constricted at base. Peru.

FABRICIA: *Leptospermum.*

FACHEIRÒA. *Cactaceæ.* One Brazilian species, **F. Ùlei** (*F. pubiflora*). Sts. cylindrical, much branched, erect to 18 ft. high, branches to 3 in. diam.; ribs 15–20, to ⅓ in. high, areoles about ½ in. apart; spines brown, radials 10–15, to ⅝ in. long, spreading, centrals 3–4, to 1 in. long; cephalium on one side of terminal sts., to 8 in. long, densely reddish-brown-woolly, the hairs to nearly 2 in. long: fls. white, to 2½ in. across, the ovary and tube scaly with hairs to ½ in. long in scale axils.

FAGÀCEÆ. Beech Family. Six widely distributed genera of woody monœcious plants, with alternate simple lvs., staminate fls. in catkins or heads, pistillate solitary or clustered, 4–7-lobed perianth, 4–20 stamens, inferior 3–7-celled ovary, and fr. a nut inclosed in a cup or bur. The family furnishes valuable timber, edible nuts, medicinal and dyeing products, cork, and numerous ornamental subjects. Genera cult. are Castanea, Castanopsis, Fagus, Lithocarpus, Nothofagus, Quercus. Most of the planted subjects are hardy in the central or northern U. S. but some of them only far S., and comprise some of the most desirable lawn and shade and grove hardwood trees.

FAGARA: see *Zanthoxylum.*

FAGELIA: *Calceolaria.*

FAGOPỲRUM. *Polygonaceæ.* European and Asian soft herbs with alternate lvs., small white fls. in racemes or corymbs, and fr. a pointed triangular achene.

Plants are grown for the seeds from which flour is made and as a cover- or catch-crop in orchards; the following are tender annuals of quick growth. Of easy cultivation on a wide range of soils. Seeds are sown broadcast or in drills late in June or early in July in the northern states.

esculéntum. Buckwheat. To 3 ft.: lvs. triangular-ovate, to 3 in. long: fls. white, fragrant, in short dense racemes or clusters mostly near summit of plant. Cent. or N. Asia.

tatáricum. India-Wheat. Kangra Buckwheat. To 2 ft.: lvs. broadly arrow-shaped, to 2 in. long: fls. greenish or yellowish, in slender open racemes along the st. India.—It has been known as duckwheat.

FÀGUS. Beech. *Fagaceæ.* Large deciduous monœcious trees with smooth light gray bark, alternate toothed lvs., staminate fls. in drooping heads, and 1 or 2 brown 3-angled nuts inclosed in a prickly involucre; native of the north temp. zone.

Beeches are excellent and emphatic ornamental trees, furnish valuable timber, and the nuts are eaten. They prosper on loam limestone soil. Propagated readily by seeds sown in fall or stratified and kept until spring; protect from vermin. Seedlings should be transplanted to prevent the formation of long tap-roots. Varieties are grafted on seedling stock under glass.

americàna: *F. grandifolia.*

Cúnninghamii: *Nothofagus Cunninghamii.*

cùprea: *F. sylvatica* var. *atropunicea.*

ferrugínea: *F. grandifolia.*

grandifòlia (*F. americana. F. ferruginea*). American B. Large and characteristic tree: lvs. ovate-oblong, to 5 in. long, dark bluish-green above, turning yellow in autumn. N. B. to Fla. and Tex.—Variable in lf. characters. Differs from the frequently planted European beech in longer coarsely serrate lvs. with more veins (9–14 pairs).

Sièboldii. Japanese B. Lvs. ovate, to 4 in. long: involucre with bract-like appendages at base. Japan.

sylvática. European B. Lvs. ovate, to 4 in. long, denticulate, shining dark green above, turning reddish-brown in autumn. Eu. to Caucasus. Some of the hort. vars. are: **álbo-variegàta,** lvs. variegated with white; **asplenifòlia,** lvs. very narrow, deeply toothed or lobed: **atropunícea** (var. *atropurpurea,* var. *purpurea,* var. *Riversii,* var. *cuprea*), Purple B., lvs. purple; **borneyénsis,** intermediate between vars. *pendula* and *tortuosa;* **fastigiàta** (var. *pyramidalis*), of columnar habit; **grandidentàta,** lvs. coarsely toothed; **laciniàta** (var. *incisa,* var. *heterophylla*), Fernleaf or Cutleaf B., lvs. deeply toothed or lobed or sometimes nearly entire and linear; **latifòlia,** lvs. to 6 in. long and 4 in. wide; **lùteo-variegàta,** lvs. variegated with yellow; **miltoniénsis,** drooping form; **péndula,** Weeping B., branches drooping; **purpùreo-péndula,** branches drooping, lvs. purple; **ròseo-marginàta,** lvs. purple edged with pale pink; **rotundifòlia,** lvs. nearly orbicular, 1 in. or less long; **tortuòsa** (var. *remillyensis*), branches twisted, drooping at tips; **trícolor,** lvs. nearly white, spotted with green and edged with pink; **variegàta,** lvs. variegated with white or yellow.

FAIRY BELLS: *Disporum.*

FAIRY FANS: *Clarkia Breweri.*

FAIRYWAND: *Chamælirium luteum.*

FALCATA: *Amphicarpa monoica.*

FALCATE: sickle-shaped.

FALLÙGIA. *Rosaceæ.* Small shrub with shredded bark, allied to Cowania from which it differs in the absence of calyx-bractlets and fewer pistils in the fl. One species is cult., **F. paradóxa.** To 7 ft., sts. whitish: lvs. palmately 3–7-lobed, segms. linear, to ¾ in. long, margins revolute: fls. white, to 1½ in. across, usually solitary on long peduncles: achenes with purplish feathery plumes to 2 in. long. Utah to W. Tex., Ariz. and Mex.

FAME-FLOWER: *Talinum.*

FAMILY. An assemblage of genera that rather closely or uniformly resemble each other in general appearance and technical characters. A few genera are so unlike all others that a family is constituted for them alone, as in the case of Eucryphia, Eucommia, Cercidiphyllum, Casuarina, Punica, Equisetum. Other families are vast associations of genera that are more like each other than they are similar to others, as the great Compositæ or Composite family that comprises well toward 1,000. Opinions differ as to the natural or practicable limits of families as they do also in respect to genera and species; thus the Composite family may be divided into two or more, as the maple genus may be divided into Acer, Negundo and others. Nature sets no formal limits. More than 300 families of seed-bearing or flowering plants are commonly recognized. The attentive gardener and botanist soon learns to recognize the important natural families and thereby to place a given plant in its proper relationship: this is the beginning of the mastery of the subject. In this book all the families represented by genera in the text are placed with the other entries in alphabetic order; the lists of genera under them suggest the family kinships and constitute the best ready definition

FANWORT: *Cabomba.*

FAREWELL-TO-SPRING: *Godetia amœna.*

FARFUGIUM: *Ligularia.*

FARKLEBERRY: *Vaccinium arboreum.*

FARSÈTIA. *Cruciferæ.* Erect woolly or tomentose ann. or per. herbs or subshrubs of Old World, having small linear-oblong to spatulate lvs., entire or pinnately lobed, and white, pink or yellow fls. in spikes or racemes; lateral sepals often inflated at base: fr. a much flattened linear or elliptical pod containing many suborbicular broadly-winged seeds.

lunarioìdes. Per. to 1 ft., woody at base, much branched, sts. often tinged purplish: lvs. spatulate to oblong, to 2½ in. long, obtuse, stellate-hairy on each side, margins wavy: fls. bright yellow, to ¼ in. across, in dense corymbs: pod elliptical, flattened and pubescent. Greece.—This species is put in the genus Fibigia by some authors.

FASCIATED: much flattened; an abnormal or teratological widening and flattening of the stem.

FASCICLE: a condensed or close cluster, as of flowers.

FATSHÉDERA. *Araliaceæ.* Shrub head high with 3–5-lobed lvs., **F. Lìzei,** hybrid between *Fatsia japonica* and *Hedera Helix*, is sometimes planted; tender N.

FÁTSIA. *Araliaceæ.* A single evergreen shrub or small tree native in Japan, grown under glass in the N. and out-of-doors in mild regions for its prominent foliage. Propagated by seeds, cuttings, and root-cuttings in spring. **F. japónica** (*Aralia japonica. A. Sieboldii*). To 20 ft.: lvs. to 16 in. across, glossy above, palmately cut beyond the middle into 5–9 toothed lobes: fls. whitish, in umbels 1 in. or more across in long panicles. Var. **Mòseri** is a compact-growing form. Var. **variegàta** lvs. marked or bordered with golden-yellow. *F. papyrifera* is *Tetrapanax papyriferum.*

FAUCÀRIA. *Aizoaceæ.* Separated from Mesembryanthemum: plant at first stemless but becoming more or less short-stemmed, the lvs. half-cylindric in cross-section and keeled or 3-angled at end, the fls. large and nearly or quite sessile and bractless; stigmas 5 or 6. S. Afr.

álbidens. Lvs. crowded, to 1¼ in. long and ¾ in. wide, the few stout teeth with white horny tips and margins, shining, dotted: fls. yellow, 1½ in. across.

Bosscheàna (*M. Bosscheanum*). Lvs. 6–8, to 1¼ in. long and ⅓ in. wide, shining, the edges white-cartilaginous and with 2–3 teeth: fls. shining golden-yellow, 1½ in. across.

Bríttteniæ. Lvs. glaucous, densely spotted, keeled, margins strongly toothed: petals in 3 series, mostly obtuse, yellow, purplish-pink on outside, 1 in. long.

felìna (*M. felinum*). Lvs. in rosettes, rhomboidal, to 2 in. long and ¾ in. wide, keeled on back, with 3–5 fleshy teeth on either side: fls. golden-yellow, 2 in. across, sessile.

Haàgei (*M. Haagei*). Lvs. to 2 in. long, 1 in. wide and ½ in. thick, keeled on back, with white cartilaginous margins and 3–4 small teeth on each side: fls. shining golden-yellow slightly purplish at tips, to 2¼ in. across, solitary.

Jàmesii: listed name.

lupìna (*M. lupinum*). Lvs. in rosettes, spreading and somewhat recurved, to 1¾ in. long and ½ in. wide, lanceolate with 3-angled apex, with 7–9 fine-pointed teeth on either side: fls. yellow, 1½ in. across, solitary.

tigrìna (*M. tigrinum*). Lvs. ovate-cordate and glaucous-green, spotted or dotted white, to 2 in. long and 1 in. wide, edges with 9–10 strong ciliate teeth: fls. 1–2, yellow, 1 in. across. Var. **supérba** is listed.

tuberculòsa (*M. tuberculosum*). Lvs. very thick, about 1 in. long and ½ in. wide, upper surface covered with white tubercles, edges with 3 strong teeth: fls. yellow, 1½ in.

FAÙRIA (*Villarsia*). *Gentianaceæ.* One stemless per., **F. Crísta-gálli** (*F. japonica*). To 1 ft.: lvs. broadly ovate to reniform, obtuse to emarginate, margins obtusely dentate, to 1½ in. long; petiole to 2½ in. long, somewhat clasping rootstock at base: fls. white, about ½ in. across, in fastigiate terminal corymbs on erect peduncle, petals lanceolate, margins cristate, style short with 2-lobed stigma. N. Japan.

FEATHER-FLEECE: *Stenanthium robustum.*

FEATHERLING, RUSH-: *Pleea.* **White-:** *Tofieldia glabra.*

FÈDIA. *Valerianaceæ.* One ann. herb native in the Medit. region and occasionally grown in the flower-garden or as a salad plant. **F. Cornucòpiæ** (*F. scorpioides*). African Valerian. Sts. to 1½ ft. long, often purplish: lvs. ovate-spatulate, to 4 in. long, entire or toothed: fls. red, small, in terminal cymes, stamens 2: fr. about ⅛ in. long.

FEIJÒA. *Myrtaceæ.* Showy S. American shrubs or trees with opposite simple lvs., solitary fls. with long-exserted stamens, and fr. a berry; one is grown for the edible fr. and as an ornamental. This plant was first named *Orthostemon Sellowianus* by Berg but subsequently changed by him to *Feijoa* because of an earlier *Orthostemon.*

Feijoas are adapted to subtropical dry climates but will withstand several degrees of frost. The best soil is sandy loam rich in humus. Plants should be spaced 15 to 18 feet apart. Propagated by seeds sown in pans or flats, a good soil being silver-sand and well-rotted redwood sawdust; the seedlings should be shaded and transplanted permanently when about 4 inches high. Also increased by layering, whip-grafting, and cuttings of young wood from ends of branches under glass.

Coòlidgei: pomological variety of *F. Sellowiana.*

Sellowiàna. To 18 ft.: lvs. oval-oblong, to 3 in. long, white-tomentose beneath: fls. to 1½ in. across, the petals fleshy, white-tomentose outside and purplish within, the stamens dark red, handsome: fr. green tinged with red, to 3 in. long. S. Brazil, Paraguay, Uruguay, Argentina.—Successful as a fruit plant in Calif.; stands in N. Fla. Grafted named vars. are **Choiceàna** and **supérba.**

FELÍCIA. *Compositæ.* African herbs or subshrubs grown in the greenhouse and in the open in warm regions for the attractive daisy-like fls. with blue or white rays and yellow disks: lvs. alternate or opposite, entire or dentate: pappus of bristles. Propagated by seeds and by cuttings.

adfìnis. Ann., to 1 ft., branching and hairy: lvs. obovate-oblong, to 1¼ in. long, entire, hairy on both sides, base cuneate: heads usually solitary on peduncles to 4 in. long, rays bluish. S. Afr.

æthiòpica: listed name.

amelloìdes (*Agathæa cœlestis*). Blue Daisy. Blue Marguerite. Subshrub to 3 ft., somewhat hairy: lvs. opposite, oval or obovate, about 1 in. long, entire or nearly so: heads solitary, to 1¼ in. across, rays numerous, sky-blue, on long stalks. S. Afr.

Bergeriàna (*Aster Bergerianus*). Hairy ann. to 8 in.: lvs. obovate-oblong, to 1½ in. long, toothed: heads solitary. S. Afr.

echinàta. Subshrub to 2 ft., many erect branches: lvs. lanceolate- to ovate-oblong, to 1 in. long, mucronate, nearly glabrous, often ciliate-serrate: heads corymbose, to 1½ in. across, blue or white. S. Afr.

frágilis: *F. tenella.*

petiolàta. Subshrub with prostrate branches: lvs. obovate or lanceolate: heads rose changing to blue. S. Afr.—Grown in hanging-baskets. Var. **ròsea** is listed.

rotundifòlia: catalogue name.

tenélla (*F. fragilis*). Ann. or bien, to 14 in., often prostrate: lvs. narrow-linear, to 2 in. long: heads solitary, rays pale blue. S. Afr.

FEMININE: pistillate (in higher plants); the seed-bearing parent or flower when the sexes are separate.

FENDLÈRA. *Saxifragaceæ.* Ornamental deciduous shrubs of W. N. Amer. with opposite entire lvs., fls. with 4 clawed petals, and capsular frs.; related to Jamesia and Deutzia.

One species is planted and is hardy in New England. It does best in sunny places in well-drained sandy or peaty soil. Propagated by seeds or by greenwood cuttings under glass.

rupícola. To 6 ft.: lvs. oblong or oblong-lanceolate, to 1 in. long: fls. solitary, white, 1 in. across. May–June. Tex., N. Mex.

FENESTRÀRIA. *Aizoaceæ.* One of the many segregates from the old genus Mesembryanthemum (which see) from S. W. Afr., characterized by a tufted stemless habit with fleshy upwardly thickened lvs. that bear a small more or less colorless or translucid area or "window" at the apex, the lvs. of each pair about equal: fls. large and showy; stigmas 10 or 11.

aurantìaca. Similar to *F. rhopalophylla* but fls. orange-yellow tinged pink.

rhopalophýlla (*M. rhopalophyllum*). Lvs. to 1½ in. long and ½ in. thick: fls. white, to 1¾ in. diam., the petals about 35 in a single series to ¾ in. long; stigmas filiform, pale yellowish-green.

FENNEL: *Fœniculum vulgare.* **Common Giant:** *Ferula communis.*

FENNEL-FLOWER: *Nigella.*

FENUGREEK: *Trigonella Fœnum-Græcum.*

FENZLIA: *Gilia dianthoides.*

FERDINANDA. *Podachænium eminens.*

FERN: see *Ferns.* **Adders-tongue:** *Ophioglossum.* **Asparagus-:** *Asparagus plumosus.* **Ball-:** *Davallia bullata.* **Bamboo-:** *Coniogramme japonica.* **Basket-:** *Nephrolepis pectinata.* **Bears-foot-:** *Humata Tyermannii.* **Beech-:** *Dryopteris Phegopteris* and *hexagonoptera.* **Birds-nest-:** *Asplenium Nidus.* **Bladder-:** *Cystopteris.* **Boston-:** *Nephrolepis exaltata* var. *bostoniensis.* **Brittle-:** *Cystopteris fragilis.* **Chain-:** *Woodwardia.* **Christmas-:** *Polystichum acrostichoides.* **Cinnamon-:** *Osmunda cinnamomea.* **Claw-:** *Onychium.* **Climbing-:** *Lygodium.* **Cup-:** *Dennstaedtia.* **Curly-grass-:** *Schizæa pusilla.* **Dagger-:** *Polystichum acrostichoides.* **Deer-:** *Blechnum spicant.* **Elephant-ear-:** *Elaphoglossum crinitum.* **Felt-:** *Cyclophorus.* **Floating-:** *Ceratopteris.* **Gold-:** *Pityrogramma.* **Goldies-:** *Dryopteris Goldiana.* **Grape-:** *Botrychium.* **Hacksaw-:** *Doodia aspera.* **Hares-foot-:** *Polypodium aureum.* **Hartford-:** *Lygodium palmatum.* **Harts-tongue-:** *Phyllitis Scolopendrium.* **Hay-scented-:** *Dennstaedtia punctilobula.* **Holly-:** *Cyrtomium falcatum,* and species of *Polystichum.* **Interrupted-:** *Osmunda Claytoniana.* **Lace-:** *Cheilanthes gracillima.* **Lady-:** *Athyrium Filix-femina.* **Licorice-:** *Polypodium glycyrrhiza.* **Lip-:** *Cheilanthes.* **Maidenhair-:** *Adiantum.* **Male-:** *Dryopteris Filix-mas.* **Marsh-:** *Dryopteris Thelypteris.* **New-York-:** *Dryopteris noveboracensis.* **Oak-:** *Dryopteris.* **Oak-leaved-:** *Polypodium quercifolium.* **Ostrich-:** *Pteretis.* **Parsley-, American:** *Cryptogramma crispa* var. *acrostichoides.* **Rattlesnake-:** *Botrychium virginianum.* **Resurrection-:** *Polypodium polypodioides.* **Royal-:** *Osmunda regalis.* **Sago-:** *Cyathea medullaris.* **Saw-:** *Blechnum serrulatum.* **Sensitive-:** *Onoclea sensibilis.* **Shield-:** *Dryopteris, Polystichum Braunii.* **Silver-:** *Pityrogramma.* **Squirrels-foot-:** *Davallia bullata.* **Staghorn-:** *Platycerium.* **Strap-:** *Polypodium Phyllitidis.* **Strawberry-:** *Hemionitis palmata.* **Sweet-:** *Comptonia peregrina.* **Sword-:** *Nephrolepis.* **Tongue-:** *Cyclophorus Lingua.* **Tree-:** *Alsophila, Cyathea.* **Walking-:** *Camptosorus.* **Wall-:** *Polypodium vulgare* and *virginianum.* **Water-:** *Ceratopteris.* **Winter-:** *Conium maculatum.* **Wood-:** *Dryopteris.*

FERNS. So-called flowerless plants (Pteridophytes) formerly included in the one family (order) *Filices,* but now distributed in several families, as *Polypodiaceæ* which includes most of the common ferns, *Cyatheaceæ* and *Dicksoniaceæ* comprising most of the tree-ferns, *Osmundaceæ,* the native royal-ferns and similar kinds, *Schizæaceæ* including the climbing ferns of the Lygodium class. Ferns are perennial plants widely spread in temperate and tropical regions, of perhaps 6,000 or more species.

Gardeners recognize two groups of ferns, the hardy kinds often transplanted from the wild and given conditions as nearly as possible like those in which they grew, and the glasshouse kinds of tropical and warm-temperate origin and that require more or less special skill in the growing. All kinds are raised for the gracefulness and beauty of the foliage, and the gardener therefore aims at luxuriousness in vegetation. Most of them do not arrive at the best state in a dry or parched atmosphere or when exposed to wind. Some kinds, however, withstand untoward and changing conditions, and these are adapted to window-gardens and porches; the Boston-fern (Nephrolepis) is one of this class.

In all fern culture, standing water in the pot is to be avoided, as also heavy clay soils. Extremes should be avoided, in air temperature and in moisture conditions. Shade should be provided, and protection from wind. For living-room ferns a night temperature of about 55° is to be recommended, with a rise of 10–20° by day in bright weather. Soils for pot ferns should be fibrous; gardeners like to mix fine fibry peat or turfy loam with it; ample drainage should be provided in the bottom. See that the pot does not dry out, or the atmosphere become very dry.

Ferns are propagated by division, by the buds or offsets that form on the fronds of some kinds, and by means of spores. The spores are usually borne on the back of the frond or leaf; when ripe they may be shaken off on paper, or parts of the frond may be cut and placed in dishes or paper bags in a dry protected place until the spores shed. They should be sown on fine sterilized moist soil in well-drained pans or pots. Spores are sown on a well-prepared soil surface and not covered with earth or watered on top; the pans or pots are kept in a close propagating frame until germination takes place, when more air may be admitted. The frame or house may be kept at a temperature of about 65° F. When watering becomes necessary, sterile water should be used. The sporelings should be pricked out—usually at first in little clumps—and transplanted as soon as a deft person can handle them and the first regular foliage appears. From eight months to a year are usually required to produce good ferns from spores.

One desiring a list of the ferns in cultivation may find the names of the genera under Ceratopteridaceæ, Cyatheaceæ, Dicksoniaceæ, Marattiaceæ, Marsileaceæ, Ophioglossaceæ, Osmundaceæ, Polypodiaceæ, Salviniaceæ, Schizæaceæ, and then trace the species in each genus. Any of the native ferns, however, may be transplanted to grounds in the same region.

Plants allied to ferns are in the families Equisetaceæ, Lycopodiaceæ, Selaginellaceæ. The so-called asparagus-fern, common in conservatories and windows, is one of the Lily family, *Asparagus plumosus.*

The American Fern Society publishes a journal.

FEROCÁCTUS. *Cactaceæ.* Very spiny often large cacti, globular to cylindric, separated from Echinocactus by the axils of the scales on the ovary and fl.-tube being naked rather than woolly, and thick-walled dry fr.; S. U. S. and Mex. They are grown like the echinocacti and are adaptable to similar uses. See *Cacti.*

acanthòdes (*F. Lecontei. Echinocactus acanthodes. E. cylindraceus*). Globular but becoming cylindric and 8 or 9 ft. tall, very spiny; ribs up to 27; spines pinkish to red to white, radials very weak, centrals awl-like: fls. 2 in. long more or less, bell-shaped, yellow to orange. S. Nev. and Calif., Lower Calif.

alamosànus (*Echinocactus alamosanus*). Solitary or clustered, sts. depressed-globose, to 1 ft. diam.; ribs 18–23, narrow; spines yellow, radials about 8, to 1½ in. long, spreading, central 1, to 2½ in. long: fls. probably yellow. Mex.

califórnicus (*Echinocactus californicus*). Globular to nearly cylindrical, perhaps to 3 ft. or more; ribs 15–20, notched, straight; spines straight, yellowish-red to dark red, radials 5–9, to 1½ in. long, centrals 4, the lowest to 2½ in. long: fls. reddish-yellow, to 1½ in. long. Lower Calif.

chrysacánthus (*Echinocactus chrysacanthus, E. Emoryi* var.). Globular to cylindrical, to nearly 4 ft. tall and 1½ ft.

diam.; ribs 13–20, wavy, obtuse, becoming acute toward apex; spines slender, radials 4–6, white, centrals 4–10, red to brownish-yellow: fls. yellow, to nearly 3 in. long. Lower Calif.

coloràtus. To 3½ ft. tall and 1 ft. diam.; ribs 13–20, fewer on young plants; spines spreading, stiff, radials 10–14, white, centrals 9–11, brownish-red: fls. pale yellow with reddish stripe down dorsal side. Lower Calif.

Còvillei. Globular to short-cylindric, to 5 ft.; ribs 22–32; spines red to white, radials 5–8 and central 1: fls. 2–3 in. long, red tipped yellow. Mex.

crassihamàtus (*Echinocactus crassihamatus* and *Mathssonii*). Globose or short-cylindric, slightly glaucous; ribs 13; radial spines 8 and some of the lower ones hooked; central spines 5 and usually red: fls. purple, ¾ in. long. Mex.

echídne. Globular, to 10 in. tall; ribs usually 14, sharp angled, somewhat wavy; spines amber-colored to gray, radials 7–8, central 1, longer than radials: fls. yellow, to 1½ in. long. Mex.

electracánthus: *F. melocactiformis.*

flavóvirens (*Echinocactus flavovirens*). Globose to subcylindrical, to 18 in. tall and 9 in. diam.; ribs 11–13, to ¾ in. high; spines subulate, ringed, red to brown or yellow, radials 13–15, to ¾ in. long, centrals 4, to 3 in. long or more: fls. reddish-yellow, to 1½ in. long, segms. narrow, ciliated. Mex.

Fórdii (*Echinocactus Fordii*). Globular, often depressed on top; ribs 20–22, acute; spines white, radials usually 14–16, divergent, centrals 4, to 1½ in. long, ringed, the longest one hooked: fls. pink, to 1½ in. long. Lower Calif.

glaucéscens (*Echinocactus glaucescens* and *Pfeifferi*). Globular, 8–16 in. diam., or sometimes higher than broad, glaucous; ribs 11–15; radials 6; central 1: fls. nearly 1 in. long, yellow. Mex.

grácilis. Globose to cylindric, to 10 ft. tall and 1 ft. diam.; ribs 24, notched; spines to 1½ in. long, straight or hooked, radials 10, whitish, centrals 7–13, ringed, dark red becoming black: fls. pale yellow with red stripe down center of reverse side, to 1½ in. long: fr. yellow. Lower Calif.

Grùsonii: *Echinocactus Grusonii.*

hamatacánthus: *Hamatocactus hamatacanthus.*

hórridus. Globose, to 1 ft. or more diam.; ribs 13, not tubercled; radial spines 8–12, acicular, to 2 in. long, white; centrals 6–8, to 5 in. long, reddish: fls. not known. Lower Calif.

íngens: see *Echinocactus ingens.*

Jóhnsonii: *Echinomastus Johnsonii.*

latispìnus (*Echinocactus latispinus*). Globular or somewhat depressed, to 16 in. high; ribs 15–23; radials 6–10; centrals 4 or more and stouter: fls. 1 in. or a little more long. bell-shaped, rose to purple. Mex.

Lecóntei: *F. acanthodes.*

longihamàtus: *Hamatocactus hamatacanthus.*

macrodíscus (*Echinocactus macrodiscus*). Depressed-globose or short-cylindric, to 1½ ft. across; ribs 16; radial spines 6–8 and yellow; central spines 4 and 1½ in. long: fls. dark red or purple, 2 in. long. Mex.

Máthssonii: *F. crassihamatus.*

melocactifórmis (*Echinocactus melocactiformis. E. electracanthus*). Cylindric, to 2 ft. diam., bluish-green; ribs about 24; spines 10–12, with 3 or 4 of them more or less central, yellow to brown: fls. 1–1½ in. long, bright yellow and perhaps reddish outside. Mex.

nóbilis (*F. recurvus. Echinocactus recurvus. E. nobilis*). Globular, to 10 in. tall and 8 in. diam., apex rounded; ribs 10–14, to 1¼ in. high, acute, straight, somewhat tubercled; spines stiff, yellow when young becoming reddish, radials several, to 1 in. long, central 1, to 2 in. long, hooked: fls. pink, campanulate, to 2 in. long. Mex.

Órcuttii (*Echinocactus Orcuttii*). To 4 ft. high and 1½ ft. across, often clustered; ribs 13–30; radial spines 9–13 and reddish; centrals 4: fls. crimson, to 2 in. long. Lower Calif. Var. **cristàtus** is listed.

penínsulæ (*Echinocactus peninsulæ*). Cylindric to club-shaped, to 8 ft. or so; ribs 12–30; spines red with yellow tips, radials 11, centrals 4: fls. yellow. Lower Calif.

Pfeifferi: *F. glaucescens.*

Prínglei (*Echinocactus Pringlei*). Cylindric, to 10 ft. high and 1 ft. across, in clumps; ribs 16–18; spines red and various: fls. yellow, red outside, 1 in. long. Mex.

rafaelénsis (*Echinocactus rafaelensis*). Globular to depressed-globular, to 1½ ft. across; ribs 14–22, acute, to 1 in. high or more; spines red becoming brownish-yellow and gray, radials 7–9, spreading, to 1½ in. long, central 1, to 2¾ in. long, ringed: fls. yellow. Mex.

rectispìnus (*Echinocactus rectispinus*). Globose or cylindric, to 6 ft. high; radial spines 8–12; central spine 1 and to 5 in. long: fls. yellowish, 2½ in. long. Lower Calif.

recúrvus: *F. nobilis.*

robústus (*Echinocactus robustus*). Makes large clumps with hundreds of branches; ribs 8; radials about 10 and often thread-like; centrals about 6 and awl-like: fls. 1½ in. long, yellowish. Mex.

Stàinesii (*Echinocactus Stainesii. E. pilosus*). Globular to columnar, to 4 ft. or more; ribs 13–20; radial spines represented by long white hairs; centrals several: fls. yellow. Mex.

tortulospìnus. Globular to cylindrical, occasionally conical, to 2 ft. tall; ribs 16–20, acutish; radial spines 9–11, to 1½ in. long, divergent; centrals 4–5, unequal, the longest to 3¼ in. long, twisted, pink to red: fls. not known. Lower Calif.

Townsendiànus. Short-cylindric, to 16 in. or more high; ribs about 16; radial spines 14–16 and to 1½ in. long, one of central spines hooked at tip: fls. greenish-yellow with pink stripe down center of segms., to 2½ in. long. Lower Calif.

uncinàtus: *Hamatocactus uncinatus.*

viridéscens (*Echinocactus viridescens*). Nearly globose or somewhat flattened, to 15 in. diam., deep green; ribs 13–21, bearing spines and felt, the spines at first red: fls. greenish-yellow, about ¾ in. long. Calif., Lower Calif. Var. **littoràlis** is listed.

viscainénsis. Globose to subcylindric, to 5½ ft. tall and 1¼ ft. diam.; ribs 13–21, thin, wavy, to ¾ in. high; radials 1–4, grayish-white; centrals 5–9, unequal, to 5 in. long, flattened: fls. pale yellow with purple stripe down reverse center of each segm., to 1¾ in. long. Lower Calif.

Whípplei: probably *Sclerocactus Whipplei.*

Wíslizenii (*Echinocactus Wislizenii*). Becoming cylindric, at length elongated and 7 ft. or more; ribs often 25; radials thread-like or needle-like or absent in young plants; centrals several: fls. 2 in. or more long, yellow. W. Tex. to Ariz. and Mex.

FERÒNIA. *Rutaceæ.* A single spiny deciduous tree, **F. Limònia,** the WOOD-APPLE, of India and Indo-China, planted somewhat in Fla. and Calif. for interest and edible frs.: lvs. small, odd-pinnate, lfts. obovate and obtuse or emarginate, rachis and petiole margined: fls. dull red, in panicles, stamens 8–12: fr. globose or oblate, hard-shelled, to 3 in. diam., with pinkish edible acid pulp used in making jellies; seeds woolly. Suggested as a citrus stock.

FERONIÉLLA. *Rutaceæ.* A small genus much like Feronia, but evergreen, seeds smooth and the woody rind comprised of a radical structure. **F. lùcida** is somewhat known in this country for ornament and as an experimental stock for citrus frs.: small spiny tree: lvs. small, odd-pinnate, lfts. oval or obovate, obtuse or emarginate, rachis and petiole pubescent: fls. white: fr. globose, to nearly 3 in. diam., pulp glutinous and eaten in Java where it is native.

FERRÀRIA. *Iridaceæ.* Cormous herbs mostly from S. Afr., allied to Tigridia: lvs. linear, passing into ovate bracts: fls. large, fugitive, several borne in inflated sheaths; perianth-segms. united at base, the lobes crisped.

obtusifòlia. To 1½ ft.: lvs. short, obtuse: fls. brownish-purple, 1½ in. across.

undulàta. Differs from *F. obtusifolia* in the lvs. long and narrowed to acute apex.

FERTILE: producing their normal sex products, said of pollen-bearing stamens and seed-bearing fruits; a plant that bears good seeds (not sterile).

FÉRULA. *Umbelliferæ.* A few per. thick-rooted herbs with pinnately decompound lvs., small yellow or greenish fls. in compound umbels, and ovate compressed frs.; one species is planted for ornament, others yielding medicines and gums; the edible fennel is Fœniculum. Propagated by seeds sown in spring where plants are to grow.

commùnis. COMMON GIANT FENNEL. To 12 ft.: lvs. very finely divided into linear segms. S. Eu. to Syria.—A striking plant with very finely divided foliage and umbels above it.

gigantèa: the plant grown under this name is probably *F. communis*.

FESCUE: *Festuca*.

FESTÙCA. Fescue. *Gramineæ*. Grasses of temp. regions, per., mostly tufted, with flat or involute lvs. and spikelets borne in narrow panicles; grown in pastures, meadows, lawns, and some kinds planted for ornament. The principal meadow and forage species are *F. elatior*, *F. ovina*, *F. rubra*. See *Grasses*.

alpìna: confused name.

amethýstina. To 2½ ft.: lvs. about 1 ft. long, involute: panicles about 3 in. long. S. Eu., Asia Minor.

arundinàcea: *F. elatior* var.

capillàta: *F. ovina* var.

duriúscula: *F. ovina* var.

elàtior (*F. pratensis*). Tall F. Meadow F. To 5 ft.: lvs. to 1 ft. long and ⅓ in. wide, flat: panicles to 1 ft. long, erect or nodding at top. Eu.; nat. in N. Amer. Var. **arundinàcea** (*F. arundinacea*). To 6 ft.: lvs. several ft. long and to ⅜ in. wide, flat: panicles to 10 in. long.

geniculàta (*F. stipoides*). To 1½ ft.: lvs. to 1 ft. long and ⅛ in. across, flat: panicles to 4 in. long, with awns ¼ in. long, heavy for size of plant. W. Medit. region.

gigantèa. To 4 ft.: lvs. to 1 ft. long and ½ in. wide, flat: panicles to 1 ft. long, awns ½ in. long. Eu.; nat. E. N. Amer.

glaùca: *F. ovina* var.

heterophýlla: *F. rubra* var.

Myùros. Rats-tail F. Ann. to 2 ft.: lvs. to 5 in. long, involute: panicles to 1 ft. long, one-sided, awns ¼ in. and more long. Eu.; nat. in N. Amer.

ovìna (*F. vulgaris*). Sheeps F. To 2 ft.: lvs. to 8 in. long, involute: panicles to 6 in. long, short-awned. Eu., Asia; nat. in N. Amer. Var. **capillàta** (*F. capillata*, *F. tenuifolia*) has hair-like lvs. and awnless spikelets. Var. **duriúscula** (*F. duriuscula*), Hard F., has stiff lvs. Var. **glaùca** (*F. glauca*), Blue F., has glaucous foliage.

praténsis: *F. elatior*.

rígida: *Scleropoa rigida*.

rùbra (*F. viridis*). Red F. To 3 ft., stoloniferous: lvs. to 6 in. long, involute: panicles to 5 in. long, sometimes reddish or glaucous, short-awned. Eu., Asia, N. Amer. Var. **fállax** differs from the type in not being stoloniferous. Var. **heterophýlla** (*F. heterophylla*) has basal lvs. involute and st.-lvs. flat.

stipoìdes: *F. geniculata*.

supìna: probably *F. ovina*.

tenuifòlia: *F. ovina* var. *capillata*.

víridis: *F. rubra*.

vulgàris: *F. ovina*.

FETERITA: *Sorghum vulgare* var. *caudatum*.

FETID: having a disagreeable odor.

FETTER-BUSH: *Lyonia lucida*.

FEVERFEW: *Chrysanthemum Parthenium*.

FEVERWORT: *Triosteum*.

FIBIGIA: see *Farsetia*.

FICARIA: *Ranunculus Ficaria*.

FÌCUS. Fig. *Moraceæ*. Many trees, shrubs and woody root-clinging vines, with milky sap, and minute fls. and seeds inside a globular or oblong or pyriform fleshy receptacle (or fig) that has a small opening at the apex: lvs. thick or stiff and mostly persistent, often large and showy. Species numerous, native in warm and trop. countries in many parts of the world. Some of the species are among the wonders of the vegetable world, as the banyan (*F. benghalensis*) that sends down aerial roots that make trunks and thus extend the top of the single tree over great areas; others begin as epiphytes, and after strangling the host become self-supporting and make independent trees. Many of the kinds emit aerial roots. In the following entries the lvs. are persistent (evergreen) unless otherwise noted. Other species than those listed here are to be expected within the limits of the U. S.; frs. as well as lvs. are necessary for identification.

Several kinds of ficus trees are planted for shade and ornament in the southermost parts of the United States, and they are frequent in the tropics. The creeping fig, commonly but erroneously known as *F. repens*, is used for covering walls far south, and often also in conservatories. The rubber plant, *F. elastica*, is one of the most popular and indestructible house plants and is grown in great quantities by florists; it is propagated by air-layering, which consists in tying a ball of moss about a young shoot that has been notched or cut for the formation of roots, the shoot being severed from the parent branch when the part is well rooted. Tall and ungainly pot specimens may be shortened in this way, by layering them under the leaves; but it is usually better to discard the old plant and to purchase a new one.

The arboreous species of Ficus may be grown in the South from air-layers; a small notch is cut in a shoot, moss is placed in the notch and also made into a ball around the place, the work is kept wet for two weeks or so, and then the shoot may be severed and established in a pot. The trailing kinds grow from division of the rooting stems.

Áfzelii: *F. eriobotryoides*.

altíssima. Large spreading tree with few aerial roots: lvs. thick, oval or elliptic, blade 4–6 in. long: fr. about ¾ in. diam. India.

aùrea. Epiphytal at first, making a tree to 60 ft.: lvs. oblong and narrowed at both ends: fr. sessile or nearly so, ⅓ in. diam., yellow. S. Fla.

austràlis: *F. rubiginosa*.

benghalénsis. Banyan. Very large tree, top spreading by secondary trunks: lvs. broad-ovate to elliptic, 4–8 in. long: fr. in pairs, globose, red, about ½ in. diam. India.

benjamìna. Large broad shining tree with graceful drooping branches, poplar-like: lvs. oval to elliptic, 2–5 in. long, narrowed to short but not sharp point: fr. becoming red, in var. **comòsa** ¾ in. diam., yellow. India.

brevifòlia (*F. populnea*). Epiphytal, making tree to 50 ft.: lvs. broadly ovate, cordate at base: fr. on drooping stalks, to ½ in. long, red. S. Fla.

Cánnonii. Perhaps *Artocarpus Cannonii*, although greenhouse material under this name seems not to be the same.

carìca. Fig (common or pomological F.). Broad irregular deciduous tree to 25 or 30 ft.: lvs. thick, rough above and pubescent underneath, deeply 3–5-lobed: fr. large, variable, edible. Medit. region. See *Fig*.

Chauvièri. Hort. name for a plant something like *F. elastica* with broader oval lvs. with lighter veins: fr. large, red. Perhaps New Caledonia.

clavàta. Erect shrub: lvs. oblong-lanceolate or oblanceolate, 4–5 in long, cuspidate or caudate: fr. about ½ in. diam., yellow. India.

Cúnninghamii. Glabrous tree to 80 ft.: lvs. ovate to oblong-elliptic, abruptly acuminate, to 5 in. long and about 2 in. broad, thick, shining above: fr. 1 or 2 in axils, sessile, globular, white becoming purplish, nearly ½ in. diam. Queensland.

diversifòlia (*F. lutescens*). Mistletoe F. Shrub or small tree: lvs. variable, mostly broadly obovate and broad on top, to 2 in. long: fr. ⅓ in. or less diam., yellow. Malaya.—Sometimes grown as pot-plant.

Doèscheri: *F. elastica* var.

elástica. Rubber-Plant. Large glabrous tree but grown in its juvenile state as a pot- and tub-plant: lvs. thick and glossy, oblong or elliptic, 5–12 in. long: fr. about ½ in. long, yellowish. India, Malaya. Var. **aùrea-marginàta** has lvs. yellow margined. Var. **bélgica** has juvenile lvs. red. Var. **Doèscheri** is probably var. *variegata*. Var. **rùbra** may be var. *belgica*. Var. **variegàta** has variegated lvs.

eréctа. Shrub or small tree, glabrous or hairy: lvs. ovate to obovate, usually entire: fr. solitary or in pairs, globose to pyriform. E. Asia.

eriobotryoìdes (*F. Afzelii*). Large tree, with lvs. at ends of branches: lvs. stiff, long-oblanceolate, to 1 ft. long and 4 in. broad, lighter colored underneath: fr. to 1½ in. diam., yellow-hairy. Trop. Afr.

falcàta. Creeping and rooting, with slender hairy sts.: lvs. thick, oblong and usually angled, unequal-sided, obtuse, 1 in. or less long: fr. ½ in. long, brown or orange. Malaya.—Grown sometimes under glass.

fistulòsa. Shrub or small tree: lvs. opposite or alternate, oblong to obovate-lanceolate, to 10 in. long, entire or subserrate: fr. clustered, depressed-globose, to 1 in. long. India.

glomeràta. Cluster F. Thick-topped tree: lvs. ovate to oblong, to 6 or 7 in. long, with strong lateral nerves: fr. about 1 in. diam., reddish, in clusters. India.

híspida. Shrub or small tree, hispid: lvs. opposite, entire or toothed: fr. yellowish, in clusters. Asia, Australia.

Hoòkeri. Glabrous tree: lvs. broadly elliptic, 5–11 in. long, pale underneath, with short broad apex: fr. to 1 in. diam., in a cup formed of the bracts. India.

índica. Large spreading glabrous tree: lvs. oblong, 4–7 in. long, acuminate, reddish when young: fr. ⅓ in. diam., yellowish-red, with rather large ovate acute bracts at base. Burma, Malaya.—Some of the trees known under this name may be *F. retusa*.

infectòria (*F. lucescens*). Deciduous tree: lvs. thin, ovate or somewhat oblong, 3–5 in. long, base broad: fr. ¼ in. diam., whitish tinged and dotted red. India.

lucéscens: *F. infectoria*.

lutéscens: *F. diversifolia*.

lyràta (*F. pandurata*). Close-headed tree to 40 ft.: lvs. large, 10–15 in. long, fiddle-shaped, apex large and rounded: fr. nearly 2 in. diam., with white dots. Trop. Afr.—Popular in juvenile state under glass, and grown in open in S. Fla.

macrophýlla. MORETON BAY F. Large tree: lvs. oval to broad-oblong, blunt or nearly so or apex very short, to 10 in. long and 4 in. broad, brownish underneath: fr. to 1 in. diam., purple spotted white, peduncled. Queensland.

microphýlla (*Urostigma rufum*). Lvs. oblong to ovate-elliptic, to 8½ in. long, usually obtuse, base truncate to subcordate, coriaceous, glabrous above, somewhat pubescent beneath, lateral veins branched and reticulated toward margin, stipules of terminal lvs. ovate, acuminate, to ⅓ in. long: fls. axillary. Brazil.

mìnima: *F. pumila* var.

mysorénsis. Large tree, twigs brown-tomentose becoming glabrous: lvs. elliptic-ovate, to 8 in. long, leathery, smooth above, hairy beneath, entire: fr. orange-red, to 1 in. long, sessile in pairs. India to Burma.

Nekbùdu (*F. utilis*). Large forest tree with pubescent young parts: lvs. thick, elliptic or nearly obovate, 6–15 in. long, rounded or broad at both ends: fr. about ½ in. diam., pubescent or woolly. Trop. Afr.—Sometimes grown under glass in juvenile state and planted in open far S.

nítida: *F. retusa*.

palmàta. Shrub or small tree: lvs. orbicular-ovate, sometimes 3–5-lobed, toothed or entire, to 5 in. long: fr. subglobose to pyriform, to 1 in. across, yellow, solitary. N. W. India to Ethiopia and Egypt.

Pálmeri. Tree to 12 ft. or more, often densely woolly beneath when young, shrub-like in its branching: lvs. to 3 in. long and 2½ in. across: fr. globose, ½ in. diam., white, usually in pairs. San Pedro Martin Isl., Mex.

panduràta: *F. lyrata*.

Parcéllii. Shrub, probably deciduous in the open: lvs. thin, òvate or oblong, acuminate, hairy at least underneath, oblique at base, 4–8 in. long, marbled creamy-white: fr. about ½ in. diam., peduncled, in different colors. Pacific Isls.

parietàlis. Shrub or tree, twigs rusty-pubescent: lvs. elliptic-oblong to obovate, leathery, to 12 in. long, petiole stout, hispid: fr. globose to ovoid, yellow or orange, to ⅓ in. diam., hispid when young. India, Malasian Isls.

popúlnea: *F. brevifolia*.

príneeps. Tree or shrub, listed in Calif.: lvs. long-ovate to oblanceolate, to 15 in. or more long, obscurely 5–7-nerved, short-acuminate, cuneate at base, entire; petiole 5–6 in. long; stipules lanceolate, glabrous, or hairy inside. Brazil.

pseudopálma. Shrub or small tree, mostly unbranched with stiffish long lvs. clustered at top and solitary or twin frs. in the axils: lvs. to 2 ft. or more long and 4 in. broad, acuminate, long-tapering to base, coarsely notched, the young ones very slender. Philippines.

pùmila (*F. repens*). Creeping, and clinging to walls by means of roots, the fruiting branches erect: lvs. on creeping sts. 1 in. or less long and cordate-ovate, those on fruiting sts. 2–4 in. long and elliptic or oblong and not cordate: fr. to 2 in. long, yellowish, pyriform. China, Japan, Australia. Common in greenhouses and in the open far S. Var. **mínima** is a slender small-lvd. form of the creeping stage. Var. **variegàta** is said to have small pointed green and white foliage.

quercifòlia. Shrub, more or less prostrate: lvs. elliptic or ovate, lobed and notched on sides, 2–6 in. long: fr. to ½ in. diam., peduncled. Burma.—Grown under glass.

radìcans. Trailing: lvs. oblong-lanceolate, about 2 in. long, base rounded or notched. Origin unrecorded.—Useful in vases; a form with variegated foliage.

religiòsa. PEEPUL. BO-TREE. Large glabrous tree: lvs. round-ovate with a projection or tail half as long as body of blade: fr. ½ in. diam., purple. Sacred tree of India.

rèpens: *F. pumila*.

retùsa (*F. nitida*). Attractive glabrous thick-topped evergreen tree much planted for shade and avenues in American tropics and also in S. Fla.: lvs. small, broadly ovate or somewhat rhomboid, 2–4 in. long: fr. ⅓ in. long, yellow or reddish, with obtuse bracts at base. India, Malaya.

Róxburghii. Low spreading tree or great bush: lvs. broad-ovate to nearly orbicular, to 15 in. long and 12 in. broad, pubescent underneath: fr. 2 in. diam., depressed-globose, brown or purplish, borne in clusters on trunk and branches. India.

rubiginòsa (*F. australis*). Broad tree, top spreading by means of aerial roots, but often remaining bushy: lvs. oval or elliptic, 3–4 in. long, rusty-pubescent underneath: fr. ⅓ in. diam., warty. Australia.

sápida. Glabrous tree: lvs. oblong-lanceolate, 2–3 in. long and to 1 in. broad, acuminate: fr. globular, to nearly ½ in. diam., peduncled. Costa Rica.

Sycamòrus. SYCAMORE. Round-headed large tree: lvs. ovate and subcordate, 3-ribbed, 4–10 in. long: fr. in leafless clusters, about ¾ in. long, edible. Egypt, Syria.—In S. Fla. usually deciduous in early spring and late summer, the new lvs. coming at same time.

Thónningii. Tree to 40 ft.: lvs. obovate-elliptic, to 9 in. long, obtuse, papery, glabrous: fr. globose, to ⅓ in. diam., axillary in pairs. Trop. Afr.

ulmifòlia. Tall rough-twigged shrub or somewhat tree-like: lvs. various, mostly oblong or elliptic, 5–7 in. long, very rough on both surfaces, dentate or sometimes lobed: fr. about ½ in. long, orange-red or purplish. Philippines.

ùtilis: *F. Nekbudu*.

velùtina. Tree: lvs. oblong, short-acute or obtuse, 4–5 in. or more long, obtuse or subcordate at base, glabrous above and rusty soft-pubescent underneath, petiole pubescent and 1 in. long. Colombia.

villòsa. Scandent or creeping shrub: lvs. ovate-oblong or longer, 5–7 in. long, rounded at base, acuminate, brownish-velvety underneath as are also the shoots: fr. ½ in. diam., yellow, in clusters. Malaya.

Wéndlandii: a hort. name.

FIDDLE-WOOD: *Citharexylum spinosum*.

FIESTA-FLOWER: *Pholistoma auritum*.

FIG. The pomological or commercial fig is not a fruit in the strict botanical sense but a hollow fleshy receptacle with the many true fruits or "seeds" on the inside of it, and an opening at the top through which passes the insect that pollinates the minute flowers. The fig fruit grows on the young shoots as if it were a branch. The cultivated fig is one of the great genus Ficus (*F. carica*), which see. It is a small very broad tree or large bush with soft wood.

Propagation is by means of hardwood cuttings taken in autumn, much after the way of grapes. In two to four years, bearing plants may be expected. The trees are usually planted about 18 to 25 feet apart. Figs stand considerable frost, and seedling or inferior varieties grow out-of-doors without protection as far north as Virginia and Maryland. Many of the varieties fruit on young sprouts, and, inasmuch as the roots endure cold, these varieties may give a few figs in the northern states. Figs have been fruited in the open ground in Michigan with good winter protection. In cold countries the figs should be laid down in winter, particularly if the temperature is likely to go ten degrees below frost. For such treatment the trees are made to branch close to the ground, and the branches are then bent down and covered with earth and a mound is made over the central or trunk part. In Louisiana, Texas, California the fig is grown in regular orchard plantations for commercial purposes.

In California, which produces the largest volume of figs, both the Mission or Adriatic and the Smyrna types are grown. The latter requires special provision for pollination with the gall wasp. In Texas and the eastern states only the Adriatic type is grown which requires no pollination to set fruit.

FIG, HOTTENTOT-: *Carpobrotus edulis*. **Indian-:** *Opuntia Ficus-indica*. **-Marigold:** *Mesembryanthemum*.

FIGWORT: *Scrophularia.*

FÍLAGO. *Compositæ.* Ann. white-woolly little herbs with alternate entire lvs. and heads of disk-fls. borne in dense clusters; pappus none.

nívea. To 6 in.: lvs. oblong or oblong-lanceolate, to ½ in. long: heads ⅓ in. across, bracts white-woolly. Ga. to Tex.

FILAMENT: thread, particularly the stalk supporting the anther.

FILAREE: *Erodium cicutarium* and *moschatum.*

FILBERTS are fruits of species of Corylus (which see), particularly of *C. maxima* in which the husk is much longer than the nut itself; the nuts of other species are cobs (a form of *C. Avellana*) and hazelnuts. Some of the hazelnuts are native in America; but the usual filberts and cobs are European and western Asian. Filberts can be grown in this country, but in the East the yield has not been satisfactory as a rule, because of disease, lack of adaptable varieties, tenderness to northern climates, and perhaps other causes. Many of the difficulties have been overcome by breeding in which the larger-fruited European sorts have been crossed with the hardier more disease-resistant species, particularly *C. americana.* There is, however, no commercial industry in the East as yet. In parts of Oregon filbert growing on a considerable basis is now fairly well established. Filberts and cobnuts are not ordinarily distinguished in this country, but the true filbert is an oblong nut, whereas the cob is roundish and usually angular and contained in a shorter husk.

FILIFORM: thread-like, long and very slender.

FILIPÉNDULA. Meadowsweet. *Rosaceæ.* Per. herbs native in the north temp. zone, once included in the genus Spiræa, having alternate pinnate lvs., small fls. in large terminal panicles in late spring and summer, and 1-seeded achenes; grown in the hardy border. Propagated by seeds and by division of old plants.

camtschática (*Spiræa camtschatica. S. gigantea*). To 10 ft.: lvs. with ovate-cordate 3–5-lobed terminal lft. and lateral lfts. usually wanting: fls. white. Manchuria, Kamtchatka. Var. **ròsea** is listed.

grandiflòra: hort. name; some of the material so listed is *F. hexapetala.*

hexapétala (*Spiræa* and *Ulmaria Filipendula*). Dropwort. To 3 ft., rootstock tuberous: lvs. fern-like, of numerous small pinnatifid lfts.: fls. white. Eu., Asia. Var. **flòre-plèno** has double fls.

lobàta: *F. rubra.*

multíjuga. Glabrous: basal lvs. of many pairs of lfts., terminal segms. cordate, lateral ones ovate, petioled, all incised-serrate: fls. rose to white. S. Japan.

palmàta (*Spiræa palmata*). To 3 ft.: lvs. with large 7–9-lobed terminal lft., white-hairy or glabrous beneath, stipules large and heart-shaped: fls. pale pink becoming white. Siberia, Kamtchatka.—Plants listed under this name are usually referable to *F. purpurea.*

pentapétala: *F. Ulmaria.*

purpùrea. To 4 ft.: lvs. with large 5–7-lobed terminal lft. and few unlobed or no lateral lfts., stipules narrow: fls. pink or purplish. Japan. Var. **álba** has white fls. Var. **élegans** has white fls. with red stamens.

rùbra (*Spiræa lobata*). Queen-of-the-Prairie. To 8 ft.: lvs. with large 7–9-parted terminal lft. and lobed lateral lfts.: fls. peach-blossom pink, with conspicuous stamens, very attractive. Pa. to Ga. and Ky. Var. **venústa** (*Spiræa venusta*) has deep pink fls.

Ulmària (*F. pentapetala. Spiræa Ulmaria*). Queen-of-the-Meadow. To 6 ft.: lvs. with large 3–5-lobed terminal lft. and toothed lateral lfts., white-tomentose beneath: fls. white. Eu., Asia; nat. in E. N. Amer. Var. **aùreo-variegàta** has lvs. variegated with yellow. Var. **plèna** has double fls.

FILIX: *Cystopteris.*

FIMBRIATE: fringed.

FINOCCHIO: *Fœniculum vulgare* var. *dulce.*

FIORIN: *Agrostis alba.*

FIR: *Abies.* **China-:** *Cunninghamia.* **Douglas-:** *Pseudotsuga taxifolia.* **Joint-:** *Ephedra.* **Summer-:** *Artemisia sacrorum* var. *viridis.*

FIRE-CRACKER, FLORAL: *Brevoortia Ida-Maia.*

FIRE-PLANT, MEXICAN: *Euphorbia heterophylla.*

FIRETHORN: *Pyracantha.*

FIREWEED: *Epilobium angustifolium.*

FIRMIÀNA. *Sterculiaceæ.* Warm-country trees with alternate lvs., unisexual or polygamous small fls. without petals in axillary panicles, and membranaceous fr. which opens into leaf-like carpels; grown in the S. as a shade or lawn tree. Propagated by seeds.

platanifòlia: *F. simplex.*

símplex (*F. platanifolia. Sterculia platanifolia*). Chinese Parasol-Tree. Phoenix-Tree. To 50 ft., deciduous: lvs. platanus-like, palmately 3–5-lobed, to 1 ft. across: fls. small, greenish: fr. to 5 in. long, separating into 4 leaf-like bodies that bear the round wrinkled seeds along the margins. China, Japan. In var. **variegàta** the lvs. are variegated with white.

FISSIPES: *Cypripedium acaule.*

FITTÒNIA. *Acanthaceæ.* Ornamental hairy low or creeping herbs with opposite entire lvs. having white or colored veins and small tubular 2-lipped fls. borne beneath bracts in slender spikes; native of S. Amer.

Fittonias are grown as choice foliage plants in the greenhouse, often under benches, and should be kept shaded and the temperature never allowed to drop below 55°. Propagated easily by stem-cuttings which should contain one joint.

argyroneùra: *F. Verschaffeltii* var.

gigantèa. To 1½ ft., erect: lvs. oval, dark green veined with carmine, short-pointed.

Verschafféltii. Creeping and rooting: lvs. ovate or oval, to 4 in. long, dark green veined with deep red, obtuse. Var. **argyoneùra** is veined with white and var. **Peàrcei** is glaucous beneath with carmine veins.

FITZRÒYA. *Cupressaceæ.* One evergreen tree or sometimes shrubby in cult. **F. cupressoìdes** (*F. patagonica*). Lvs. spreading or overlapping, ⅛ in. long, dark green above and with 2 white bands beneath: cones globose, ⅓ in. across. S. Chile. For cult. see *Conifers.* Adaptable only to the lower S. and Calif. It belongs to the Cupressus tribe, with Thuja and Chamæcyparis.

FIVE-SPOT: *Nemophila maculata.*

FLACOÚRTIA. *Flacourtiaceæ.* Fruit-bearing shrubs or trees with alternate simple lvs., small bisexual or polygamous fls. in racemes or clusters, and fr. a berry-like drupe, the pulp of which is made into jams and preserves. It is not particular as to soil but will not withstand frost. Propagated by seeds and budding.

índica (*F. Ramontchi*). Ramontchi. Governors-Plum. Batoko-Plum. To 25 ft., often with long slender spines: lvs. ovate, to 3 in. long: fls. yellowish: fr. deep maroon colored, to 1 in. across. S. Asia, Madagascar.

Ramóntchi: *F. indica.*

sepiària. Shrub, usually spiny: lvs. obovate, 1½ in. long: fr. ½ in. across. India.

FLACOURTIÀCEÆ. Flacourtia Family. Trop. trees and shrubs of both hemispheres, of about 70 genera, characterized by alternate simple lvs., regular bisexual or unisexual fls. having 4 or more sepals and petals or without petals, numerous stamens, superior 1-celled ovary and fr. mostly a berry or drupe; placed near Cistaceæ in the series. Azara, Berberidopsis, Carrierea, Idesia, Oncoba, Poliothyrsis, Xylosma are cult. for ornament, Dovyalis (Aberia) and Flacourtia for the edible fr., and Taraktogenos for the curative oil.

FLAG, BLUE-: *Iris.* **Crimson:** *Schizostylis.* **Spiral:** *Costus.* **Sweet:** *Acorus Calamus.* **Yellow:** *Iris Pseudacorus.*

FLAMBOYANT: *Delonix regia.*

FLAME-OF-THE-FOREST: *Butea frondosa.* **-Tree:** *Brachychiton acerifolium.*

FLANNEL-BUSH: *Fremontia californica.* **-Flower:** *Actinotus Helianthi.*

FLAX. To gardeners the flaxes are annual and perennial plants grown for the bright showy bloom. They are species of Linum. The flax of commerce is *Linum usitatissimum,* an annual grown for two classes of products,—the fiber of the bast in the stem from which flax-fiber and fine linen are derived, and the seeds from which linseed oil and linseed cake and meal are manufactured. These are not horticultural products. In North America flax is raised mostly in Minnesota, the Dakotas and Canada. Seed is sown directly in the field when the weather is warm, as in May and June, and the crop should be ready in one hundred days or less.

FLAX, NEW ZEALAND: *Phormium tenax.* **Yellow:** *Reinwardtia indica.*

FLEABANE: *Erigeron.* **Marsh-:** *Pluchea.*

FLEECE-FLOWER: *Polygonum.* **Mountain:** *Polygonum amplexicaule.* **-Vine, China:** *Polygonum Aubertii.*

FLEMÍNGIA. *Leguminosæ.* Herbs or shrubs, often twining, with lvs. commonly of 3 digitate lfts. but sometimes simple, red or purple papilionaceous fls. and short swollen pods; native in tropics of Old World and intro. in S. U. S.

strobilífera. Shrub to 10 ft.: lvs. simple, ovate, to 3½ in. long, silky beneath: fls. purple, hidden by large bracts, in racemes to 6 in. long: pods to ½ in. long. India, Malaya.

FLEXUOUS, FLEXUOSE: having a more or less zigzag or wavy form; said of stems of various kinds.

FLOATING-HEART: *Nymphoides.*

FLOERKEA: *Limnanthes Douglasii.*

FLOPPERS: *Kalanchoë pinnata.*

FLORAS-PAINTBRUSH: *Emilia sagittata.*

FLORETS: individual flowers of composites and grasses also other very small flowers that make up a very dense form of inflorescence.

FLORIFEROUS: flower-bearing.

FLOSS-SILK TREE: *Chorisia speciosa.*

FLOWER-OF-AN-HOUR: *Hibiscus Trionum.* **-of-Jove:** *Lychnis Flos-Jovis.*

FLY-POISON: *Amianthium muscætoxicum.*

FOAM-FLOWER: *Tiarella cordifolia.*

FŒNÍCULUM. *Umbelliferæ.* Herbs native in the Old World, having pinnately decompound lvs., small yellow fls. in compound umbels, and narrow prominently ribbed frs.; one species is grown for the lvs. and aromatic seeds which are used in flavoring; lvs. and lf.-bases sometimes eaten. Propagated by seeds in spring.

atrosanguínea: listed name.

dúlce: *F. vulgare* var.

officinàle: *F. vulgare.*

vulgàre (*F. officinale*). FENNEL. Per. but grown as an ann., to 5 ft.: lvs. 3–4-pinnate into linear thread-like segms. S. Eu. Var. **dúlce,** FLORENCE F. or FINOCCHIO, has the base of the lvs. much enlarged and thickened and, when blanched, serves as article of food. Var. **piperìtum,** CAROSELLA, is grown for the young sts. which are eaten.

FOLIACEOUS: leaf-like; said particularly of sepals and calyx-lobes and of bracts that in texture, size or color look like small or large leaves.

FOLLICLE: dry dehiscent pericarp opening only on the front suture.

FONTANÈSIA. *Oleaceæ.* Two Asian deciduous somewhat Ligustrum-like shrubs with opposite entire lvs., small white fls. in narrow leafy panicles in May–June, and fr. a flat winged nutlet.

Fontanesias thrive in any good garden soil. Propagated by seeds, layers, and cuttings of green wood under glass.

califórnica: *F. Fortunei.*

Fórtunei (*F. californica*). To 15 ft.: lvs. lanceolate or ovate-lanceolate, to 4 in. long, shining. China; hardy N.

phillyreoìdes. To 10 ft.: lvs. ovate-lanceolate to oblong, to 3 in. long, grayish-green. Asia Minor; less hardy.

FORCING. Plants are forced when made to grow or bloom outside their normal season, particularly in advance of the season, by some artificial means. The mere imitation of the natural conditions under which any plant grows may not constitute forcing. Growing in greenhouses is not necessarily forcing; it may be only protection. The word forcing has come to be associated with particular crops and sometimes quite independently of its proper restricted meaning; thus we speak of the forcing of tomatoes, cucumbers, melons, bulbs. A forcing-house is only a glass-house: its use determines its title or designation.

FORESTIÈRA (*Adelia*). *Oleaceæ.* American deciduous (seldom evergreen) trees or shrubs with opposite lvs., small yellowish diœcious or imperfect fls. without petals in clusters or racemes before the lvs., and fr. a small black or dark purple drupe with scant flesh. Only *F. acuminata* is hardy North without protection. They thrive best in moist locations. Propagated by seeds and layers.

acuminàta. To 30 ft.: lvs. to 4 in. long, acuminate: fr. ½ in. long. Ill. to Ga. and Tex.

ligustrìna. To 10 ft.: lvs. to 1½ in. long, obtuse: fr. ⅓ in. long. Tenn. to Fla.

neo-mexicàna. To 10 ft.: lvs. to 1½ in. long, acute or obtuse: fr. ⅙ in. long. Tex. to New Mex. and Colo.

FORESTRY. The growing and utilizing of forests, with all the science, craft and commerce consequent thereto. The forest is a crop, making use of land, and is therefore agriculture in its broad sense. In its general relations it is also within the realm of political economy inasmuch as great permanent forests are almost necessarily public domains, and it is directly concerned in the conservation and utilization of natural resources as well as with governmental problems. These domains are to be kept and utilized in the interest of all the people, in consideration with all related questions. Silviculture is the science and practice of raising forests, one of the main departments or components of forestry. Arboriculture (which see) is properly not within the realm of forestry, although popularly confused with it, but rather a department of horticulture. Farm forestry is that smaller application having to do with the raising and using of wood-lots.

FORGET-ME-NOT: *Myosotis.* **Creeping:** *Omphalodes verna.*

FORSÝTHIA. GOLDEN-BELLS. *Oleaceæ.* Deciduous erect or diffuse shrubs of the Old World with opposite, simple or 3-parted lvs., showy yellow fls. deeply 4-parted into oblong corolla-lobes, appearing before the lvs., and fr. a woody caps. with winged seeds.

Forsythias are amongst the showiest spring-blooming shrubs and are hardy North. They are not particular as to soil. Propagated by cuttings of young wood in summer, of ripe wood in fall and winter, by seeds, and the drooping sorts by rooting at the tips.

decípiens: *F. suspensa* var.

europæa. To 6 ft., with erect branches having lamellate pith: lvs. to 3 in. long, entire or with few shallow teeth. Albania.

Fórtunei: *F. suspensa* var.

intermèdia. Hybrid between *F. suspensa* and *F. viridissima:* to 10 ft., with arching or spreading branches having lamellate pith: lvs. to 5 in. long, sometimes 3-parted. Var. **densiflòra,** fls. pale, crowded. Var. **nàna,** low-growing. Var. **primúlina** has pale yellow fls. crowded at base of branches. Var. **spectábilis** has bright yellow fls. more than 1 in. long. Var. **vitellìna,** fls. deep yellow, 1 in. long.

ovàta. Very early: lvs. ovate to broad-ovate, to 2½ in. long, serrate, not lobed: fls. solitary, amber-yellow. Korea.

primúlina: *F. intermedia* var.

Sièboldii: *F. suspensa* var.

spectábilis: *F. intermedia* var.

suspénsa. To 10 ft., with hollow drooping branches: lvs. to 4 in. long, toothed, often 3-parted: fls. golden-yellow. China. Commonly planted. Var. **atrocaùlis** has dark purple branchlets. Var. **aùrea,** lvs. yellow. Var. **decípiens** (*F. decipiens*) has solitary deep yellow fls. Var. **Fórtunei** (*F. Fortunei*), is of more erect habit, often with 3-parted lvs. Var. **Sièboldii** (*F. Sieboldii*) has more slender drooping or trailing branches. Var. **variegàta,** lvs. variegated with yellow.

viridíssima. To 10 ft., with erect branches having lamellate pith: lvs. to 6 in. long, toothed above middle: fls. greenish-yellow. China.—May be distinguished from *F. intermedia* and *F. suspensa* by pith not solid at the nodes. In var. **variegàta** the lvs. are variegated with white. Var. **koreàna** has more spreading branches, larger fls. and is more showy. Korea.

FORTUNÉLLA. Kumquat. *Rutaceæ.* Four known or recognized small evergreen fruit-trees or shrubs native probably in S. E. China, differing from Citrus in few-celled ovary with but 2 ovules in each cell, characteristic hollowed stigma and smaller frs. Grown in the orange belt, but somewhat hardier than the sweet orange particularly when grown on trifoliata (Poncirus) stock: lvs. lanceolate or somewhat broader. The attractive aromatic frs. are used for preserves and may be eaten raw. Kumquats make ornamental tub plants. Full grown plants reach a height of 10 or 12 ft. They hybridize with other citrus fruits. For general culture, consult *Citrus fruits*, page 183.

crassifòlia. Meiwa K. Shrub, with or without spines: lvs. thick and trough-like, petioles narrowly winged: frs. slightly ovoid, to 1½ in. diam., cells 6 or 7; pulp-vescicles oval or ovate.

Hìndsii. Spiny small tree, wild on Hongkong and adjacent mainland, grown somewhat for curiosity: lvs. oval-elliptic, petiole winged: fr. less than 1 in. diam., subglobose, orange-red, with 3 or 4 cells, with few nearly juiceless small pulp-vescicles.

japónica (*Citrus japonica*). Round and Marumi K. Much branched shrub with or without spines: lvs. to 3 in. long, blunt-pointed and relatively broad: fr. round, to about 1¼ in. diam., without rudiments of style, and 5–6 cells.

margarìta. Oval and Nagami K. Shrub or small tree, nearly or quite thornless: lvs. longer than in *F. japonica* and relatively narrower and more pointed: fr. oval or oblong, to 1 in. cross diam., with persistent rudiment of style, cells 4 or 5.

FOSTÈRA. *Stylidiaceæ.* Glabrous perennials, mostly from New Zeal., having erect or decumbent sts. with white fls. on slender peduncles; calyx tubular with 5–6 equal lobes; corolla nearly regular, campanulate: fr. a 1-celled caps. Propagated by seeds and layers.

tenélla. Sts. to 8 in. long, decumbent and rooting at base, branched above: lvs. usually confined to terminal parts of sts., narrowly oblong-obovate, to ⅔ in. long, few and laxly placed, narrowed into short petiole, dark green and veinless above: fls. 1–3, on peduncle to 4 in. long, to ¼ in. across: caps. narrowly clavate.

FOTHERGÍLLA. *Hamamelidaceæ.* Deciduous N. American shrubs with alternate simple coarsely toothed witch-hazel-like lvs., white fls. without petals borne in dense terminal heads or spikes in which the stamens are the conspicuous part, and fr. a beaked caps.

Fothergillas are hardy and thrive in moist soils. Propagated by seeds, by layers which will not root for two years, and *F. Gardenii* by suckers and root-cuttings.

alnifòlia: *F. Gardenii.*

carolìna: *F. Gardenii.*

Gárdenii (*F. alnifolia. F. carolina*). To 3 ft.: lvs. obovate to oblong, base rounded or broadly cuneate, to 2 in. long, pale beneath: fls. before lvs. Va. to Ga.

màjor. To 10 ft.: lvs. to 4 in. long, glaucous and stellate-pubescent beneath: fls. with lvs. Ga.—Differs from *F. monticola* in its more pyramidal and less spreading habit and in its shorter fl.-spikes 1–2 in. long.

montícola. To 6 ft.: lvs. to 4 in. long, light green and sparingly pubescent beneath: fls. with lvs. N. C. to Ala.

parvifòlia. To 2 ft.: lvs. suborbicular to ovate, base often cordate, to 2¼ in. long, gray-pubescent beneath: fls. before lvs. N. C. to Fla.

FOUNTAIN-PLANT: *Russelia equisetiformis.*

FOUQUIÈRIA. *Fouquieriaceæ.* Singular spiny shrubs or trees in Mex., one extending into the desert regions of S. W. U. S. and there planted for hedges. **F. spléndens.** Ocotillo. Coach-Whip. Vine-Cactus. Jacobs-Staff. Shrub of many sts. to 20 ft. with slender rigid spines bearing clusters of small lvs. in their axils which soon fall: fls. scarlet, to 1 in. long, the stamens exserted, in terminal racemes or panicles to 10 in. long: fr. ¾ in. long. For *F. columnaris,* see *Idria.*

FOUQUIERIÀCEÆ. Fouquieria Family. Two genera of spiny trees and shrubs, often leafless, with bisexual fls. having 5 sepals, 5-lobed corolla, 10–17 stamens, superior 3-celled ovary and capsular fr. It has mostly been associated with Tamaricaceæ, but has lately been placed in the sequence near Polemoniaceæ. Fouquieria and Idria are sometimes planted.

FOURCROYA: *Furcræa.*

FOUR-O'CLOCK: *Mirabilis Jalapa.*

FOXGLOVE: *Digitalis.*

FOXTAIL, MEADOW: *Alopecurus pratensis.*

FRAGÀRIA. Strawberry. *Rosaceæ.* Low per. herbs with rooting runners, lvs. of 3 lfts., white or reddish sometimes more or less imperfect fls. in small clusters on radical peduncles, and fr. a berry formed of the fleshy receptacle bearing the seed-like frs. on the surface; a few grown for ornament and the edible fr. For cult. see *Strawberry.*

alpìna: *F. vesca.*

americàna. The American form or var. of *F. vesca*, but apparently not regularly in cult.

califórnica. To 5 in.: lfts. silky-pubescent beneath: fls. ½ in. across: fr. ½ in. across, the achenes in shallow pits. Calif.

chiloénsis. To 8 in.: lfts. thick and glossy, silky beneath: fls. to 1 in. across: fr. ¾ in. across, the achenes in shallow pits. Alaska to Patagonia. Var. **ananássa** comprises most of the common garden strawberries, with larger frs.; hybridization may have modified them.

Daltoniàna. Small hairy or nearly glabrous plant with thread-like runners: lfts. with few teeth: fls. solitary, calyx-lobes toothed: fr. scarlet, nearly 1 in. long and one-half as broad. Himalayas.—Name recently intro. to U. S., but plant not correctly determined.

elàtior: *F. moschata.*

Grayàna: *F. virginiana* var. *illinoensis.*

illinoénsis: *F. virginiana* var.

índica: *Duchesnea indica.*

mexicàna. To 4 in.: lfts. silky beneath: fls. about ⅓ in. across: fr. ⅓ in. across, the achenes superficial. Mex.

moschàta (*F. elatior*). Hautbois S. To 1 ft.: lfts. silky beneath: fls. usually diœcious, standing above foliage: fr. musky, the achenes superficial, hull strongly reflexed. Eu.

vésca (*F. alpina*). To 1 ft.: lfts. slightly silky beneath: fls. ½ in. across: fr. red, or white in var. **álba**, ½ in. across, the achenes superficial. Eu.; nat. in E. N. Amer.—Here belong the races of strawberries known as Alpine, Everbearing and Perpetual.

virginiàna. To 8 in.: lfts. becoming glabrous: fls. to ¾ in. across: pedicels bearing appressed hairs: fr. ½ in. across, the achenes in deep pits. Stout forms with spreading hairs on the pedicels are known as var. **illinoénsis** (*F. illinoensis, F. Grayana*). E. N. Amer.—Supposed to have entered into some of the garden strawberries.

FRAÌLEA. *Cactaceæ.* Small S. American cacti with many low tubercled ribs and small spines: fls. small and often cleistogamous.

cataphrácta (*Echinocactus cataphractus*). St. solitary or sprouting about base, globular; ribs 15, indistinct, tubercles low and flat; spines all radial, 5, yellow to gray, to ¾ in. long: fls. cleistogamous, to 1½ in. long: fr. red, globose; seeds smooth, glossy black. Paraguay.

columbiàna (*Echinocactus columbianus*). Cespitose, sts. globular, to 1¾ in. diam., glossy green; ribs usually 18, indistinct; spines yellow to white, to ¼ in. long, radials 15–20, centrals 2–5: fls. yellow, to 1 in. long. Colombia.

Dádakii. Globular, depressed on top; ribs 12; spines all radial, usually 8, recurved and contorted, brown to white: fls. yellow, to 1 in. long, mostly cleistogamous. Argentina, Uruguay.

gracíllima. Globular to cylindrical, to 4 in. tall and 1½ in. diam.; ribs 12–14; spines white to gray, radials 15–17, curved, centrals usually 2, stiff: fls. red without, pale yellow within, to 1¼ in. long. Paraguay.

Grahliàna. Cespitose, globular, flattened on top, brownish-green; ribs 13, indistinct, shallowly tubercled; spines all radial, usually 9–11, yellow to brown or gray, about ⅛ in. long, curved: fls. pale yellow with red throat, to 1½ in. long: seeds yellowish-brown, puberulent. Paraguay.

pseudopulchérrima: listed name.

pulchérrima (*Echinocactus* and *Malacocarpus pulcherrimus*). Cespitose, globular, to 1 in. diam., dark green; ribs 19–21, indistinct, tubercled; spines pale brown, radials usually 14, reflexed, central 1, straight, sometimes absent: fls. yellow, 1 in. across. Argentina, Paraguay, Uruguay.

pùmila (*Echinocactus pumilus*). Globose, flattened at center, dark green, to 1½ in. diam. and 1 in. tall; ribs 13–15, flat; spines gray to brown, curved, radials 12–14, to ¼ in. long, centrals 1–2, slightly longer: fls. yellow. Argentina, Paraguay.

pygmæa (*Echinocactus pygmæus*). Cespitose, globular, flattened on top, to 1¼ in. diam.; ribs 13–21, tubercled; spines alike, 6–9, bristle-like, twisted and recurved, to nearly ¼ in. long: fls. yellow, to 1 in. long, mostly cleistogamous. Argentina, Uruguay.

Schilinzkyàna (*Echinocactus Schilinzkyanus*). Globular, flattened above, 1 in. across, sometimes forming clumps; ribs 10–13, indistinct; radial spines 12–14, flattened. Paraguay, Argentina.

FRANCISCEA: *Brunfelsia.*

FRANCÒA. *Saxifragaceæ.* Herbaceous perennials from Chile with lyrate lvs. and terminal dense racemes of white or pink fls.; suitable for outdoor planting in mild climates. Propagated by seeds sown in spring in a cool house or frame; also by division.

appendiculàta. To 2½ ft.: fls. pale rose, usually not spotted.

glabràta: *F. ramosa.*

ramòsa (*F. glabrata*). To 3 ft.: infl. pubescent; fls. white, in spikes 2 ft. long and 1 in. thick.—The sprays of fls. are much used for table decoration; incorrectly called Bridal Wreath. Var. **álba** is listed, but may not differ from type. Var. **hýbrida** has larger pure white fls.

sonchifòlia. To 2 ft.: lf.-stalks with broad wings at base: fls. pink marked with darker color.

FRANGIPANI: *Plumeria.*

FRANKÈNIA. *Frankeniaceæ.* Evergreen more or less heath-like per. herbs or subshrubs with small entire lvs. opposite or in 4's, small inconspicuous fls., and capsular frs.; seldom grown under glass and perhaps in the open in mild regions.

capitàta. Branches prostrate or ascending, to 1½ ft., glabrous or hairy: lvs. linear, glabrous with strongly revolute margins: fls. pink to purple. Salt marshes, S. Afr. Var. **lævis** (*F. lævis*), sts. and calyces not hairy.

Jàmesii. Much branched shrub to 2 ft.: lvs. linear, ⅓ in. long, margins revolute: fls. white. Colo., Tex., Mex.

lævis: *F. capitata* var.

pulverulénta. Sts. straggling, to 1½ ft. long: lvs. many, broadly oval to obovate, to ¼ in. long, close together: fls. pink, less than ¼ in. long. S. Eu. to India, S. Afr.

FRANKENIÀCEÆ. Frankenia Family. Herbs or subshrubs of 4 genera in warm countries, with often heath-like lvs., small bisexual fls. having 4–7 sepals and petals, mainly 6 stamens, superior 1-celled ovary, and fr. a caps. inclosed in the calyx. In natural sequence it is placed near Hypericaceæ and Tamaricaceæ. Frankenia may be cult.

FRANKLINIA: *Gordonia alatamaha.*

FRASÈRA. Columbo. *Gentianaceæ.* N. American large stout herbs with opposite or whorled simple and entire lvs. that are mostly basal, and white, yellowish or bluish fls. in panicled clusters on tall single sts.; corolla rotate and 4-parted, style awl-shaped; sometimes transplanted from the wild and usually of simple handling.

carolinénsis. To 7 ft.: lvs. to 6 in. long: fls. yellowish-white spotted with brown-purple, 1 in. across, with fringed glands, in panicles to 2 ft. long. Mich. to Ga. and Mo.

nítida. To 1½ ft.: lvs. to 10 in. long, with narrow white margins: fls. greenish with deeply fringed glands, in cymes ¾ in. across. Ida. to Calif. Var. **albicaùlis** (*Swertia albicaulis, Leucocraspedium albicaule*) is somewhat pubescent.

Párryi (*Swertia Parryi*). To 3 ft.: lvs. to 8 in. long, white-margined: fls. greenish-white, the lobes spotted with black around the yoke-shaped fringed gland, in broad panicles to 1 ft. long. S. Calif.

speciòsa (*Tessaranthium speciosum. Swertia radiata*). To 5 ft.: lvs. to 1 ft. long: fls. greenish-white spotted with purple, with fringed glands, in narrow panicles to 2 ft. long. Ore. to Mont. and Calif.

FRAXINELLA: *Dictamnus albus.*

FRÁXINUS. Ash. *Oleaceæ.* Trees with opposite mostly pinnate lvs., usually deciduous, small not showy bisexual or unisexual fls. in panicles and in some species in early spring before the lvs., and fr. a 1-seeded winged samara; mostly native in the north temp. zone but some of them extending to the tropics. Shade and timber trees are in the genus, and many interesting hort. forms. The following species are hardy N. unless otherwise stated.

Ashes are valuable as street or lawn trees and succeed in good fairly moist soil. They transplant readily. Propagated by seeds which should be stratified and sown the following year. The named sorts are grafted in spring on seedling stocks or budded in summer.

álba: *F. americana.*

americàna (*F. alba. F. novæ-angliæ*). White A. To 120 ft.: lvs. of 5–9 lfts. to 6 in. long, glaucous beneath: fls. diœcious, before the lvs., without petals, the calyx persistent on fr.: fr. linear-oblong, to 2 in. long. N. S. to Fla. and Tex. Var. **ascidiàta** has lfts. somewhat hollow or pitcher-shaped at base. Var. **péndula** has drooping branches. Var. **subcoriàcea** has thick lfts. silvery-white beneath.

angustifòlia. To 75 ft.: lvs. of 7–13 lanceolate lfts. to 3 in. long: fls. before the lvs., without calyx or corolla: fr. oval-oblong, to 1½ in. long. S. Eu., N. Afr., W. Asia; not hardy N. Var. **lentiscifòlia** (*F. lentiscifolia*) has lfts. further apart. Var. **austràlis** (*F. australis*) has lfts. slightly pubescent beneath.

anómala. Single-leaf A. To 20 ft., with slightly winged branchlets: lvs. usually of 1 broad-ovate lft. to 2½ in. long: fls. with the lvs., without petals, the calyx persistent on fr.: fr. oblong, ¾ in. long. Colo. to Calif.; not hardy far N.

arbutifòlia: *F. pennsylvanica.*

atróvirens: *F. excelsior* var. *crispa.*

aucubæfòlia: *F. pennsylvanica* var.

austràlis: *F. angustifolia* var.

Biltmoreàna. To 50 ft.: lvs. of 7–11 lfts. to 6 in. long, pubescent beneath: fls. diœcious, before the lvs., without petals, with calyx persistent in fr.: fr. linear-oblong, to 1½ in. long. N. J. to Ga. and Ala.

Bungeàna. To 15 ft.: lvs. usually of 5 broad-ovate lfts. to 1½ in. long: fls. with or after lvs., with petals: fr. oblong, 1 in. long. China.

califórnica: *F. oregona.*

caroliniàna (*F. platycarpa*). WATER A. To 50 ft.: lvs. of 5–7 lfts. to 5 in. long: fls. diœcious, before the lvs., without petals, the calyx persistent on fr.: fr. oval to oblong, to 2 in. long, winged to base. Swamps, Va. to Fla. and Tex.; not hardy in the N.

chinénsis. To 50 ft.: lvs. of 5–9 lfts. to 4 in. long: fls. with or after lvs., without petals, with calyx: fr. lanceolate, to 2 in. long. China. Var. **rhynchophýlla** (*F. rhynchophylla*) has larger lvs.

cuspidàta. To 20 ft.: lvs. of 7 lfts. to 2½ in. long: fls. fragrant, with or after lvs., with petals united into tube: fr. oblong, 1 in. long. Tex. to Mex.; to be planted only far S.

dipétala. To 15 ft., with 4-sided branchlets: lvs. usually of 5 lfts. to 1¾ in. long: fls. with the lvs., with 2 white petals: fr. oblanceolate, 1 in. long. Calif.; to be planted only in mild climates.

Elónza. Small tree, the branchlets with whitish warts: lvs. of 9–13 lfts. to 3 in. long: fr. oblong. Of uncertain origin.

excélsior. EUROPEAN A. To 140 ft., with black buds: lvs. of 7–11 lfts. to 5 in. long: fls. before lvs., without calyx or corolla: fr. oblong, 1½ in. long. Eu., Asia Minor. A few of the hort. vars. are: **asplenifòlia,** lfts. linear; **aùrea,** branchlets yellow; **aùrea-péndula,** branchlets yellow, drooping; **aùreo-variegàta,** lvs. variegated or edged with yellow; **críspa** (var. *atrovirens*, var. *cucullata*), lfts. small and curled or twisted; **diversifòlia** (var. *simplicifolia laciniata*, *F. monophylla*, *F. heterophylla*), lvs. of 1–3 cut-toothed lfts.; var. **eròsa,** lfts. narrow, jagged or cut-toothed; var. **globòsa** is var. *nana;* **nàna** (var. *globosa*, *F. polemoniifolia*), dwarf, lfts. small; **péndula** (var. *Wentworthii*), branches drooping; **spectábilis,** habit pyramidal; **verrucòsa,** branches warty; **verticillàta** (*F. verticillata*), lvs. clustered.

floribúnda. To 120 ft.: lvs. of 7–9 lfts. to 6 in. long, the rachis slightly winged: fls. with or after lvs., in panicles to 1 ft. long, with corolla: fr. linear, about 1 in. long. Himalayas; adapted only far S.

Gréggii. To 25 ft.: lvs. of 3–7 leathery lfts. to ¾ in. long: fls. before lvs., without corolla, with calyx: fr. oblong, to ⅔ in. long. Tex., N. Mex.; to be planted only far S.

heterophýlla: *F. excelsior* var. *diversifolia.*

lanceolàta: *F. pennsylvanica* var.

lentiscifòlia: *F. angustifolia* var.

longicúspis. To 50 ft.: lvs. of 5–7 lfts. to 4 in. long, the lowest pair much smaller: fls. with or after lvs., with corolla and minute calyx: fr. linear-oblong, 1½ in. long. Japan. Var. **Sieboldiàna** (*F. Sieboldiana*) has slightly smaller lfts. which are pubescent beneath along midrib. Japan, Korea.

mandshùrica. To 100 ft.: lvs. of 9–11 lfts. to 5 in. long, rusty-tomentose at base: fls. diœcious, before the lvs., without calyx or corolla: fr. oblong-lanceolate, to 1½ in. long. N. E. Asia.

Marièsii. To 25 ft.: lvs. usually of 3–5 close lfts. to 3 in. long, pale beneath: fls. with or after the lvs., with corolla and minute calyx: fr. oblanceolate, to 1 in. long, purplish. China; not hardy N.

monophýlla: *F. excelsior* var. *diversifolia.*

nìgra (*F. sambucifolia*). BLACK A. To 75 ft.: lvs. of 7–11 lfts. to 5 in. long, rusty-tomentose at base: fls. diœcious, before the lvs., without calyx or corolla: fr. oblong, to 1½ in. long, winged to base. Newf. to W. Va. and Ark., in low lands.

nòvæ-ángliæ: *F. americana.*

oregòna (*F. californica*). To 75 ft.: lvs. of 5–9 sessile lfts. to 6 in. long, pubescent beneath: fls. diœcious, before the lvs., without petals, with calyx: fr. 2 in. long, winged nearly to base. Wash. to Calif.; not hardy far N.

Órnus (*Ornus europæa*). FLOWERING A. To 60 ft.: lvs. usually of 7 lfts. to 3 in. long: fls. fragrant, with the lvs., with linear white petals and with calyx: fr. linear or lanceolate, 1 in. long S. Eu., W. Asia.

oxyacanthifòlia: *F. xanthoxyloides.*

parvifòlia: *F. rotundifolia.*

Paxiàna. To 60 ft.: lvs. of 7–9 sessile lfts. to 7 in. long: fls. with or after lvs., with corolla and large calyx: fr. linear, 1 in. long. China, Himalayas.

pennsylvánica (*F. pubescens. F. arbutifolia. F. Richardii*). RED A. To 60 ft.: lvs. of 5–9 lfts. to 6 in. long, pubescent beneath: fls. diœcious, before the lvs., without petals, with calyx: fr. to 2½ in. long, winged nearly to base. N. S. to Ga. and Miss. Var. **aucubæfòlia** has lvs. mottled with yellow. Var. **lanceolàta** (*F. lanceolata. F. viridis*). GREEN A. Lfts. narrower, pubescent only on midrib beneath. Me. to Fla. and Tex.

platycárpa: *F. caroliniana.*

platýpoda. To 70 ft.: lvs. of 7–11 sessile lfts. to 4 in. long, petioles enlarged at base: fls. diœcious, before the lvs., without petals, with calyx: fr. oblong, to 2 in. long, winged to base. China.

polemoniifòlia: *F. excelsior* var. *nana.*

potamóphila. To 30 ft.: lvs. of 9–11 lfts. to 2 in. long: fls. before the lvs., without calyx or corolla: fr. oblong, to 2 in. long. Turkestan.

pubéscens: *F. pennsylvanica.*

pubinérvis. Tree: lvs. of 5–11 lfts. to 4 in. long: fls. with lvs., having corolla: fr. oblanceolate, 1½ in. long. Japan.

quadrangùlata. BLUE A. To 80 ft. or more, the branches 4-angled: lvs. of 7–11 lfts. to 5 in. long: fls. bisexual, before the lvs., without calyx or corolla: fr. oblong, to 2 in. long, winged to base. Mich. to Ark.

retùsa. Tender shrub allied to *F. Mariesii*, differing in its stalked lfts. which are reticulated beneath and often dentate: fls. with a large calyx. E. China.

rhynchophýlla: *F. chinensis* var.

Richárdii: *F. pennsylvanica.*

rotundifòlia (*F. parvifolia*). To 15 ft.: lvs. of 7–13 sessile lfts. to 1¼ in. long: fls. before the lvs., without calyx or corolla: fr. oblong, 1¼ in. long. S. Eu., W. Asia; hardy in cent. region. Var. **péndula** has drooping branches.

sambucifòlia: *F. nigra.*

Sieboldiàna: *F. longicuspis* var.

sogdiàna. Small tree: lvs. of 7–11 lfts. to 2½ in. long: fls. before the lvs., without calyx or corolla: fr. oblong, 1½ in. long. Turkestan.

syrìaca. Small tree: lvs. of 3–5 lanceolate lfts. to 4 in. long: fls. before the lvs., without calyx or corolla: fr. obovate, to 1½ in. long. Asia.

texénsis. To 50 ft.: lvs. of usually 5 lfts. to 3 in. long: fls. diœcious, before the lvs., without petals, with calyx: fr. oblong, to 1 in. long. Tex.

Toùmeyi (*F. velutina* var. *Toumeyi*). Medium-sized gray-barked tree with young branchlets usually pubescent as well as under surface of narrow acuminate lfts. New Mex., Ariz., Mex., sometimes planted in its region.

velùtina. To 50 ft.: lvs. of 3–5 lfts. to 1½ in. long, pubescent beneath: fls. diœcious, before the lvs., without petals, with calyx: fr. oblong, ½ in. long. Ariz., New Mex.; not hardy N.

verticillàta: *F. excelsior* var.

víridis: *F. pennsylvanica* var. *lanceolata.*

xanthoxyloìdes (*F. oxyacanthifolia*). Small tree: lvs. of 5–9 lfts. to 1½ in. long, the rachis winged: fls. before the lvs., without petals, with calyx: fr. linear-oblong, to 2 in. long, winged to base. W. Asia; not hardy N.

FREÈSIA. *Iridaceæ.* S. African tender herbs with bulb-like corms, linear basal and st.-lvs., and white or yellow, very fragrant, erect funnelform fls. in raceme-like spikes which are bent at right angles to st.

Freesias are forced under glass for the late winter and early spring bloom, but bulbs do not withstand the previous potting and cold treatment required by hyacinths and tulips. They should be kept cool and moist when growing, and the soil well drained. Bloom may be expected ten or twelve weeks after planting if bulbs are strong. Several bulbs or corms are planted together in pots, pans or boxes. Started in late winter or early spring, they are useful for porch- and window-boxes. After blooming and ripening, gradually dry off the plant, shake out the corms and keep for subsequent planting. Seeds should give blooming corms in second or third year. The offsets reproduce the stock rapidly.

Ármstrongii. Differs from *F. refracta* in having fls. with white tube orange at base and segms. margined with rose-purple.

hýbrida. A hort. group containing many hybrid or variant forms known as "colored freesias," the fls. variously tinted and veined with shades of rose, purple, brown, blue and orange.

Ragionièri. A hybrid race with fragrant fls. in shades of rose, purple, blue, brown, orange.

refrácta. To 1½ ft.: fls. greenish-yellow to bright yellow, to 2 in. long, the segms. unequal. Var. **álba** has white fls. with gradually narrowed tube while the white fls. of var. **xanthospìla** have abruptly narrowed tube. The fls. of var. **Leichtlínii** are pale yellow and abruptly narrowed and of var. **odoràta** bright yellow.

Regìna-Marìa: catalogue name.

spléndens: hort. form with violet fls.

Tubergènii. A hybrid of *F. Armstrongii* and *F. refracta* var. *alba:* fls. rose-lilac with white markings.

FREMÓNTIA (*Fremontodendron*). *Sterculiaceæ.* Two evergreen shrubs with alternate usually palmately lobed lvs., showy yellow fls. without petals, solitary in the axils, and capsular fr. **F. califórnica.** Flannel-Bush. To 10 ft.: lvs. to 1 in. long, densely tomentose beneath: fls. to 2 in. across. Calif. **F. mexicàna** differs in the glands at the base of the calyx not being hairy. S. and Lower Calif.—Fremontias require rather dry soil. They are not hardy N. Propagated by seeds or cuttings of green wood under glass.

FREMONTODENDRON: *Fremontia.*

FREYCINÈTIA. *Pandanaceæ.* Diœcious shrubs climbing or scrambling, largely in Australia and New Zeal., of many species, the sts. rooting: lvs. long-linear and mostly serrate or spinescent, sheathing at base: fls. in terminal spadices: fr. an aggregate oblong mass or cone of woody or somewhat fleshy berry-like bodies. **F. Bánksii** is a tall climber on trees and over rocks, the spinose-serrate lvs. towards ends of branches. New Zeal.

FRIESIA: *Pyrrhocactus umadeave.*

FRINGE-BELL: *Shortia soldanelloides.* **-Tree:** *Chionanthus.*

FRITILLÀRIA. Fritillary. *Liliaceæ.* Bulbous simple-stemmed herbs with alternate or whorled lvs. and nodding bell-shaped often oddly colored fls. solitary or in racemes or umbels, the perianth-segms. distinct; native in north temp. zone.

Most of the species are hardy and of easy cultivation in good garden soil; they are usually early spring-flowering. Most kinds should be lifted and divided every two or three years. Propagated by offsets, rarely by seeds.

agréstis. Stink Bells. To 1½ ft.: lvs. oblanceolate, mostly near base of st.: fls. yellowish-green, to 1¼ in. long, in 3–5-fld. racemes, having disagreeable odor. Calif.

atropurpùrea. To 1½ ft.: lvs. narrow-linear: fls. dull purple somewhat spotted with yellowish-green, to ¾ in. long, in 1–6-fld. racemes. Ore., Calif. to N. D.

biflòra. To 1½ ft.: lvs. oblong-lanceolate: fls. brownish-purple tinged with green, to 1½ in. long, in 1–4-fld. racemes. Calif.

camschatcénsis. To 1½ ft.: lvs. lanceolate: fls. livid wine-purple, 1¼ in. long, in 1–3-fld. racemes. Siberia.

cirrhòsa. To 2 ft.: lvs. linear-lanceolate, the upper with tendrilled tips: fls. yellowish-green checkered with purple, to 2 in. long, 1–2 together. Himalayas.

coccínea: *F. recurva* var.

delphinénsis: *F. tubæformis.*

glaùca. To 8 in.: lvs. oblong-lanceolate, glaucous: fls. purple marked with greenish-yellow, ¾ in. long, in 1–3-fld. racemes. Ore.

imperiàlis. Crown Imperial. To 4 ft., having strong odor: lvs. lanceolate: fls. purplish, brick- or yellow-red, to 2 in. long, borne on curved stalks under a whorl of lvs. at top of st. Persia. Named hort. forms are **fòliis argénteis vittàtis** and **máxima.**—An interesting old-fashioned plant, persisting for years.

japónica. Low: lvs. lanceolate: fls. yellow spotted with brown, drooping, solitary and terminal. Japan.—A doubtful species.

lanceolàta. To 2 ft.: lvs. ovate-lanceolate: fls. dark purple mottled with greenish-yellow, to 1½ in. long, in 1–4-fld. racemes. B. C. to Calif. Var. **flávida** is listed. Var. **grácilis** has smaller fls.

liliàcea. White F. To 1 ft.: lvs. linear to oblanceolate: fls. dull white, ¾ in. long, fragrant, in 1–5-fld. racemes. Calif.

meleàgris. Checkered-Lily. Snakes-Head. To 1½ ft.: lvs. linear to oblanceolate: fls. checkered and veined with purplish or maroon, to 3 in. across, in 1–3-fld. racemes. Eu., Asia. Var. **álba** has white fls. and **purpùrea** purplish.

montàna: *F. nigra.*

multiflòra (*F. parviflora*). To 2½ ft.: lvs. linear or linear-lanceolate: fls. purplish or greenish, ½ in. long, in long racemes. Calif.

nìgra (*F. montana. F. tenella*). To 1 ft.: lvs. linear: fls. purple outside or yellowish-green spotted with purple, inside yellowish spotted purple, 1 in. long, solitary or in pairs. S. E. Eu.

pallidiflòra. To 15 in.: lvs. oblong, the upper lanceolate: fls. yellow, checkered inside, 1½ in. long, in 1–6-fld. racemes. Siberia.

parviflòra: *F. multiflora.*

pluriflòra. Pink F. Adobe-Lily. To 1 ft.: lvs. oblong-lanceolate: fls. pink-purple, to 1¼ in. long, in 4–12-fld. racemes. Calif.

pùdica (*Ochrocodon pudicus*). Yellow F. To 9 in.: lvs. narrowly oblanceolate: fls. yellow or orange tinged with purple, ¾ in. long, in 1–3-fld. racemes. B. C. to Calif. and N. Mex.

Púrdyi. To 16 in.: basal lvs. ovate, upper linear: fls. white mottled with purple, to 1 in. long, 1–2 together. Calif.

pyrenàica. To 1½ ft.: lvs. linear, glaucous: fls. dark purple spotted with green, usually solitary. Pyrenees.

recúrva. Scarlet F. To 2½ ft.: lvs. linear to linear-lanceolate: fls. scarlet checkered with yellow, to 1½ in. long, in 3–6-fld. racemes. S. Ore. to Calif. Var. **coccínea** has more brilliantly scarlet fls.

Róylei. To 2 ft.: lvs. in whorls of 3–6, linear-lanceolate, to 4 in. long, suberect: fls. greenish-yellow netted dull purple, solitary or few, campanulate, to 2 in. long. Himalayas.

ruthénica. To 2 ft.: lvs. linear-lanceolate, to 20 in number: fls. brilliant purple, indistinctly checkered. Caucasus.

serópsis: listed name.

Stràcheyi: *Nomocharis nana.*

tenélla: *F. nigra*

tubæfórmis (*F. delphinensis*). To 1 ft.: lvs. oblanceolate to linear: fls. purple spotted and checkered with yellow, often solitary. Alps.

verticillàta. To 1½ ft.: lvs. ovate: fls. white or yellow, dotted at base, in 1–5-fld. racemes. Altai Mts. Var. **Thúnbergii** differs in technical fl. characters.

FRŒLÍCHIA. *Amaranthaceæ.* American ann. or bien. herbs, woolly or silky, with opposite lvs. and small fls. in dense spikes borne in panicles; of little ornamental value but may be listed.

floridàna. Ann. to 6 ft.: lvs. few, linear, to 5 in. long: spikes to 2½ in. long. Ga., Fla.

FROGS-BIT: *Hydrocharis Morsus-ranæ.*

FROND: leaf of fern, and frequently applied to palms and similar plants; sometimes used in the sense of foliage.

FRUIT: the ripened pericarp or pericarps with the adnate parts; the seed-bearing organ or body. In horticultural usage, a fruit is an edible body or product developed from a flower, independently of its morphology, sometimes with other parts associated with the seed-bearing organ.

FÙCHSIA. *Onagraceæ.* Shrubs and trees native in Mex. to S. Amer. and New Zeal., but usually treated under glass essentially as herbs, with simple lvs., usually showy hanging fls. in shades of rose, red and purple, sometimes white, exserted stamens and pistil, and fr. a berry.

Fuchsias are grown in the cool greenhouse and often bedded out in summer, and in mild climates they are outdoor subjects. They are sometimes trained to large pyramids with a central stem; and when grown permanently in the open they are useful for covering walls and fences. For window-garden and conservatory use in pots new plants are commonly started each year. Propagated by cuttings of soft green wood in pots or boxes or on benches. If plants are to be kept over winter, the branches should be cut back after blooming.

arboréscens (*F. syringæflora*). To 18 ft.: lvs. lanceolate-oblong, to 8 in. long: fls. pink or purplish, ½ in. long, in erect terminal panicles. Mex.

bolivìana. To 10 ft., the branches becoming drooping: lvs. elliptic-ovate, large, pubescent: fls. to 3 in. long, sepals pale rose, petals rich rose, in long drooping corymbs. Bolivia.

cárnea: listed name.

coccínea. Lvs. narrow-ovate, about 2 in. long, pointed, dentate, with very short hairy petioles, twigs also hairy:

fls. 1–3 in the axils, the narrow pointed sepals scarlet, petals purplish, rolled and much shorter. Probably Brazil.—The name *coccinea* may be applied to forms of *F. magellanica*.

Colensòi. Shrub with long straggling branches: lvs. ovate, to 2 in. long: fls. solitary, drooping, about 1 in. long, petals small. New Zeal.

cónica: *F. magellanica* var.

corállina: hort. form.

cordifòlia. Loose shrub: lvs. heart-shaped, with reddish midribs and petioles, pubescent: fls. with dull red tube, green sepals and yellow petals. Mex.

corymbiflòra. To 6 ft., requiring support: lvs. ovate-oblong, large: fls. deep red, to 4 in. long, in long drooping corymbs. Peru. Var. **álba** is listed.

excorticàta. Tree to 40 ft.: lvs. ovate-lanceolate, to 5 in. long: fls. to 1¼ in. long, petals small. New Zeal.

fúlgens. To 4 ft.: lvs. broadly ovate, to 7 in. long: fls. red, to 3 in. long, in short racemes. Mex.

globòsa: *F. magellanica* var.

grácilis: *F. magellanica* var.

hýbrida (*F. speciosa*). Lvs. ovate, to 4 in. long: fls. with crimson calyx and purple, rose or white petals, sometimes double, to 3 in. long, stamens long-exserted. Various cultigens; probably of hybrid derivation from forms of *F. magellanica* and *F. fulgens*; common in conservatories and windows.

lycioìdes: *F. rosea*.

macrostémma: *F. magellanica*.

magellánica (*F. macrostemma*). To 20 ft. when trained on walls but usually a low shrub, thinly pubescent or glabrous: lvs. ovate-lanceolate, to 2 in. long, sinuate-dentate: fls. with red calyx and blue petals, 1–2 in. long, the stamens long-exserted. Peru to Tierra del Fuego. Var. **cónica** (*F. conica*) has ovate lvs., the scarlet calyx-tube widest at base, and dark purple petals. Var. **globòsa** has ovate lvs. and small red-purple fls. with nearly globose buds. Var. **grácilis** is a slender graceful form with scarlet calyx and purple petals. Var. **Ríccartonii** grows to 10 ft. high and is very floriferous.—This species, in various forms, is much planted in the open in Calif.

microphýlla. To 6 ft.: lvs. ovate or round, less than 1 in. long: fls. deep red, ½ in. long, drooping. Mex., Cent. Amer.

mínima: a listed name.

monstròsa: listed name.

parviflòra. Shrubby: lvs. small, the obtuse mostly entire blades oval and less than 1 in. long on longer petioles: fls. less than ½ in. long, pink and purple, solitary, sepals reflexed. Mex.

procúmbens. Trailing F. Sts. prostrate and trailing: lvs. round-ovate, ¾ in. long: fls. pale orange with purple calyx-lobes, petals lacking, to ¾ in. long, erect and solitary. New Zeal.

pùmila: probably one of the many forms of *F. magellanica*.

recúrva: listed name.

refléxa: listed name.

Ríccartonii: *F. magellanica* var.

ròsea (*F. lycioides*). Shrub with horizontal branches: lvs. oval to lanceolate, more or less acute, entire, about 1 in. or less long: fls. small, axillary, sepals becoming reflexed, the shorter corolla purple-violet. Chile.

serratifòlia. Tall shrub: lvs. oblong to lanceolate, toothed, pale beneath with reddish midvein and petioles: fls. with calyx red at base becoming pink and white at tips. Peru.

speciòsa: *F. hybrida*.

spléndens. Lvs. broadly ovate, to 5 in. long: fls. scarlet with small greenish petals, to 1½ in. long, the stamens long-exserted. Mex., Guatemala.

syringæflòra: *F. arborescens*.

tenélla: hort. form of *F. magellanica*.

Thómpsonii: form of *F. magellanica* var. *gracilis*.

thymifòlia. To 3 ft.: lvs. ovate-lanceolate or orbicular, to 2 in. long: fls. purplish-red, ½ in. long. Mex.

triphýlla. To 1½ ft.: lvs. oblanceolate, small: fls. cinnabar-red, 1½ in. long, in terminal racemes. W. Indies. Var. **purpuráscens** is listed.

virgàta: name of uncertain application.

FUCHSIA, CALIFORNIA: *Zauschneria californica*. **Cape:** *Phygelius capensis*.

FUGACIOUS: falling or withering away very early.

FUGOSIA: *Cienfuegosia*.

FUMÀNA. *Cistaceæ.* Low shrubs of the Old World, distinguished from Helianthemum in the presence of sterile outer stamens and the anatropous ovules. One species, **F. nudifòlia** (*F.* and *Helianthemum procumbens*), is cult. Low subshrub, sts. procumbent: lvs. linear, to 1½ in. long, mucronate: fls. yellow, in 3–4-fld. terminal racemes. Cent. Eu.

FUMÀRIA. Fumitory. *Fumariaceæ.* Ann. and bien. herbs with soft finely dissected lvs. and small 1-spurred fls. in racemes; occasionally grown for medicinal uses. Propagated by seeds.

officinàlis. To 3 ft. producing small underground tuber: fls. purplish tipped with crimson. Eu.; nat. in N. Amer.

FUMARIÀCEÆ. Fumitory Family. Five genera of herbs native in the north temp. zone and S. Afr., allied to the Poppy family, having dissected thin or flaccid lvs., irregular bisexual fls. with 2 scale-like sepals, 4 petals of which the 2 inner are crested and one or both of the outer spurred, 6 stamens, superior 1-celled ovary, and capsular frs. The genera Adlumia, Corydalis, Dicentra are cult. to some extent for ornament, and one Fumaria is officinal and cult..

FUMITORY: *Fumaria*. **Climbing:** *Adlumia fungosa*.

FUNASTRUM: *Philibertia clausa*.

FUNKIA: *Hosta*.

FUNNELFORM: with tube gradually widening upward and passing insensibly into the limb like a trumpet, as in many flowers of Convolvulus; infundibuliform.

FUNTÙMIA. *Apocynaceæ.* A small genus of large trop. African trees. **F. elástica** is intro. in semi-tropic regions as a rubber plant: to 100 ft. in its native places: lvs. opposite, long-oblong, to 7 or 8 in., abruptly acuminate, entire: fls. white or yellowish, in dense clusters: pods woody, 4 in. or more long; seeds with long hairs on an extended beak.

FURCRÆA (*Fourcroya*). *Amaryllidaceæ.* Succulent plants native in the warm parts of Amer., having lvs. in basal rosettes and whitish or greenish fls. in terminal panicles on tall scapes, the perianth-segms. slightly united at base; they usually bloom only once and then die. Bulblets are commonly borne in the fl.-clusters. Cult. as for *Agave*, from which the Furcræas differ in the rotate whitish fls. rather than funnelform and colored and in character of stamens; propagated by bulblets.

altíssima: *F. inermis*.

Bedinghaùsii. Trunk to 3 ft.: lvs. to 2 ft. long and 3 in. wide, rough-margined; infl. to 15 ft.; fls. 1½ in. long. Mex.

gigantèa. Nearly trunkless: lvs. to 8 ft. long and 8 in. wide, with few distant prickles: infl. to 25 ft.; fls. 1½ in. long. Brazil. Var. **mèdio-pícta** (*F. Watsoniana*) is unarmed and is variegated with cream-color.

inérmis (*F. altissima*). Trunk very short: lvs. to 3 ft. long and 3 in. broad, nearly entire: infl. to 10 ft. high; fls. 1 in. long. Trop. Amer.

Líndenii: *F. Selloa* var. *marginata*.

pubéscens. Nearly trunkless: lvs. to 5 ft. long and 3 in. broad, toothed: infl. to 20 ft. high; fls. 2¼ in. long. Mex.

Roézlii. Trunk to 6 ft.: lvs. to 4 ft. long and 5 in. wide, rough-margined: infl. to 15 ft.; fls. 1¾ in. long. Mex.

Sellòa. Trunk to 5 ft.: lvs. to 4 ft. long and 3 in. wide, with curved teeth: infl. to 20 ft. high; fls. 1½ in. long. Colombia. Var. **marginàta** (*F. Lindenii*) has lvs. margined with white or yellow.

Watsoniàna: *F. gigantea* var. *medio-picta*.

FURROWED: with longitudinal channels or grooves.

FURZE: *Ulex*.

FUSIFORM: spindle-shaped; narrowed both ways from a prominent or swollen middle, as dahlia roots.

FUSTIC: *Chlorophora tinctoria*.

G

GACHIPAES: *Guilielma Gasipaës.*

GÀGEA. *Liliaceæ.* Small bulbous herbs of Eu., N. Afr. and Asia, with usually 1 developed lf. to a bulb, the others forming bracts under the umbel of mostly yellow fls., the perianth-segms. distinct. Cult. as for *Ornithogalum.*

lùtea: *G. silvatica.*

silvática (*G. lutea*). To 1 ft.: lf. to 1½ ft. long and ⅓ in. wide: fls. yellow, ½ in. long, in umbels of 1–7, in spring. Eu. to Himalayas.

GAILLÁRDIA. *Compositæ.* American herbaceous annuals, biennials and perennials with alternate and basal lvs., toothed and spotted or dotted, and large showy solitary heads, the rays yellow and red, 3-toothed, the disk purple; pappus of awned scales.

Gaillardias grow best in light open well-drained soil and full sunlight, and are favorites for cut-flowers. The annual species are propagated by seed sown in the open where the plants are to stand or started earlier under glass; the perennials by seeds, by cuttings in August or September, or by division; sometimes root-cuttings are employed in early spring.

amblỳodon. Ann. to 2 ft., hairy: lvs. oblong, to 3 in. long, entire or nearly so, sessile and auriculate: heads 2 in. across, rays brown-red throughout, lobes of disk-fls. obtuse. Tex.

aristàta (*G. grandiflora. G. lutea. G. maxima. G. perennis*). Per. to 3 ft., hairy: lvs. lanceolate to spatulate, to 5 in. long, entire or pinnately cut: heads to 4 in. across, rays yellow, lobes of disk-fls. acuminate. Minn. to B. C. and New Mex. Vars. **compácta, máxima, oculàta** and **supérba** are listed.

Drúmmondii: *G. pulchella.*

grandiflòra: *G. aristata.*

kermesìna spléndens: probably a form of *G. aristata.*

lanceolàta. Ann. or bien. to 2½ ft., hairy: lvs. spatulate to linear, to 3½ in. long, acute, entire or nearly so: heads to 2½ in. across, ray-fls. yellow, disk purplish-brown, the lobes long-acuminate. S. C. to Fla. west to Kans. and Tex.

Lorenziàna. A form of *G. pulchella* var. *picta* with ray-fls. and sometimes disk-fls. enlarged and tubular.

lùtea: *G. aristata.*

máxima: *G. aristata.*

perénnis: *G. aristata.*

pícta: *G. pulchella* var.

pinnatífida. Per. to 15 in., hairy: lvs. spatulate-oblong, to 3 in. long, pinnatifid, segms. linear: heads to 1¾ in. across, ray-fls. yellow, disk yellow, lobes long-aristate. Tex. to Utah and Ariz.

portòla: a listed name.

pulchélla (*G. Drummondii*). Ann. to 20 in., soft-pubescent: lvs. oblong to spatulate, to 4 in. long, entire or cut: heads 2 in. across, rays yellow with rose-purple at base. Kans. and La. to Ariz. Var. **pícta** (*G. picta*) has large heads in different shades.

regàlis: a listed name.

sanguínea: a listed name.

GALACTÌTES. *Compositæ.* Thistle-like herbs native in the Medit. region, with purple heads in corymbs or panicles, the marginal fls. sterile and ray-like; pappus plumose. One species is sometimes grown for ornament. Propagated by seeds.

tomentòsa. Ann. or bien. to 2 ft., sts. white-tomentose: lvs. pinnately lobed or parted into very spiny lobes, green and more or less white-marked above, white-tomentose underneath: heads to 1½ in. across, bracts of involucre spiny-tipped.

GALÁNTHUS. Snowdrop. *Amaryllidaceæ.* Spring-blooming bulbs with 2 or 3 basal lvs. and solitary white fls., the perianth-segms. distinct, the 3 inner ones overlapping and appearing tubular and thus differing from the snowflake or Leucojum. Hardy and of easy cult. in usual garden soil. Bulbs should be planted in autumn 3–4 in. deep. Other species than the following are offered abroad.

byzantìnus. Lvs. broad, glaucous, with recurved margins: fls. with oblong white outer segms. ¾ in. long, inner segms. green. S. E. Eu.

Élwesii. Giant S. To 1 ft. and more: lvs. 8 in. long and ¾ in. across, very glaucous: fls. 1¼ in. long, the inner segms. green on sinuses and lower half. Asia Minor.

Ikàriæ. Lvs. strap-shaped, to 1 in. across, bright green: fls. green on half of outside of inner segms., white within, lobes of inner segms. square, crisp and longer than stamens. Isl. of Nikaria.

nivàlis. Common S. To 1 ft.: lvs. to 9 in. long and ¼ in. wide: fls. 1 in. long, the inner segms. green on sinuses. Eu. to Caucasus. Hort. forms offered are **flòre-plèno** with double fls., **símplex** with single, **máximus,** large-fld., **Schárlokii,** with green spot at tip of outer segms., **víride-àpice,** petals tipped with green.

plicàtus. Lvs. to 1 ft. long and 1 in. wide, plaited, margins recurved, glaucous: fls. to 1 in. long, inner segms. green with white edge. Crimea.

GALATELLA: *Aster dracunculoides.*

GÀLAX. *Diapensiaceæ.* One stemless evergreen per. herb native from Va. to Ga., **G. aphýlla.** Lvs. basal and tufted, heart-shaped to nearly orbicular, to 5 in. across, stiff, shining and turning a beautiful bronze color in autumn: fls. small, white, in spike-like racemes on scapes to 2½ ft. high. The lvs. are extensively collected for use in floral decorations, and the plant makes good ground-cover. Sometimes grown in rock-gardens and colonized in woods; hardy well N. Propagated by division.

GALAX, FRINGED: *Shortia soldanelloides.*

GALE, SWEET: *Myrica Gale.*

GALEÁNDRA. *Orchidaceæ.* Trop. American epiphytes or terrestrials with short leafy sts. thickened into a more or less elongate pseudobulb and loose terminal racemes; sepals and petals similar; lip funnel-shaped and spurred. For cultural directions, see *Orchids.*

lacústris. To about 1 ft. high: lvs. about 6 in. long: racemes pendulous, 2–6-fld.; sepals and petals whitish-green and light wine-purple; lip white with purple spots in front and yellow spur to 1 in. long. Jan.–June. Brazil.

GALÈGA. *Leguminosæ.* Per. herbs with pinnate lvs., blue or white papilionaceous fls. in racemes, and cylindrical pods; grown for ornament. Seeds may be sown in spring where plants are to stand, or roots may be divided.

bícolor. To 3 ft.: lfts. oblong-linear: fls. with deep blue standard and bluish-white wings and keel. W. Asia.

Hártlandii: *G. officinalis* var.

Heldreìchii: listed name.

officinàlis. Goats-Rue. To 3 ft.: lfts. oblong, stipules lanceolate: fls. purplish-blue. Eu., W. Asia; hardy N. Var. **álba** or **albiflòra** has white fls., **cárnea** rose-colored double fls., and **Hártlandii** has variegated lvs. when young and lilac fls. Vars. **nàna, nàna ròseo-lilácina** and **ròsea** are listed.

orientàlis. To 4 ft.: lfts. ovate, stipules ovate: fls. purplish-blue, nodding. Caucasus.

pérsica: a confused name applied to a white-fld. form; possibly *G. officinalis.*

GALÈOLA. *Orchidaceæ.* Leafless terrestrial branching and climbing orchids native in Asia, Australia and Malaya, with fls. in terminal panicles or racemes; one species has been offered in the trade.

Lindleyàna (*Cyrtosia Lindleyana*). Sts. stout, to 10 ft. high, strict: fls. bright yellow with red blotch on lip, about 1½ in. across, in loose panicles. Himalayas, Sumatra.

GALEÓPSIS. *Labiatæ.* Small genus of annuals of temperate regions allied to Lamium and Stachys and characterized by anther-cells opening by a transverse slit bordered with hairs: adapted to wild-garden.

ochroleùca. To 10 in. with spreading almost decumbent sts. densely covered with soft and somewhat silky hairs: lvs. narrowly ovate to lanceolate, coarsely toothed: fls. yellow, to 1 in. long, in dense whorls. July–Sept. Eu., where treated as a weed of cult. and waste places.

GALEORCHIS: *Orchis spectabilis.*

GALINGALE: *Cyperus.*

GÀLIUM. Bedstraw. *Rubiaceæ.* Slender mostly weak herbs with usually square sts., whorled sessile lvs. and very small deeply 4-parted wheel-shaped fls. in panicles; a few species sometimes grown in rock-gardens, and as cut-flowers to give a filmy effect in bouquets. Propagated by seeds and division; of ordinary cultural requirements.

aristàtum (*G. Mollugo* of hort., at least in part). Strong per. to 3 ft. and more, making clumps, sts. 4-angled: lvs. narrow, whorled, to 1½ in. long: fls. numerous, very small, white: fr. glabrous. Eu.—One of the plants known as Babys-Breath, and common in gardens.

atropurpùreum: hort. form with purple fls.

aùreum: *G. firmum.*

boreàle. Northern B. Per. to 3 ft., stoloniferous: lvs. in 4's, lanceolate, to 1½ in. long: fls. white: fr. somewhat hispid. N. N. Amer.

fírmum (*G. aureum*). Per., erect to 3½ ft.: lvs. linear-oblanceolate, in whorls of 6 or 8, mucronate: fls. deep yellow, in loose panicles, corolla-lobes long-cuspidate: fr. glabrous. E. Eu.

longifòlium (*Asperula longifolia*). Glabrous per., st. terete: lvs. linear-lanceolate, in whorls of 6–8, acute, mucronate, 1-nerved: fls. white, in lax panicles: fr. glabrous. Cent. Eu.

marítimum. Per. to 2½ ft., hairy: lvs. in 6–8's, linear-oblong or lanceolate, revolute at margins: fls. red, to ⅛ in. across, the axillary cymes forming a large panicle. S. Eu.

Mollùgo. White B. False Babys-Breath. Per. to 3 ft.: lvs. in 8's or 6's, oblanceolate to linear, to 1 in. long, bristle-tipped: fls. white. Eu.; nat. in N. Amer.—Often confused with *Gypsophila paniculata*, although very different; see *G. aristatum.*

officinàle: unidentified trade name.

purpùreum. Per. to 1½ ft.: lvs. in 8–10's, linear, glabrous, acute to mucronate: fls. red. Eu.

rùbrum. Per. to 1½ ft.: lvs. mostly in 6's, linear-lanceolate, bristle-tipped: fls. dull red, to ⅛ in. across: fr. glabrous. S. Eu. Var. **màjor** is listed.

vèrum. Yellow B. Per. to 3 ft., sts. often decumbent: lvs. in 8's or 6's, linear, to 1 in. long, bristle-tipped: fls. yellow: fr. smooth. Eu.; nat. in N. Amer.

GALPHIMIA: *Thryallis.*

GALPINSIA: *Œnothera lavandulæfolia.*

GALTÒNIA. *Liliaceæ.* S. African bulbous herbs with basal lvs. and white or greenish fls. in loose racemes terminating a tall scape, the perianth-segms. partially united.

Galtonias succeed in rich moist soil and in northern regions should be heavily mulched in winter. Propagated by offsets or by seeds.

cándicans (*Hyacinthus candicans*). Giant Summer-Hyacinth. To 4 ft.: lvs. to 3 ft. long and 2 in. across: fls. white, fragrant, to 1½ in. long, in summer or autumn.

prínceps (*Hyacinthus princeps*). Similar to *G. candicans* but with shorter racemes and fewer fls. tinged green outside.

GALVÈZIA. *Scrophulariaceæ.* Shrubs with lvs. opposite or in 3's and corolla with palate more or less closing throat, saccate, gibbous or spurred at base: plants from Peru and Ecuador and from the Calif. region, allied to Antirrhinum.

speciòsa (*Antirrhinum speciosum*). Evergreen shrub to 7 ft., glabrous or pubescent: lvs. in 3's, ovate, entire, to 1½ in. long: fls. scarlet, 1 in. long, saccate at base, in terminal infl. Isls. off Calif., and planted in those parts.

GAMÓLEPIS. *Compositæ.* S. African small shrubs or herbs with alternate lvs., mostly pinnately cut, and yellow solitary heads of ray- and disk-fls.; pappus none. One species is grown for the fls., sometimes employed in edgings. Propagated by seeds.

Tagètes. Glabrous ann. to 1 ft., very floriferous: lvs. to 1½ in. long, pinnately parted into linear segms.: heads bright yellow or orange, ¾ in. across.

GAMOPETALOUS: corolla of one piece, as in morning-glory and snapdragon; petals united.

GARBANZO: *Cicer arietinum.*

GARBÈRIA. *Compositæ.* One branching shrub to 6 ft., native in Fla. and sometimes used in ornamental plantings. **G. fruticòsa** (*Liatris fruticosa*). Lvs. alternate, spatulate or obovate, about 1 in. long, leathery, pale: heads pale purple or pink, about ½ in. long, in dense cymes, of disk-fls.; pappus of bristles.

GARCÍNIA. *Guttiferæ.* Many species of trees native in the tropics of the Old World, with opposite simple usually thick lvs., polygamous fls., and fr. a hard berry pulpy within; one species is grown for its edible fr. and the juice of others yields the gamboge of commerce; a number of the species give promise as pomological plants for occidental regions.

Mangosteens require a tropical climate and a moist but well-drained soil. Propagated by seeds which should be sown in pots and the seedlings shaded and grown to about 2 feet high before transplanting. As mangosteens root slowly, it is best to inarch on roots of related species of Garcinia. Budding may also be practiced.

Mangostàna. Mangosteen. To 30 ft.: lvs. leathery, glossy, with many cross veins, to 10 in. long: bisexual fls. rose-pink, 2 in. across: fr. reddish-purple, 2–3 in. across, having 5–7 white crimson-veined segms. resembling an orange. Malay region.—Highly prized where it can be grown but it is not yet much planted in American tropics; within the continental U. S., grown only under protection for its general interest. The fruit is highly desirable.

GARDEN. In its historical significance a garden is a plant-growing area of small or limited dimensions, usually inclosed, connected with a residence or having relationships with the family. Ornamental subjects, fruits and vegetables for household use, plantings constituting part of the setting for a home or building, are the essential components of it; and gardening is the rearing, establishing and maintenance of the plants and care of the area devoted to them. In modern time, however, the word garden has taken on an expanded meaning, involving much larger areas and commercial undertakings, and the older more restricted unit is often called the home garden. The kinds of plants or crops now constitute the main distinction between commercial gardening and agriculture, and there is no clear line of demarcation; yet one ordinarily and properly thinks of a home and a pleasure-ground, personal satisfactions, and a particular kind of skilled training, when employing the words garden, gardener, gardening. See *Horticulture, Landscape-Gardening.*

The home garden should be useful in the degree to which it expresses the sentiments of its maker or proprietor; a garden planned without regard to personality may not fulfill the requisite. To accomplish essential results the garden-maker must be well prepared to meet the requirements of the plants and to defend them against injury, insect and disease; to this end he must be informed by the latest bulletins and books on the subject.

GARDÈNIA. *Rubiaceæ.* Shrubs or small trees with lvs. opposite or in 3's and large yellow or white fls. solitary or in corymbs, with salverform or tubular corolla and 5–11-lobed limb; native in warm regions of eastern hemisphere.

Gardenias were formerly very popular greenhouse specimens and are now grown indoors for cut-flowers and out-of-doors in warm climates. They require a warm close house with a night temperature of about 65°. Buds should be kept pinched off until late in September when they are allowed to set, and will produce bloom for midwinter. Propagated by cuttings containing three or four buds and kept over bottom heat. Frequent syringing is employed.

flórida: *G. jasminoides.*

Fórtunei: *G. jasminoides* var. *Fortuniana.*

grandiflòra. Tree: lvs. lanceolate, shining: fls. white, large, fragrant, 6-parted: fr. oblong. Cochin-China.—The plant cult. under this name is probably *G. jasminoides.*

jasminoìdes (*G. florida. G. radicans. Warneria* or *Varneria augusta*). Cape-Jasmine. Evergreen shrub to 6 ft.: lvs. lanceolate or obovate, to 4 in. long, thick: fls. waxy-white, to 3 in. across, often double, fragrant: fr. ovate. China. Var. **Fortuniàna** (*G. Fortunei*) has larger fls. Var. **prostràta** is listed as a low form.

radìcans: *G. jasminoides.*

strícta nàna: listed as a very free-flowering form of *G. jasminoides.*

Thunbérgia. To 10 ft.: lvs. elliptic, to 6 in. long: fls. white, fragrant, 3–4 in. across and long-tubed, calyx spathe-like: fr. ovoid, woody, crowned with calyx, 2 in. or more long. S. Afr.

urcellifórmis. Shrub, branches tawny-puberulous: lvs. elliptical-cuneate, to 5 in. long, thin: fls. white, solitary, corolla campanulate, terminal on short branches in forks of longer ones. N. trop. Afr.

Veìtchii: hort. name for a form of *G. jasminoides.*

GARDOQUIA BETONICOIDES: *Brittonastrum mexicanum.*

GARLAND-FLOWER: *Hedychium coronarium.*

GARLIC (*Allium sativum*). Rather small onion-like plant but with flat leaves and a thinly covered bulb that breaks up into separable parts or "cloves." The plant is native in southern Europe. For relationships, see *Onion.*

The bulbs are used in cookery. They are often seen in the stores in long braids, held together by their dry tops. The crop grown in the United States is put up for market mainly in 50- or 100-pound mesh bags. Propagated by the cloves or bulblets, which are planted in early spring in any good garden land. Seed is not available, as it is rarely produced.

GARLIC, FALSE: *Nothoscordum.* **Giant:** *Allium Scorodoprasum.* **Wild:** *Allium canadense.*

GARRAMBULLA: *Myrtillocactus geometrizans.*

GÁRRYA. Silk-tassel Bush. The only genus of *Garryaceæ.* Evergreen shrubs native in W. N. Amer., having opposite entire lvs., unisexual fls. without petals borne in catkin-like racemes, and fr. a dry berry-like body.

Garryas are grown for ornament but not hardy North. They do best in sunny sheltered positions. Propagated by cuttings of half-ripened wood, by layers, and by seeds.

ellíptica. To 8 ft. and more: lvs. elliptic, to 3 in. long, leathery, densely woolly beneath, becoming glabrous and shining above, wavy-margined: staminate catkins to 8 in. long; pistillate spikes dense, to 4 in. long. Ore. to Calif.

Frèmontii. To 7 ft.: lvs. to 2¼ in. long, elliptical, acute to obtuse, usually entire, glabrous above and somewhat pubescent below at maturity: fr. ovoid, dark purple. Wash. to Calif.

laurifòlia (*G. macrophylla*). To 20 ft., shrub or tree-like, branchlets pubescent: lvs. oblong or narrower, to 6 in. long, glabrous or soon becoming so, mostly obtuse: lower bracts resembling the lvs. Mex.

macrophýlla: *G. laurifolia.*

Thurétii. Hybrid between *G. elliptica* and *G. Fadyenii* of the W. Indies: lvs. long and narrow, to 4 in.: pistillate spikes slender.

GAS-PLANT: *Dictamnus albus.*

GASTERALOE: *Gastrolea.*

GASTÈRIA. *Liliaceæ.* S. African succulents, stemless or nearly so, with long 2-ranked thick lvs. crowded in rosettes and red or rose fls. in loose racemes. For cult. see *Succulents;* grown as fanciers plants.

acinacifòlia. Lvs. to 14 in. long and 2 in. wide, strongly acuminate, dark green with many small greenish-white spots: infl. 4 ft. high; fls. to 2 in. long. Var. **nìtens** (*G. nitens*). Lvs. to 18 in. long, less acuminate, very smooth, light green with many confluent spots.

angulàta. Lvs. to 10 in. long and 2 in. wide, the edges angularly doubled, with small white dots: infl. 3 ft. high.

Bowieàna: *G. picta.*

brachyphýlla: listed name.

brevifòlia. Lvs. to 4 in. long and 2 in. wide, very thick with small white spots: infl. 2 ft. high; fls. ¾ in. long.

cæspitòsa: listed name of unknown botanical standing.

carinàta. Lvs. 5–6 in. long, to 2 in. wide at base, narrowed to horny spine at apex, dull green, rough with many raised white scattered papillæ, margin and keel strongly papillose: infl. to 3 ft. high; fls. 1 in. long.

cheilophýlla. Lvs. to 1 ft. long and 1½ in. wide, with many confluent white spots and tip with white horny margin, the rosettes much twisted.

colubrìna. Lvs. to 14 in. long and 1¼ in. wide, bright green or purple with small whitish spots: infl. to 4 ft.; fls. ¾ in. long.

dícta. Lvs. to 5 in. long and 1½ in. wide, one edge often doubled: infl. 1½ ft. high; fls. ¾ in. long.

dísticha: *G. lingua.*

echinàta: catalogue name.

excavàta. Rosette of 12–16 lvs. 4–6 in. long, to 1½ in. wide, pale dull green with small indistinct whitish spots, cuspidate at apex, borders tubercled: infl. to 2 ft.

glàbra. Lvs. to 9 in. long and 3 in. wide, keeled on back, with small white spots: infl. to 3 ft.; fls. 1 in. long.

latifòlia: not a valid botanical name; plants so designated in the trade may be *G. excavata, G. nigricans,* or a var. of *G. verrucosa.*

Laùchii: listed name.

língua (*G. disticha*). Lvs. to 10 in. long and 2 in. wide, white spotted: infl. 3 ft. high.

maculàta. Lvs. to 8 in. long and 2 in. wide, spotted or white at base: infl. 4 ft. high.

Márlothii: listed name of unknown botanical standing.

marmoràta. Lvs. to 6 in. long and 1½ in. wide, with confluent green spots, one edge doubled: infl. 2½ ft. high; fls. ¾ in. long.

mínima: catalogue name.

multipunctàta is listed.

nígricans. Lvs. to 8 in. long and 2 in. wide, leathery, shining dark green with whitish spots: infl. 3 ft. high; fls. ¾ in. long.

nìtens: *G. acinacifolia* var.

nítida. Lvs. to 9 in. long and 2½ in. wide, spotted with whitish: infl. 3 ft. high; fls. 1 in. long.

obscùra: listed name of unknown botanical standing.

obtusifòlia. Lvs. to 6 in. long and 2½ in. wide, broadly rounded at apex, white spotted: infl. 2½ ft.; fls. 1 in. long.

pícta (*G. Bowieana*). Lvs. to 14 in. long and 2 in. wide, mottled with white, glossy, margins thickened: infl. 3 ft. high.

planifòlia. Lvs. to 8 in. long and 1 in. wide, glossy dark green with many confluent white spots: infl. to 6 ft.; fls. ¾ in. long.

prolífera. Very proliferous, forming large tufts: lvs. very thick and 3-cornered, to 1 ft. long and 6 in. wide, spotted with white.

púlchra. Sts. leafy, to 1 ft. and more: lvs. to 1 ft. long and 1 in. wide, white spotted: infl. to 3 ft., branched.

punctàta: listed name.

retàta. Lvs. to 1 ft. long and 1½ in. wide, one edge doubled: infl. 1 ft. or more high; fls. ¾ in. long.

spiràlis. Rosette of 16–28 lvs. 4–6 in. long, glossy dark green, apex cuspidate, many white spots: infl. to 2½ ft.

subverrucòsa. Lvs. to 6 in. long and 1¼ in. wide, edges with raised tubercles: infl. 2 ft. high; fls. ¾ in. long.

sulcàta. Lvs. to 4 in. long and 1 in. wide, with small greenish dots: infl. to 2½ ft.

trigòna. Rosette of 12–15 lvs. 6–8 in. long and 1½ in. wide, lanceolate, very smooth with many small white spots, all except the outer ascending: infl. to 2½ ft. high.

verrucòsa. Lvs. arranged in two vertical ranks, 6–9 in. long, lanceolate, apex cuspidate, spots pure white and raised forming roughened surface: infl. 2 ft. high. Var. **intermèdia,** lvs. greener and with less tubercles. Var. **latifòlia,** lvs. greener and more mucronate, to 1 ft. long, papillæ less crowded, infl. branched. Var. **scabérrima,** lvs. more strap-shaped, incurved with most of the tubercles greenish-white, nearly same color as lf.

vittàta: catalogue name.

GASTONIA: *Trevesia palmata.*

GASTROCHÌLUS. *Orchidaceæ.* Epiphytes with short leafy sts. and fls. in many-fld. racemes springing from the sts.; sepals and petals similar; lip composed of a sac-like lower portion and a flat spreading toothed or fringed apical part. For cult. see *Orchids*.

bellìnus (*Saccolabium bellinum*). Lvs. strap-shaped, to 12 in. long: racemes about 6-fld.; fls. to about 1½ in. across; sepals and petals greenish-yellow spotted with reddish-brown or purple; lip white spotted with purple and with a central yellow blotch. Nov.–Apr. Burma.

GASTROLÈA (*Gasteraloe*). *Liliaceæ.* A genus founded to include hybrids between Gasteria and Aloe. The plants differ from either parent largely in fls. having perianth scarcely inflated and segms. longer than perianth-tube.

Béguinii. Lvs. 3–4 in. long, rarely over 1 in. wide at base, short-pointed, tubercles of lf. surfaces blunt, those of margins sharp-pointed: infl. to 2 ft. high.

mortolénsis. Lvs. less than 2 in. wide at base, smooth, pale green, spots longitudinally confluent, many marginal teeth, basal offsets numerous: infl. to 2 ft. high.

Nowótnyi. Lvs. 1½ in. long and nearly as wide at base, silvery-spotted, margins tubercled.

perféctior. Lvs. 3–4 in. long, rarely over 1 in. wide at base, short-pointed, tubercles of lf. surfaces and margins sharp-pointed: infl. to 2 ft. high.

pethaménsis. Lvs. 8–12 in. long, to 2 in. wide at base, short-pointed, lf. tubercles prominent.

smarágdina. Lvs. to 3½ in. wide at base, smooth except at edges, purplish-green, spots transversely confluent, few marginal teeth, basal offsets few: infl. to 2 ft. high.

GAULTHÈRIA. *Ericaceæ.* Evergreen little shrubs or herb-like, adapted to the rock-garden, having alternate or sometimes opposite lvs., urn- or bell-shaped fls., and bright colored berry-like capsular frs.; an aromatic oil is derived from several species.

Moist sandy or peaty soils and partial shade are desirable. Propagated by seeds, layers, suckers, division, and by cuttings of half-ripened wood.

adenóthrix. Low shrub, sts. terete, ascending: lvs. ovate, short-petioled, margin sharply serrulate: fls. 2–15 in axillary racemes, calyx-tube long-setose, anthers spurred. Japan.

adpréssa: *G. antipoda* var.

antípoda. Shrub to 5 ft., occasionally procumbent: lvs. usually orbicular, to ⅜ in. long, persistent: fls. white or pink, fragrant, campanulate, solitary. New Zeal., Tasmania. Var. **adpréssa** is the procumbent form.

cuneàta. Differs from *G. Miqueliana* in narrower lvs. scattered along sts. and not crowded terminally, ovary hairy not glabrous, and fr. always white, never pink. W. China.

híspida. Waxberry. Erect spreading shrub to 6 ft., sts. pubescent: lvs. lanceolate to oblong, to 2 in. long, somewhat serrulate: fls. white, minute: fr. white. Australia.

hispídula: *Chiogenes hispidula.*

humifùsa (*G. Myrsinites*). To 4 in., tufted, procumbent: lvs. oval or orbicular, to ¾ in. long, entire or crenate: fls. white, ⅛ in. long, July: fr. scarlet. B. C. to Colo. and Calif.

Miqueliàna. Woody evergreen to 1 ft.: lvs. elliptic to obovate, crenate-serrate: fls. white or pinkish, nodding, less than ¼ in. long: fr. white. Japan.

Myrsinìtes: *G. humifusa.*

nummularioìdes. Probably decumbent or creeping, sts. bristly: lvs. orbicular-ovate, to ⅝ in. long, ciliate, pubescent beneath: fls. pale pinkish-white, solitary: fr. bluish-black. Himalayan region, W. China.

oppositifòlia. To 8 ft., much branched: lvs. opposite, ovate or oblong-ovate, to 2½ in. long, cordate at base, leathery: fls. white, ⅙ in. long, in mostly panicled racemes. New Zeal.

ovatifòlia. To 8 in.: lvs. ovate, to 1½ in. long, toothed, rather thick: fls. white, ⅙ in. long, solitary, June–July: fr. scarlet. B. C. to Ore. and Ida.

perpléxa. Suberect or prostrate shrub to 3 ft., much branched: lvs. lanceolate to linear, to ½ in. long, bristly serrate, acute, leathery: fls. solitary or axillary: fr. ½ in. diam. New Zeal.

procúmbens. Wintergreen. Checkerberry. Teaberry. Sts. creeping: lvs. oval, to 2 in. long, shining above: fls. white, ¼ in. long, solitary and nodding, May–Sept.: fr. scarlet. Newf. to Man. and Ga.

pyrolæfòlia: *G. pyroloides.*

pyroloìdes (*G. pyrolæfolia*). Low shrub to 1 ft.: lvs. orbicular-ovate, to ½ in. long: fls. white, in lax racemes to 2½ in. long: fr. bluish-black. Himalayan region, W. China.

rupéstris. To 4 ft., much branched, rarely prostrate: lvs. variable, oblong to ovate, to 2 in. long, leathery: fls. white, in racemes. New Zeal.

Shállon. Salal. To 2 ft.: lvs. ovate, to 5 in. long: fls. white or pink, ⅖ in. long, in panicled racemes, May–June: fr. purple turning black. Alaska to Calif.

trichophýlla. Probably prostrate: lvs. elliptic to oblong, to ⅜ in. long, ciliate, not pubescent: fls. pink, solitary: fr. blue. Himalayan region, W. China.

Veitchiàna. Evergreen shrub to 3½ ft., sts. occasionally decumbent: lvs. elliptic to oblong-obovate, to 3½ in. long, dark glossy-green above, paler and often setose beneath, mucronate: fls. white, nodding, racemes to 2 in. long, axillary and terminal, pedicels shorter than corolla: fr. bright blue, to ¼ in. diam. W. China.—Probably hardy as far north as Philadelphia.

GAÙRA. *Onagraceæ.* Several N. American herbs with alternate simple lvs., small white or rose fls. in spikes or racemes, and nut-like caps.; sometimes grown in the wild-garden or hardy border. Propagated by seeds and division.

coccínea. Per. to 2 ft.: lvs. oblong or lanceolate, to 1½ in. long: fls. pink, white or scarlet, to ½ in. across. S. D. to Mex.

Líndheimeri. Per. to 4 ft.: lvs. lanceolate, to 3½ in long: fls. white, ¾ in. long, in loose terminal spikes. La., Tex.

parviflòra. Per. to 5 ft., sts. pubescent: lvs. ovate-lanceolate, to 4 in. long, pubescent: fls. pink, to ⅙ in. across, in elongated spike: fr. sessile. S. D. to Ore. and Mex.

sinuàta. Per. to 3 ft.: lvs. spatulate to linear, to 3 in. long, toothed or pinnatifid: fls. pinkish, ⅓ in. long. Kans. to Mex.

GAÚSSIA. *Palmaceæ.* Two monœcious unarmed tall feather-palms of Cuba and Puerto Rico, little adaptable to cult. in continental U. S.: trunk enlarged at base, tapering above: spadices in the axils of lower lvs., branched, becoming spreading or deflexed; fls. in 2's to 5's on the branches, the lowest commonly pistillate; stamens 6: fr. obovoid-oblong, small. They grow on the summit of limestone ledges.

GAÝA. *Malvaceæ.* Herbs, shrubs or rarely trees, having alternate simple lvs., yellow or white axillary or terminal fls., and fr. of many carpels; native in S. Amer. and one in New Zeal., the latter planted in S. Calif.

Lýallii (*Plagianthus Lyallii*). Lacebark. Deciduous tree to 30 ft., pubescent: lvs. ovate, to 4 in. long, deeply crenate: fls. white, to 1 in. across, in clusters of 3–5 or rarely solitary. New Zeal. Var. **ribifòlia** has deeply lobed or cut lvs.

GAYFEATHER: *Liatris.*

GAYLUSSÀCIA. Huckleberry. *Ericaceæ;* separated by some authors in *Vacciniaceæ.* American shrubs with alternate usually entire lvs., white or reddish fls. in axillary racemes in spring, and fr. a blue or black berry-like drupe crowned by the persistent calyx-lobes; distinguished from Vaccinium by the 10-celled ovary instead of usually 4–5-celled in the latter.

Huckleberries should have shady locations in peaty or sandy soil. They do not thrive on limestone lands. Propagated by seeds, layers, division, and the evergreen sorts by cuttings of half-ripe wood under glass.

baccàta (*G. resinosa*). Black H. To 3 ft., deciduous, the branches sticky when young: lvs. to 2 in. long: fls. reddish, ovoid, in dense drooping racemes to 1 in. long: fr. black, shining. Newf. to Ga.

brachýcera. Box H. To 1½ ft., the st. creeping, evergreen: lvs. to 1 in. long: fls. white or pink, cylindrical, in short racemes: fr. blue. Pa. to Va.

dumòsa. To 1½ ft., the st. creeping and glandular-pubescent, deciduous: lvs. to 2 in. long: fls. white, pink or red, bell-shaped, in loose racemes: fr. black. Newf. to Fla. and La.

frondòsa. DANGLEBERRY. To 6 ft., deciduous: lvs. to 2¼ in. long: fls. greenish-purple, bell-shaped, in racemes to 3 in. long: fr. blue, bloomy. N. H. to Fla.

resinòsa: *G. baccata.*

ursìna. BUCKBERRY. To 6 ft.: lvs. to 4 in. long: fls. whitish or reddish, bell-shaped, in racemes to 2 in. long: fr. black, shining. N. C., S. C.

GAZÀNIA (*Meridiana*). *Compositæ.* Herbaceous perennials, seldom annuals, with entire or pinnately cut lvs. and solitary heads on long sts.; ray-fls. white, yellow, orange, scarlet, opening in sunshine, closing at night; disk-fls. dark; pappus of scales; native in S. Afr.

Gazanias are grown in the flower-garden and for edgings. Propagated by seeds, division and also by cuttings taken in summer from shoots near the crown of the plants. The kinds in cultivation are not clearly understood.

aurantìaca: listed name for a low form with bright orange fls.

coccínea: a race with fls. in shades of orange, yellow, red and bronze.

longiscàpa. Stemless: lvs. white-woolly below, lanceolate or pinnately cut: heads about 2 in. across, on glabrous peduncles longer than lvs., rays orange with dark spot at base.—May be treated as an ann. if sown early.

oxylòba. Per. to 6 in. with woody crown: lvs. linear-lanceolate, to 4 in. long, white-woolly beneath, acute, occasionally pinnatisect above middle: fl. color not known.

Pavònia. Per., st. short: lvs. lanceolate, to 9 in. long, glabrescent above, white-woolly beneath, entire or pinnatisect, margins revolute: heads to 3½ in. across, rays orange-yellow with basal blackish spot somewhat ringed white.

pinnàta. Per.: lvs. lanceolate, pinnatisect, hirsute above, white-woolly beneath: heads to 3 in. across, on hairy peduncles, rays orange-yellow. Var. **scàbra** (*G. scabra*) has lvs. stiffly setose above, peduncle short nearly glabrous. Var. **speciòsa** (*G. speciosa*) has lvs. glabrous or hispid above, peduncle long, pubescent; ray-fls. said to be more reddish than in type.

Póttsii. Per. to 14 in., stemless or nearly so: lvs. erect, linear to lanceolate-spatulate, to 7 in. long, acute or obtuse, rarely pinnatifid, tomentose beneath: heads to 3½ in. across, rays bright yellow.

rìgens. Sts. short and branching, densely leafy or diffuse: lvs. white-woolly below, spatulate or occasionally pinnatifid: heads 1½ in. across, on glabrous peduncles longer than lvs., rays orange with a brown-black white-eyed spot at base, varying to yellow, blooming throughout the year in warm climates.

scàbra: *G. pinnata* var.

speciòsa: *G. pinnata* var.

spléndens. Supposed hybrid: to 1½ ft.: lvs. silky-white beneath, linear-spatulate: heads large, rays orange with black and white spot at base.

GEIGER-TREE: *Cordia Sebestena.*

GEISSORHÌZA. *Iridaceæ.* Cormous S. African herbs with fls. of various colors borne in open spikes; perianth with rotate limb and cylindrical tube; something like Ixia. Usually flowered under glass in spring and early summer, or in the open in mild climates.

hírta. To 1 ft.: lvs. linear, to 6 in. long, hairy: fls. 2–6, bright red, 1 in. across.

inæquàlis. To 1 ft., corm obconical: lvs. 4, to 8 in. long and ⅓ in. wide, the 2 lowest longer than upper ones: fls. gray-blue to lavender, to 1 in. long, in spikes of 4–8, 1 stamen much shorter than other 2.

GEITONOPLÈSIUM. *Liliaceæ.* Somewhat woody twining shrubs, of 1 or 2 species in Australia and Pacific Isls., grown in Calif.: segms. of perianth 6, oblong, distinct, outer ones often hooded.

cymòsum. Lvs. alternate, linear to ovate, to 3 in. long: fls. purplish-green, ⅓ in. long, drooping, in loose terminal cymes: fr. a dark blue berry ½ in. across.

GELSÈMIUM. *Loganiaceæ.* Twining shrubs with commonly opposite entire lvs., fragrant funnelform fls. solitary or in small cymes, and capsular frs.; grown in the S. as a cover for porches and banks and sometimes under glass. Propagated by cuttings under glass and by seeds. One species in E. Asia and 2 in E. N. Amer.

sempérvirens. CAROLINA YELLOW JESSAMINE. Evergreen: lvs. lanceolate, to 4 in. long, shining above, narrowed at base: fls. bright yellow, to 1½ in. long, blooming throughout the season, borne on scaly pedicels; calyx-lobes obtuse: fr. ¾ in. or more long, short-beaked. Va. to Fla., Tex. and Cent. Amer.—A second species, *G. Rankinii*, has recently been distinguished, N. C. to Fla. and Ala., marked by lvs. rounded at base, pedicels scaly only on lower part, calyx-lobes narrow and acuminate, fr. about ½ in. long and long-beaked.

GEMMINGIA: *Belamcanda chinensis.*

GENIÓSTOMA. *Loganiaceæ.* Shrubs ranging from Madagascar to Pacific Isls., with opposite lvs., small fls. in axillary clusters or cymes, and capsular frs.; one species grown in Calif.

ligustrifòlium. To 12 ft., glabrous: lvs. ovate, to 3 in. long, entire, paler beneath: fls. greenish-white, ⅙ in. across. New Zeal.

GENIP: *Genipa, Melicocca bijuga.*

GENÌPA. GENIP (see also *Melicocca*). *Rubiaceæ.* Trop. American trees with large opposite lvs., white or yellowish large fls. in cymes, the corolla salverform with 5–6 lobes, and fr. a berry which is eaten fresh, made into preserves or drinks in its native lands.

Genipa can be grown only in the tropics without protection or risk, and grows best in rich loam with abundant moisture. Propagated by seeds and by shield-budding.

americàna. To 50 ft.: lvs. obovate to oblong, to 1 ft. long: fls. white or pale yellow, 1 in. across, silky: fr. brown, to 3 in. across. Trop. Amer. where it is called "Marmalade-Box" and "Genipap."

GENIPAP: *Genipa americana.*

GENÍSTA. BROOM. *Leguminosæ.* Ornamental shrubs with simple or trifoliolate lvs., papilionaceous yellow or white fls. in racemes, and flattened pods; they differ from Cytisus in the absence of any appendage or slight callus-like protuberance on seed base.

Brooms are adapted to dry situations and mild climates. Propagated by seeds, layers, and greenwood cuttings under glass. The Genista of florists is *Cytisus canariensis.*

æthnénsis. To 20 ft., the branches almost leafless: fls. golden-yellow, fragrant, axillary along the branches. July–Aug. Sicily, Sardinia.

álba: *Cytisus albus.*

Andreàna: *Cytisus scoparius* var. *Andreanus.*

ánglica. To 3 ft., sometimes procumbent, spiny: lvs. alternate, simple, about ⅓ in. long, bluish-green: fls. in few-fld. racemes. Eu.

Ardoìnii: *Cytisus Ardoinii.*

Beànii: *Cytisus Beanii.*

canariénsis: *Cytisus canariensis.*

capitàta: *Cytisus supinus.*

cinèrea. To 3 ft.: lvs. alternate, simple, lanceolate, to ⅓ in. long, pubescent: fls. bright yellow, in terminal racemes to 8 in. long. Apr.–June. S. Eu., N. Afr.—Plant not spiny.

Dállimorei: *Cytisus Dallimorei.*

dalmática: *G. silvestris* var. *pungens.*

decúmbens: *Cytisus decumbens.*

depréssa. Procumbent, with deeply striate branchlets: fls. in short leafy racemes. Tauria.

élegans: hort. name.

ephedroìdes. Shrub to 3½ ft.: lfts. trifoliolate or partly so, linear-lanceolate, glabrous: fls. in terminal racemes: pods silky-hairy, 1-seeded. Isls. of N. W. Medit.

falcàta. To 2 ft. or more, sts. erect and dense: lvs. ovate-oblong to lanceolate, to ⅛ in. long, branches very spiny: fls. few, in lax racemes: pods strongly curved, to 1 in. long, glabrous. Spain and Portugal.

flórida. To 5 ft., branches striped: fls. yellow, in dense many-fld. racemes. Apr.–July. Spain.

fràgrans: *Cytisus fragrans.*

germánica. To 2 ft., twigs hairy, spiny: lvs. simple, alternate: fls. yellow, in racemes to 2 in. long. June–July. Eu.

hirsùta: *Cytisus hirsutus.*

hispánica. Spanish B. To 2 ft., the branches spiny: lvs. alternate, simple, ovate-lanceolate, to ½ in. long: fls. golden-yellow, in terminal heads or clusters, in May–June. S. W. Eu. Var. **compácta** is of denser habit. Var. **nàna** is a dwarf form.

hórrida. To 1½ ft., densely branched and with stiff spiny branchlets: lvs. trifoliolate, at least in part, opposite or whorled: fls. few, in terminal heads, summer. France, Spain.

humifùsa: a confused name of uncertain application in regard to material so listed in trade.

Jóhnstownii: listed name.

júncea: *Spartium junceum.*

kewénsis: *Cytisus kewensis.*

lusitánica. To 4 ft., spiny: lfts. linear-lanceolate, silvery-silky, to 4 in. long: fls. pale yellow, in heads, woolly-tomentose: pods 3-4-seeded. Spain, Portugal.

maderénsis: *Cytisus maderensis.*

monospérma. To 10 ft., almost leafless: fls. white, fragrant, in short lateral racemes, in early spring. Spain, N. Afr. Hort. forms are **álba** and **péndula.**

multibracteàta. Sts. stiffly erect, younger ones angled: lfts. linear-oblong, mucronulate, ciliate: fls. yellow, in dense compact terminal spikes: pods short, erect, glabrous. Habitat not known.—Confused in cult. with *G. tinctoria* from which it differs in its more slender virgate and pilose sts., paler lfts., denser spikes, and the aggregation of sterile bracts at base of infl.

multiflòra: *Cytisus multiflorus.*

newreyénsis: see *Cytisus newreyensis.*

nígricans: *Cytisus nigricans.*

ovàta. To 4 ft., hairy, the branches striped: lvs. alternate, simple, ovate to lanceolate, hairy: fls. yellow, in short racemes. E. Eu.

palménsis: *Cytisus filipes.*

pilòsa. Prostrate, spineless: lvs. alternate, simple, obovate to oblong, to ⅝ in. long, obtuse, hairy: fls. yellow, in short racemes. May–July. Eu.

præcox: *Cytisus præcox.*

prostràta: *Cytisus decumbens.*

púrgans: *Cytisus purgans.*

purpùrea: *Cytisus purpureus.*

racemòsa: *Cytisus racemosus.*

radiàta. To 2 ft., much branched: lvs. trifoliolate, at least in part, opposite or whorled: fls. yellow, in 3–10-fld. heads. May–July. S. Eu.—Plant not spiny.

sagittàlis. To 1 ft., the branches broadly 2-winged: fls. yellow, in terminal racemes. June–July. Eu., W. Asia.

schipkaénsis: *Cytisus albus.*

scopària: *Cytisus scoparius.*

sessilifòlia: *Cytisus sessilifolius.*

sibírica: *G. tinctoria.*

silvéstris. Spiny: lvs. alternate, simple: fls. in racemes to 4 in. long. S. E. Eu. Var. **púngens** (*G. dalmatica*) is more spiny.

Spachiàna: *Cytisus Spachianus.*

stenopétala: *Cytisus maderensis* var. *magnifoliosus.*

sulphùrea: listed name.

tectòrum: listed name.

tinctòria (*G. sibirica*). Dyers-Greenweed. To 3 ft., the branches striped: lvs. alternate, simple, mostly elliptic-oblong, to 1 in. long, glabrous, ciliate: fls. yellow, in many-fld. racemes panicled at the ends of the branches, in summer. Eu., W. Asia; nat. in N. Amer. Var. **prostràta** is a low-lying form. Var. **virgàta** (var. *elatior*), to 6 ft., more branched and vigorous than type with fewer-seeded pod.

tricuspidàta. Lvs. lanceolate, glabrous to slightly hirsute, spines trifid: fls. yellow, glabrous, keel nearly twice as long as standard. Algiers.

uralénsis: *Cytisus supinus.*

Veìtchii fràgrans: hort. name.

Víllarsii. Low suffrutescent spineless per.: lvs. simple, oblong-lanceolate, usually densely silky beneath: fls. yellow, silky outside, 1–3 in. axillary racemes, erect, standard about as long as keel: pods oblong, 2-seeded, silky-villous. S. Cent. Eu.

GENTIAN: *Gentiana.* **Horse:** *Triosteum.* **Prairie:** *Eustoma Russellianum.*

GENTIÀNA. Gentian. *Gentianaceæ.* Small or low per. and ann. herbs with mostly opposite, simple and entire lvs. and blue or purple, rarely yellow or white fls.; corolla 4–5-lobed and with plaits, teeth or appendages in the sinuses.

Gentians are grown mostly as rock-garden subjects. They require good drainage with plenty of moisture and a cool temperature, as the planted kinds are mostly mountain plants. Some species require special treatment, determined by personal experience, and are grown only by fanciers. Propagated by seed sown as soon as ripe and which are small and slow in germinating. The genus abounds in good blues. Some of the plants known as gentians may be Centaurium.

acaùlis (*G. excisa*). Stemless G. Per. to 4 in.: lvs. elliptic or lanceolate: fls. solitary, dark blue spotted inside, 2 in. long. Alps and Pyrenees. Var. **gigantèa** is listed as a larger form.—By some authors divided into several species.

affìnis. Per., clustered, to 1 ft.: lvs. oblong to linear: fls. mostly many in terminal racemes or in whorls, blue, corolla to 1 in. long. Rocky Mts. west and north.

álba: *G. flavida.*

álgida (*G. Romanzovii*). Per. to 15 in.: basal lvs. oblanceolate, to 5 in. long, obtuse, glossy, 3-nerved; st.-lvs. lanceolate, acutish, to 1½ in. long: fls. yellowish-white often minutely dotted with blue-green, tubular-campanulate, to 2 in. long. E. Asia, W. N. Amer. Var. **sibírica** is 6–10 in. tall with more linear lvs. and fls. to 1¾ in. long. E. Siberia to Japan.

altàica. Tufted per. to 4 in.: lvs. mostly radical, linear and acute: fls. single terminating the very short sts., blue, to 2 in. long, long-trumpet-shaped. Siberia.

Amarélla (*Amarella plebeja. G. plebeja*). Erect ann. to 1 ft.: basal lvs. spatulate, to 1¼ in. long; st.-lvs. shorter, more lanceolate: fls. bluish, to ½ in. long, axillary. N. N. Amer., N. Eu., N. Asia.

Ándrewsii (*Dasystephana Andrewsii*). Closed G. Per. to 2 ft.: lvs. ovate to lanceolate: fls. purplish-blue, nearly or quite closed, 1½ in. long, in terminal sessile clusters or in upper axils. E. N. Amer. Var. **álba** is listed.

angulòsa: *G. verna* var. *alata.*

angustifòlia. Per., stoloniferous: lvs. linear-oblong: fls. blue spotted with green. Alps.

asclepiadèa. Per. to 1½ ft.: lvs. ovate-lanceolate: fls. dark blue, 1½ in. long, solitary in the axils and resembling leafy racemes. S. Eu., Caucasus. Var. **álba** has white fls.

baicalénsis: listed name for a gentian producing heads of rich blue fls.

barbellàta (*Anthòpogon barbellatus*). Per. to 6 in., sts. angled: basal lvs. oblanceolate, to 2 in. long; st.-lvs. more linear, to 1¾ in. long: fls. bright blue, to 1¾ in. long, lobes fimbriate, in 4's. Colo. and Wyo.

bavárica. Per. to 3 in.: lvs. ovate: fls. solitary, deep blue, 1 in. long. Cent. Eu.

Bígelovii (*Dasystephana Bigelovii*). Per. to 1 ft.: lvs. oblong to linear: fls. purple, 1 in. long, solitary in axils and forming a many-fld. spike. Colo. to Ariz.

bisetæa. Decumbent per. with sts. to 16 in. long and more or less ascending: lvs. oval to oblong or upper ones lanceolate, obtuse: fls. solitary, blue, ½ in. or more long, with 2 setæ in sinuses. Coast Mts., Ore.

brachyphýlla. Per., making little clumps or mats, to 3 in.: lvs. short and very broad, ¼ in. or less long: fls. single on each st., about 1 in. long, deep azure-blue. Alps.

Búrseri. Per. to 1 ft.: lvs. elliptic-ovate: fls. yellowish, calyx spathe-like. Pyrenees.

cachemírica. Low, spreading, rosette-forming, sts. somewhat ascending, to 8 in. long: lvs. ovate, to ½ in. long, base clasping st.: fls. azure-blue, striped with yellowish-white and darker blue, to 1¼ in. long, bell-form. W. Himalayas.

calycòsa (*Dasystephana calycosa*). Per. to 1 ft., sts. procumbent or ascending: lvs. ovate: fls. dark blue spotted with green, to 1½ in. long, solitary, corolla-lobes not entire. Wet meadows, B. C. to Mont. and Calif.

campéstris. Ann. to 6 in.: lvs. ovate-lanceolate, to 1½ in. long, entire, sessile: fls. bright purple, erect, 1 in. and more long, in abundance. Eu.—Good for the rock-garden.

claùsa. Per. to 2 ft.: lvs. ovate-lanceolate: fls. blue, corolla closed, with broad rounded lobes. E. N. Amer.

Clùsii. One of the segregates from *G. acaulis* but scarcely differing.

corymbòsa. Per. to 8 in., simple sts. arising from rosette-like crown: basal lvs. tufted, linear-spatulate; st.-lvs. linear-oblong, about 1 in. long, fleshy, obtuse, glabrous: fls. rose-violet, campanulate, to ⅝ in. long, erect, in umbellate clusters to 3 in. across. Colombia.

crinìta. Fringed G. Bien. to 3 ft., with long slender roots that are broken in ordinary transplanting: lvs. obovate to lanceolate: fls. solitary, bright blue, 2 in. long, the lobes conspicuously fringed. E. N. Amer.

cruciàta. Per. to 10 in.: lvs. ovate-lanceolate: fls. dark blue, ¾ in. long, in axillary clusters. Eu., N. Asia.

dahùrica: *G. Olivieri.*

decòra. Per. to 2 ft. or more: lvs. elliptic or narrower, acuminate: fls. purple, about 1 in. long, calyx-tube pubescent. Va. to Ga.

decúmbens. Per. to 10 in.: lvs. oblong or elliptic: fls. blue, about 1 in. long, in clusters, calyx spathe-like. Himalayas.

depréssa. Per. to 2 in.: lvs. elliptic: fls. solitary, blue, 1¼ in. long. Himalayas.

detónsa. Per. to 2 ft.: lvs. oblong: fls. blue, ¾ in. long, in terminal and axillary clusters. Himalayas.

élegans: *G. thermalis.*

Élliottii: *G. parvifolia.*

excìsa: *G. acaulis.*

Fárreri. Per., stoloniferous, the sts. ascending: lvs. linear, the pairs connate at base: fls. solitary, blue with white throat and yellowish-white band on the petals, to 2½ in. long. China.

Fetisòwii. Tall per.: lvs. lanceolate: fls. deep blue, 1½ in. long, in terminal and axillary clusters. China.

flávida (*G. alba. Dasystephana flavida*). Per. to 3 ft.: lvs. ovate-lanceolate: fls. greenish or yellowish-white, to 2 in. long, in clusters. Ont. to Va. and Mo.

florenciàna: listed as a semi-bog species from S. Ore., having large open blue fls. on 6–10-in. sts.

fragifòlia: listed name of hort. form.

Freyniàna: a hort. form of *G. septemfida* with larger less fringed fls.

frígida. Per. to 6 in.: lvs. spatulate-linear: fls. whitish, few together. Carpathian Mts.

gélida. Per. to 6 in.: lvs. ovate-lanceolate: fls. yellowish-white, in clusters. Caucasus.

Gentianélla: name for a group of gentians, sometimes maintained as a separate genus.

glaùca. Per. to 4 in.: lvs. glaucous, oval, less than ½ in. long: fls. blue, about ½ in. long. Rocky Mts. and far N.; Asia.

gracílipes. Rosette-forming per., sts. ascending to 6 in.: rosette-lvs. lanceolate, to 6 in. long; st.-lvs. much smaller: fls. greenish outside, purplish-blue inside, narrowly bell-shaped, to nearly ¾ in. across, solitary on very short pedicels. Kansu, China.—Confused in cult. with *G. Purdomii.*

Grìsebachii. Ann., sts. slender, decumbent to suberect, to 14 in.: lvs. spatulate, to 1 in. long, obtuse, thin, lower ones long-petioled: fls. white, about 1 in. long, terminal, few or solitary, narrowly campanulate. New Zeal.

hascombénsis. Hybrid between *G. septemfida* var. *Lagodechiana* and another var. of that species, produced in England: to 2 ft.: fls. 1½ in. across, bright intermediate blue slightly speckled white.

holopétala. Ann. to 1 ft. or more, erect: lvs. mostly toward base, obovate to linear, to 1½ in. long: fls. to 2 in. long, narrow, blue, single terminating scape, corolla-lobes entire or nearly so. Mts., Calif.

Íngramii: listed name for a plant 8–16 in. high and 2–5 large blue fls. with lobes of corolla speckled greenish-white.

Késselringii. Per. to 8 in.: lvs. lanceolate: fls. whitish dotted violet outside, in terminal clusters. Turkestan.

Kochiàna (*G. latifolia*). Rosette-forming per. to 4 in.: rosette-lvs. elliptic-oval, to 6 in. long; st.-lvs. smaller: fls. dark blue, green spotted within, sometimes white, rose or violet, to 1½ in. across, distinctly stalked. Cent. Eu.

Kurroò. Tufted per. to 7 in.: lvs. lanceolate to linear: fls. blue spotted with white inside, 1–3 together. Himalayas.

Lagodechiàna: *G. septemfida* var.

latifòlia: plants in trade under this name may be *G. Kochiana* or *G. linearis* var.

lineàris (*Dasystephana linearis*). Per. to 2 ft.: lvs. linear or linear-lanceolate: fls. blue, to 2 in. long, in terminal clusters. N. B. to Md. and Minn. Var. **latifòlia** (*G. latifolia*). Lvs. distinctly sessile and not contracted at base, lower ones oblong-linear, upper ovate-lanceolate. N. B., Lake Superior region.

lùtea. Per. to 6 ft.: lvs. ovate: fls. yellow, 1 in. long, in dense umbel-like cymes, calyx spathe-like. Eu., Asia Minor.

Macaùleyi. Hybrid of *G. sino-ornata* and *G. Farreri*, differing from the latter parent in its larger fls. with more spreading corolla-lobes; free-flowering.

macrophýlla. Per. to 1 ft.: lvs. lanceolate, to 1 ft. long: fls. pale blue, in terminal clusters. Siberia.

Mákinoi. Erect per. to 1 ft.: lvs. lanceolate to lanceolate-ovate, to 2 in. long, 3–5-nerved: fls. pale blue, minutely spotted, tubular, to 1½ in. long, usually in heads at ends of sts. Japan.—Differs from *G. scabra* in its unequal calyx-lobes.

Ménziesii. Erect, to 1 ft.: lvs. oblong-elliptic, to 1 in. long: fls. bluish-purple, 1 in. long, with calyx split down one side. N. W. N. Amer.

Moorcroftiàna. Ann. to 1 ft. or more: lvs. oblong or elliptic, about 1 in. long: fls. in leafy clusters, pale blue, about 1 in. long. Himalayas.—Probably not in cult. in N. Amer., plants so named being other species.

Néwberryi. Alpine per. 2-4 in. high in bloom: lvs. mostly basal, broad-obovate to oblanceolate, to 1½ in. long: fls. single, terminating a lf.-bearing st., 1 in. or more long, white inside, blue outside with brownish lengthwise bands. Calif.

nivàlis. Ann. to 4 in.: fls. solitary, blue, ⅔ in. long. Eu.

ochroleùca: *G. villosa.*

Olivièri (*G. dahurica*). Lvs. narrowly lanceolate: fls. dark blue, in umbel-like cymes. Asia.

oregàna. Per. to 2 ft.: lvs. ovate to oblong, to 1½ in. long: fls. few clustered at summit, about 1¼ in. long, light blue. Calif. to B. C.

Órfordii. Per., slender, to 2 ft.: lvs. linear-lanceolate, to 3 in.: fls. 1 in. or more long, blue, speckled within. Ore.

ornàta (*G. Veitchiorum*). Low rosette-forming per. with short ascending sts.: lvs. narrowly to broadly lanceolate, basal lvs. to 1 in. long, st.-lvs. ½ in. long and almost linear: fls. blue, white-throated, campanulate, to 1 in. across. Nepal.—Confused in cult. with *G. sino-ornata.*

pannónica. Erect, to 2 ft.: basal lvs. elliptic-cuneate, to 8 in. long, margins rough; st.-lvs. ovate to lanceolate, upper ones sessile: fls. brownish-purple, spotted darker, broadly bell-form, to 1½ in. long. Cent. and E. Eu.

Párryi (*Dasystephana Parryi*). Per. to 16 in.: lvs. linear-lanceolate to ovate: fls. bright blue, about 2 in. long, 1-6 together. Wyo. to Utah.

parvifòlia (*Dasystephana parvifolia. G. Elliottii*). Per. to 2 ft.: lvs. ovate-lanceolate, to 2 in. long, 3-nerved, margins rough: fls. blue, to 1 in. long. Va. to Fla.—Differs from *G. decora* in having glabrous calyx tube. Sometimes listed as *G. Catesbæi.*

phlogifòlia. Per. to 10 in.: lvs. lanceolate-oblong: fls. blue, in terminal 3-7-fld. cymes. E. Eu.

plebèja: *G. Amarella.*

Pneumonánthe. Per. to 1 ft.: lvs. oblong-lanceolate to linear: fls. deep blue lined outside with green, 1½ in. long, in the axils of upper lvs. forming a raceme-like cyme. Eu., N. Asia.

Porphýrio (*Dasystephana Porphyrio*). Per. to 1½ ft.: lvs. linear: fls. bright blue often spotted with brown, 2 in. long, solitary and terminal. Pine barrens, N. J. to Fla.—Has been renamed *G. Stoneana.*

prolàta. Stoloniferous per., the shoots turning upward at the end and each terminated by purple-striate fl. to 1½ in. long, lobes blue: lvs. thickish, about ½ in. long, lower ones elliptic and others lanceolate to oblong. Himalayas.—Has been grown as *G. ornata.*

Przewálskii. A few in. high: lvs. oblong to oblong-linear: fls. blue with cream-colored anthers, to 2½ in. long, in terminal clusters of 1–3. China.

pterócalyx. Ann., 1 ft. or more, branched: lvs. 1 in. or less long, cordate-ovate: fls. single or few terminating sts., 2 in. or more long, deep azure varying to yellowish. Yunnan, China.—Listed, but true *pterocalyx* probably not in cult. in this country, plants so named being apparently forms of *G. decumbens* or others.

pubérula (*Dasystephana puberula*). Per. to 1½ ft.: lvs. lanceolate: fls. blue, 1½ in. long, sessile in upper axils and forming a dense spike. Ohio to Sask.

punctàta. Per., 1–2 ft., glabrous: lvs. ovate or narrower, 3 in. or less long, strongly ribbed: fls. in dense terminal and subterminal clusters, to about 1½ in. long, not opening widely, light yellow and violet-spotted. Alps and eastward.

Púrdomii. Per. to 8 in., erect, glabrous: lvs. linear-lanceolate, 6 in. or less long; st.-lvs. 1 in. long, few, sheaths prominent: fls. 6–8 in terminal bracted cluster, pedicellate, corolla 1 in. or more long, yellowish (when dried) with purple lines. High mts., Kansu, China.—Although listed, *G. Purdomii* is probably not in cult., plants so named being *G. trichotoma*, a form of *G. decumbens*, and perhaps others.

purpùrea. Per. to 2 ft., erect: lvs. ovate-lanceolate, 5-nerved: fls. few terminating the sts. and in upper axils, about 1½ in. long, red with yellowish throat. Alps.

pyrenàica. Cespitose per. to 3 in.: lvs. many, lance-linear, pointed, less than 1 in. long: fls. single and terminal, to 1½ in. long, violet, corolla-lobes obtuse. Pyrenees, Caucasus.

quinquefòlia. Ann. to 20 in.: lvs. ovate-acuminate, connate, glabrous, entire: fls. pale-lilac, to 1 in. long, erect, usually terminal in clusters of 3–5. E. U. S.

Róchelii. Low per., with clustered lvs. at base, sts. 2 or 3 in. high: lvs. lanceolate, about 1½ in. long, pointed: fls. single and terminal, about 2 in. long, blue. Hungary.—By some authorities regarded as a var. of *G. Clusii.*

Romanzóvii: *G. algida.*

Saponària (*Dasystephana Saponaria*). Per. to 2½ ft.: lvs. lanceolate or oblong: fls. blue, 2 in. long, in terminal and axillary clusters; calyx-lobes linear-oblanceolate. Ont. to Fla. and La.

saxícola. Per. to 1 ft.: lvs. ovate, to 1¼ in. long: fls. deep violet-blue, corolla green dotted inside, to 1½ in. long and ¾ in. across, lobes entire and expanding. Dry rocky slopes, Wash.—Related to *G. calycosa*, differing in its erect sts., wider calyx-lobes and entire corolla-lobes.

saxòsa. Per., sts. many, ascending to 6 in., having rosettes at ends: lvs. spatulate, to 1½ in. long, fleshy, dark green: fls. white with brownish veins, bell-shaped, to ¾ in. across. New Zeal.

scàbra. Lvs. ovate, rough-toothed: fls. dark blue, in clusters. E. Asia. Var. **Búergeri** is a form with narrower fls.

scéptrum. Per. to 4 ft.: lvs. oblong-lanceolate: fls. dark blue often dotted with greenish, 1 in. long, in clusters. B. C. to Calif.—Sometimes listed as *G. Menziesii.*

septémfida. Per. to 1½ ft.: lvs. ovate-lanceolate: fls. dark blue, to 2 in. long, in terminal clusters. Asia. Var. **Lagodechiàna** has slender prostrate sts. with single fls. Var. **procúmbens** is a low habit form.

setígera. Per., 1 ft., decumbent at base: lvs. nearly orbicular or short-oblong, obtuse: fls. single or few, terminal, about 1½ in. long, blue. N. Calif.

setòsa: listed name.

sikkiménsis. Mat-forming per. to 6 in.: lvs. oblong-cuneate, to 1 in. long: fls. blue, white-throated, to 1 in. across, in terminal clusters. Himalayas, China.

Sikokiàna. Erect per. to 1 ft., sts. 4-angled: lvs. elliptic-acute, to 3 in. long: fls. blue or purplish-blue, funnelform, to 1¾ in. long, terminal. Japan.

sìno-ornàta. Stoloniferous per. with sts. to 7 in. long: lvs. in rosettes, linear-lanceolate: fls. yellowish-white marked irregularly with purple, to 2¼ in. long, solitary and terminal. Mts., China.

siphonántha. Erect per. to 1 ft.: basal lvs. linear-lanceolate, to 9 in. long; st.-lvs. becoming shorter to top: fls. purplish-blue, narrowly funnelform, to 1 in. long, terminal and axillary. Tibet and N. W. China.

Stoneàna: see under *G. Porphyrio.*

stramínea. Per. to 1 ft.: lvs. linear-oblong: fls. pale yellow, 2 in. long, 1 or 2 together. China.

stylóphora. Similar to *G. lutea*, differing in its fewer and much larger fls. with corolla-lobes deeply cut. Nepal, S. E. Tibet.

tenélla. Ann. to 4 in., sts. slender: lvs. spatulate to oblong, 1-nerved: fls. blue, to ⅜ in. long, usually solitary. Cent. and N. Eu.

thermàlis (*G. elegans. Anthopogon thermalis*). Ann. to 1 ft.: lvs. obovate: fls. deep blue streaked with lighter, 2 in. long, solitary. Colo. to Ariz.

tianshánica. Differs from *G. decumbens* in sepals arcuate, plicate and entire, with corolla narrower and acute. E. Asia.

tibética. Per. to 1½ ft.: lvs. lanceolate: fls. yellowish-white tinted lilac, crowded in upper axils. E. Himalayas.

trichótoma. Per., erect, 1 ft. or more, sts. mostly 3-forked at apex: lvs. oblong-lanceolate to spatulate: fls. axillary and subterminal usually in 3's, pedicelled, the blue corolla (varying to whitish) 1 in. or more long. W. China.—The name *trichotoma* does not appear in the N. American trade-lists, but plants cult. as *G. Purdomii* may belong to it.

tubulòsa. Ann. or bien. to 6 in., sts. slender, erect: lvs. narrowly oblong-lanceolate, to ¾ in. long, acute, sometimes clasping at base: fls. bluish-lilac, to 1 in. long, tubular, solitary or rarely in 3-fld. cymes, on pedicels 1½–2 in. long. Argentina.

Veitchiòrum: *G. ornata.*

vérna. Tufted per. to 3 in.: lvs. ovate: fls. dark blue, solitary, 1 in. long. Eu. Var. **alàta** (*G. angulosa*) is taller with winged calyx.

villòsa (*G. ochroleuca*). Per., erect, to 18 in.: lvs. obovate, to 3 in. long: fls. in a terminal cluster, greenish-white, 1½ in. long. N. J. south.

Walùjewii. Lvs. elliptic or lanceolate: fls. whitish dotted with pale blue, crowded in a terminal cluster. Turkestan.

GENTIANÀCEÆ. Gentian Family. About 70 genera of herbs or rarely shrubs, of wide distribution, with mostly opposite simple and entire lvs. and regular bisexual gamopetalous fls. having 4–12 sepals, petals and stamens, superior 1-celled ovary, and capsular frs. Some of the best blues among fls. are in this family. A few genera are grown for ornament although of minor importance except for special uses, as Centaurium, Chironia, Crawfurdia, Eustoma, Exacum, Fauria, Frasera, Gentiana, Menyanthes, Nephrophyllidium, Nymphoides, Sabatia.

GENUS (plural, *genera*). A more or less closely related and definable group of plants comprising one or more species, and the name of which becomes the first word of the binominal employed in horticultural and botanical literature. Thus *Citrus* is a genus comprising the citrus fruits, and some of the species are *Citrus sinensis* the sweet orange, *C. aurantifolia* the lime, *C. paradisi* the grapefruit. The oaks belong to genus *Quercus:* the white oak is *Quercus alba*, Spanish red oak *Q. rubra*, live oak *Q. virginiana.* Rosa is the genus of the roses, Pinus of the pines, Lilium of the lilies, Delphinium of larkspurs, Lycopersicon of tomatoes, Mentha of mints, Fragaria of the strawberries. In some cases the technical genus name has become also the common or vernacular name, as Begonia, Petunia, Chrysanthemum, Dahlia, Iris, Grevillea, Gladiolus, Verbena, Crinum, Magnolia, Rhododendron. By bearing in mind that the first of the two words in the Latin or botanical designation of a plant is the generic name, the gardener arrives at the first step in tracing plants in books and indices, as he must know a man's surname to find him in the directory. See *Species* and *Family.* Something like 10,000 or more genera are commonly recognized among seed-bearing or flowering plants.

GEONÒMA. *Palmaceæ.* Feather-palms or feather-veined, unarmed, stoloniferous, cespitose or trunk solitary, slender but usually not very tall, the sts. ringed and commonly reed-like, monœcious or diœcious, with variable foliage and sometimes lvs. entire and bifid, when pinnatisect the pinnæ or segms. frequently with broad not petiole-like bases: spadices below the lvs. for the most part, the fls. in pits or depressions on the branches; stamens 6, connate: fr. small, globose, oblong or ellipsoid, 1-seeded, dark purple or black. Trop. Amer., about 175 species, mostly woods palms. Some of the species stand in shady protected places in S. Fla., and they are grown under glass making attractive small tub specimens but are little known to planters in U. S. See *Palm.*

élegans. Graceful palm, caudex to 6 ft. and very thin: lvs. 10–14 in number close together at apex of trunk, dark green, 1½–2½ ft. long, with broad and narrow divisions intermingled; pinnæ 3–5, broad-lanceolate, to 10 in. long, 1-nerved and with several secondary nerves, the terminal largest: spadices from the axils of lowermost lvs.: fr. oblong, dark purple, about ⅓ in. long. Brazil. Var. **robústa** is a larger plant, with more and broader pinnæ or segms., the narrow ones ⅓ in. broad and others much broader.

grácilis. Slender, with single st., 4 ft., 1½ in. thick, naked: lvs. in a terminal crown, 2½ ft. long, regularly pinnate; pinnæ many, 1 ft. long and ½ in. or less broad, long-acuminate, 3-nerved, curving. Probably Costa Rica.

príneeps. Slender but stout, 4 or 5 ft., st. naked: lvs. 2½ ft., arching, regularly pinnate but terminal pinnæ broader or confluent; pinnæ about 50, green both sides, strong 3- or more-ribbed, 18–20 in. long, main ones 1 in. or less broad, long-pointed. Peru.

Schottiàna. Caudex single, 9–16 ft. and 1 in. thick more or less: lvs. long and gracefully curving, regularly pinnate; pinnæ 30–50 or more, and sharp-pointed, 10–12 in. long and about ½ in. broad, curving: fr. ellipsoidal, about ½ in. long. Brazil, in several forms.

GEOPRUMNON: *Astragalus.*

GEORGINA: *Dahlia.*

GERÆ̀A. *Compositæ.* W. American annuals with alternate toothed lvs. and yellow panicled heads of ray- and disk-fls.; pappus of awns joined at base into a crown; sometimes included in Encelia.

canéscens (*Encelia eriocephala*). Desert Sunflower. To 2 ft., white-hairy: lvs. ovate to lanceolate, to 4 in. long: heads 1 in. or more across, the edges of the involucral bracts white-ciliate. Calif., Nev., Ariz.

GERANIÀCEÆ. Geranium Family. Herbs, sometimes semi-woody, of about 12 genera widely distributed over the world; known to cult. in the ornamental genera Erodium, Geranium, Pelargonium, and Sarcocaulon, and species of Erodium have forage value. The family is characterized by its bisexual mostly regular polypetalous fls., usually 5 sepals and petals and stamens 5, 10 or 15, superior 3–5-lobed ovary, and capsular fruit. The geranium tribes are of simple culture. The true geraniums and the erodiums are mostly hardy plants in the East, but pelargoniums need house treatment except in California and similarly mild climates.

GERANIUM. Cranesbill. *Geraniaceæ.* Herbs ann. or per., with palmately lobed or divided lvs., pink or purplish fls. 1–2 in the axils, having 10 stamens, 5-celled ovary with 2 ovules in each cell, and long-beaked frs.

Grown in the hardy border or rock-garden. Propagated by seeds and root-division; the cultivated perennials should be transplanted from the seed-bed in early spring. They are mostly hardy plants, and some of them are introduced weeds. See *Pelargonium*, to which the greenhouse and florists geraniums belong.

aconitifòlium. Per. to 1½ ft.: lvs. deeply 7-lobed: fls. white, ½ in. or less across. Eu.

albànum. Per. with decumbent to ascending sts.: basal lvs. reniform-orbiculate, to 2½ in. diam., lobes 5–7, much laciniated; cauline lvs. opposite, ovate-lanceolate: fls. rose-purple, to ¾ in. across. Asia Minor, Persia.

albiflòrum. Per. to 1½ ft.: lvs. deeply 7-lobed: fls. white veined with pink, about ½ in. across. S. Siberia.

anemonifòlium. Per. to 1½ ft.: lvs. 5-parted, on petioles to 15 in. long: fls. pale purple. Canary Isls.—Perhaps not hardy N.

argénteum. Silver-leaved C. Per. or bien. to 5 in.: lvs. 5–7-parted, hoary and silky on both sides: fls. pink with darker veins, 1 in. across. N. Italy.

armènum: *G. psilostemon.*

atropurpùreum: probably *G. sanguineum* var.

bícolor: listed name of uncertain application.

cæspitòsum. Tufted per. with pubescent sts. to 16 in. long: lvs. 3–5-parted: fls. rose-purple, to ¾ in. long. Wyo., Colo., Utah.

caroliniànum. Ann. to 1½ ft.: lvs. 5–7-parted: fls. pale pink or whitish, to ¼ in. across. N. Amer.

célticum: listed name.

cinèreum. Per. to 6 in.: lvs. 5–7-parted, glaucous: fls. pink with dark stripes, about 1 in. across. Pyrenees. Var. **ròseum** is listed. Var. **subcauléscens** (*G. subcaulescens*) differs in the calyx hairs spreading or divergent from the sepals and not appressed. E. Eu.

citriodòrum: *Pelargonium acerifolium.*

collìnum. Per. somewhat decumbent, to 1½ ft.: lvs. deeply 7-parted: fls. purplish-violet, the veins deeper, less than ½ in. across. E. Eu.

disséctum. Ann. to 2 ft.: lvs. 5–7-parted: fls. purple, to ¾ in. across. S. Eu.; nat. in N. and S. Amer.

Éndressii. Per. to 1½ ft.: lvs. deeply 5-lobed: fls. rose, ⅓ in across. Pyrenees.

eriánthum. Per. with solitary pubescent sts.: lvs. 5–7-parted: fls. bluish or rose-purple, ¾ in. long. Alaska to B. C., N. Asia.

eriostèmon (*G. platyanthum*). Per. to 2 ft.: lvs. deeply 5-lobed: fls. violet-blue, 1 in. across. Siberia to China.

Fárreri. Per. to 9 in., taller in rich soil; rhizome short, roots with enlarged tuberous portions: lvs. reniform, 3-lobed, blade to 1 in. long, petiole to 6 in.: fls. pale lilac, usually in pairs, on peduncles to 6 in. long. Yunnan.

fragafórmis: catalogue name.

Frèmontii. Per., 1 ft. or more high: lvs. 5–7-parted: fls. rose-purple, 1 in. across. Rocky Mts.

grandiflòrum. Per. 1 ft. or more: lvs. deeply 5-lobed: fls. lilac with purple veins, to 1½ in. across. N. Asia. Var. **alpìnum** is said to be a dwarf form.

Grevilleànum. Per. with creeping sts.: lvs. reniform, 5-lobed, lobes deeply serrate but not to midrib, pubescent: fls. rose, often purple spotted, to 2 in. across. Himalayas.

Grièvesii: listed name.

gymnocaùlon. Per. to 1½ ft.: lvs. 5-parted: fls. deep violet, to ¾ in. long. W. Asia.

ibéricum. Per. to 1½ ft.: lvs. 7-lobed nearly to base: fls. purple, 1¼ in. long. S. W. Asia. Var. **álbum** has white fls. Var. **platypétalum** is *G. platypetalum.*

incìsum. Per. to 2 ft.: lvs. 3–5-parted, the lfts. often cut: fls. pink or purple, ½ in. long. B. C. to Calif.

japónicum. Per. to 3½ ft., briefly glandular-hispid: lower lvs. kidney-shaped, 5–7-palmately lobed, to 6 in. across, upper ones 3-lobed: fls. usually white, to ¾ in. across, on peduncles to 2 in. long. Japan.—This plant is imperfectly known and material so named in cult. may not belong here.

lancastriénse: *G. sanguineum* var. *prostratum.*

Lòwii: name for a bien. hort. form having bright rose fls. with violet center: perhaps allied to *G. anemonifolium.*

macrorrhìzum. Per. to 1½ ft., with long thick root: lvs. 5–7-lobed nearly to base: fls. magenta. S. Eu.

maculàtum. Per. to 2 ft.: lvs. deeply 3–5-lobed: fls. rose-purple, 1 in. across. N. Amer. Var. **álbum** has white fls.

napulígerum. Per. to 15 in., sts. slender, decumbent to ascending: lvs. cordate-orbicular, blade to 2 in. across, long-petioled, 5-lobed, lobes strongly incised: fls. rose, 1 in. or more across. China and Korea.

nepalénse. Per. with decumbent or ascending sts. to 1½ ft. long: lvs. deeply 5-lobed: fls. rose-purple, to ⅔ in. across. Mts. of Asia.

nervòsum. Per. to 2½ ft.: lvs. deeply 5–7-parted: fls. pale violet or nearly white streaked with purple, ¾ in. long. Wyo., Colo., Ore.

nodòsum. Per. to 2 ft., sts. slender, ascending: lvs. cordate-reniform, to 3 in. across, petioled, 5-lobed, lobes dentate: fls. few, to 1 in. across. Mts. of S. Eu.

oregànum. Per. to 2 ft.: lvs. 5–7-parted: fls. purple, ½ in. long. Ore.

Párryi. Per. to 2 ft., sts. tufted: lvs. to 2¼ in. across, 3–5-lobed, lobes usually incised: fls. pinkish-purple, to 1¼ in. across. Mts. of Wyo., Colo. and Ariz.

pectinàtum: listed name.

phæum. Per. to 2 ft.: lvs. deeply 5–7-lobed: fls. dark blue or almost black, with white spot at base of each petal. Eu.

platyánthum: *G. eriostemon.*

platypétalum. Per. to 2 ft.: lvs. 5-lobed beyond middle: fls. dark purple, ¼ in. long. China.

praténse. Per. to 3 ft.: lvs. 7-parted: fls. purple, about ½ in. across. Eurasia. Var. **álbum** has white fls.

prostràtum: *G. sanguineum* var.

psilostèmon (*G. armenum*). Per. to 2 ft.: lvs. deeply 5-lobed: fls. dark red, spotted with black at base, about 1½ in. across. Armenia.

pusíllum. Prostrate much branched ann.: lvs. 5–9-parted, the lfts. 3-lobed: fls. blue-purple, ¼ in. across. Eu. to Himalayas.

Pylzowiànum. Per. to 1 ft.: lvs. 5-parted, the lfts. 3-lobed: fls. purple, 1¼ in. across. China.

pyrenàicum. Per. to 2 ft., soft-pubescent: lvs. 5–7-lobed: fls. blue-violet, ½ in. across. Eu.

Ríchardsonii. Per. to 3 ft.: lvs. 3-5-parted: fls. white, 1 in. across. W. N. Amer.

Robertiànum (*Robertiella Robertianum*). Herb-Robert. Red Robin. Ann. or bien. to 1½ ft.: lvs. 3-parted, the lfts. deeply cut: fls. red-purple, about ¼ in. long. N. Amer., Eurasia, N. Afr., mostly in woods or coppices.

sanguíneum. Per. to 1½ ft., covered with spreading white hairs: lvs. 5–7-parted: fls. reddish-purple. Eurasia. Var. **álbum** has white fls. Var. **atropurpùreum,** fls. dark red-purple. Var. **nànum,** of low compact habit. Var. **prostràtum** (*G. lancastriense, G. prostratum*) is a dwarfer form with lighter colored fls. Var. **ròseum** has paler fls. than type.

sessiliflòrum. Per. to 4 in.: lvs. all basal, deeply 5–7-parted: fls. white, to ½ in. across. Andes of S. Amer.

striàtum. Per. to 18 in.: lvs. reniform-orbicular, palmately 5-lobed, to 3 in. wide, pubescent: fls. white veined rose-red, petals emarginate, clusters of 3–10, pedicels and peduncle pilose. Cent. Eu.

subcauléscens: *G. cinereum* var.

sylváticum. Per. to 2½ ft.: lvs. deeply 7-lobed: fls. violet, about 1 in. across. Eu., Asia.

Tráversii. Per. to 1½ ft., gray-pubescent: lvs. 7-parted to about the middle: fls. rose or white, 1 in. across. Chatham Isl. (New Zeal.).

tuberòsum. Erect per. to 15 in., with fleshy ovoid tubers ⅝ in. thick: basal lvs. with 5-7 pinnately incised lobes, long-petioled; cauline lvs. sessile: fls. deep rose-purple to violet, large, peduncle 1-2-fld. S. Eu.

viscosíssimum. Per. to 2 ft., sts. sticky: lvs. 3-5-parted: fls. pinkish-purple, ¾ in. long. S. D. to Calif.

Wallichiànum. Prostrate per.: lvs. 3–5-parted, the lfts. deeply toothed: fls. purple, to 2 in. across. Himalayas.

Wìlfordii. Procumbent ann.: lvs. 3-parted, tne lfts. deeply toothed: fls. white striped with rose, ½ in. across. Manchuria.

Wìllardii. Per. to 1½ ft.: fls. rosy-red. Botanical position unknown.

zonàle: *Pelargonium zonale.*

GERANIUM, BEEFSTEAK-: *Begonia Rex-cultorum.* **California-:** *Senecio Petasites.* **Feather-:** *Chenopodium Botrys.* **Florists:** *Pelargonium.* **Mint-:** *Chrysanthemum Balsamita.* **Strawberry-:** *Saxifraga sarmentosa.*

GERÁRDIA (*Agalinis*). *Scrophulariaceæ.* American ann. and per. herbs with mostly opposite sessile lvs. and showy slightly irregular fls.; somewhat planted.

flàva: *Aureolaria flava.*

hýbrida: *Penstemon campanulatus.*

pediculària: *Aureolaria pedicularia.*

purpùrea (*Agalinis purpurea*). Ann. to 4 ft.: lvs. linear, entire, to 1½ in. long: fls. rose-pink with 2 yellow lines in throat and red-purple spots, 1 in. long, in 6–14-fld. racemes. July–Sept. N. Amer.

tenuifòlia (*Agalinis tenuifolia*). Ann. to 2 ft.: lvs. narrow-linear, entire, to 1¼ in. long: fls. light purple, spotted, to ¾ in. long. Aug.–Oct. Que. to Ga. and Tex.

virgínica: *Aureolaria virginica.*

GERBÈRIA (*Perdicium*). *Compositæ.* Several herbaceous perennials with lvs. in basal tufts, the solitary pink, yellow or orange heads on scapes, with 1 or 2 rows of ray-fls.; pappus of bristles; native in S. Afr. and Asia.—Name commonly but not originally spelled *Gerbera.*

Gerberia is grown in a temperate greenhouse and out-of-doors in mild or protected places. It may survive the northern winters if given a protection of leaves and decomposed manure. Propagated by seeds or by cuttings of side shoots.

anándria. Differing from *G. Kunzeana* in the woolly involucral bracts and pale pappus. China.

Jàmesonii. Transvaal Daisy. Barberton Daisy. To 1½ ft., hairy: lvs. very woolly beneath, to 10 in. long, pinnately lobed or parted: heads orange-flame color, to 4 in. across. Transvaal. Var. **hýbrida** is listed as an improved form with white, pink, orange, salmon, ruby-red-violet fls.—Not hardy in northernmost states; sometimes bloomed under glass.

Kunzeàna. Diœcious: lvs. oblong or ovate, lobed or lyrate-pinnatifid, very woolly beneath: bracts of involucre glabrous; pappus brown. Himalayas.

GERMANDER: *Teucrium.*

GESNERIA: see *Corytholoma, Smithiantha.*

GESNERIÀCEÆ. Gesneria Family. Mostly trop. herbs, rarely shrubs or trees, of about 84 genera, having simple lvs. which are frequently colored above or underneath, tubular usually 5-lobed showy gamopetalous often irregular corolla, 4 stamens, superior or inferior ovary, and commonly fleshy frs. Plants of several genera are grown for ornament chiefly under glass, as Achimenes, Alloplectus, Chirita, Columnea, Conandron, Corytholoma, Episcia, Haberlea, Isoloma, Mitraria, Nematanthus, Oreocharis, Ramondia, Rhabdothamnus, Saintpaulia, Sinningia, Smithiantha, Streptocarpus, Trichosporum, Tussacia.

GESNOUÍNIA. *Urticaceæ.* Canary Isl. shrubs or trees with alternate entire lvs. and unisexual fls. borne 3 together in an involucre in spikes or panicles; sometimes grown in the open in S. Calif. for ornament and interest. Propagated by cuttings.

arbòrea (*Parietaria arborea*). Tree to 20 ft.: lvs. lanceolate, to 5 in. long and 2 in. wide, white-tomentose beneath: fls. in large terminal panicles.

GÈUM. Avens. *Rosaceæ.* Per. erect herbs often with runners, with pinnate basal lvs. and small st.-lvs., yellow, white or red fls. in corymbs or solitary, and fr. an achene with long persistent style; native in temp. and cold regions and adapted to rock-gardens, and the taller ones for rear borders; some of them are good flower-garden subjects. Of easy cult. Propagated by seeds and by division.

aléppicum. To 5 ft.: lvs. with large rounded terminal lft. and 4–6 lateral lfts.: fls. yellow, to ¾ in. across: body of achene long-villous. Cent. and E. Eu. Var. **stríctum** (*G. strictum*) has the body of achene smooth except on the margin and summit, or only short-pilose, and the terminal lft. more acutely and deeply dissected. N. Amer., E. Asia.

alpìnum barbáricum: unidentified trade name.

atrococcíneum: probably *G. chiloense.*

atrosanguíneum: *G. chiloense.*

aurantìacum. Hybrid between *G. rivale* and *G. aleppicum* var. *strictum:* fls. golden-yellow.

Bòrisii. Hybrid between *G. reptans* and *G. bulgaricum:* fls. bright yellow.

bulgáricum. To 2 ft.: lvs. with very large heart-shaped terminal lft. and numerous small lateral lfts.: fls. nodding, bright yellow or orange. Bulgaria.

calthifòlium. To 1 ft.: basal lvs. with a large round-cordate terminal lft. and few very small lateral lfts.: fls. 1–few, bright yellow, 1 in. or more across. W. N. Amer. south to B. C., E. Asia. Var. **dilatàtum** is listed.

campanulàtum (*Sieversia campanulata*). Similar to *G. triflorum* but shorter, fls. reddish-purple, the petals much longer than sepals. Wash., Ore.

canadénse. To 2½ ft.: lvs. 3-5-parted into toothed or lobed lfts.: fls. white, about ½ in. across. N. S. to La.

chiloénse (*G. atrosanguineum*). To 2 ft.: lvs. with large terminal toothed lft. and many smaller lateral lfts., hairy: fls. scarlet, to 1½ in. across. Chile. Var. **plènum** has double fls. A favorite garden form is Mrs. Bradshaw.

ciliàtum: *G. triflorum.*

coccíneum. Lvs. with large heart-shaped terminal lft. and smaller lobed lateral lfts.: fls. bright red, 1 in. across. S. Eu., Asia Minor.—The plants commonly grown under this name are *G. chiloense.*

depréssum (*Acomastylis depressa*). To 4 in.: radical lvs. pinnate and appressed-silky, the lfts. crowded and 3-cleft: fls. yellow, 1 to a st. Wash.—Probably a geographical var. of *G. Rossii.*

dryadoìdes: *Cowania mexicana;* also, by other authors, *G. pentapetalum.*

Èwenii: hort. name for a form with light orange fls.

gracílipes (*Acomastylis gracilipes*). To 3 in.: radical lvs. pinnate and appressed-silky, the lfts. not crowded and 3-cleft at apex or entire: fls. yellow, 1 to a st. Ore.—Probably a geographical var. of *G. Rossii.*

Heldreìchii: hort. name for a form with orange-red fls.: 8 in. Said to be a form of *G. montanum;* also has been referred to *G. coccineum.* Varietal names listed are **magníficum, spléndens, supérbum.**

hýbridum: probably a form of the hybrid between *G. montanum* and *G. rivale.*

Jánkæ. Hybrid between *G. coccineum* and *G. rivale:* fls. large, yellow.

japónicum. To 3 ft.: lvs. with a large heart-shaped 3–5-lobed terminal lft. and small lateral lfts.: fls. yellow. Japan.

Kolbiànum: *G. rhæticum.*

macrophýllum. To 3 ft.: lvs. with large 3-7-lobed terminal lft. and 3–6 main lateral lfts.: fls. yellow, to ¾ in. across. N. Amer., N. Eu.

magellánicum. To 2 ft.: basal lvs. with very large lobed terminal lft. and small lateral lfts., hairy: fls. yellow, to 1 in. across. S. S. Amer.

magníficum spléndens is listed as having orange-red fls.; probably a form of *G. chiloense.*

montànum (*Sieversia montana*). To 1 ft.: lvs. with large terminal heart-shaped lft. and much smaller lateral lfts.: fls. golden-yellow, to 1½ in. across. S. Eu. Var. **máximum** is advertised.

Péckii (*Sieversia Peckii*). To 2 ft.: lvs. with large orbicular toothed terminal lft. and few or no lateral lfts.: fls. yellow, to 1 in. across. Me., N. H.

pentapétalum. To 6 in., with ascending or decumbent branches: lvs. with 5–7 obovate-oblanceolate serrate lfts.: fls. white, about 1 in. across. Aleutian Isls., E. Siberia, Japan.

pyrenàicum. To 1½ ft.: lvs. with large heart-shaped toothed terminal lft. and smaller lateral lfts.: fls. yellow, nodding. Pyrenees.

réptans (*Sieversia reptans*). To 6 in., with long runners: lvs. with large 3-lobed deeply toothed lft. and small lateral lfts.: fls. yellow, to 1½ in. across. Eu.

rhǽticum (*G. Kolbianum*). Hybrid between *G. montanum* and *G. reptans:* fls. golden-yellow.

rivàle. To 3 ft.: lvs. with terminal and 2 upper lateral lfts. much larger, toothed and lobed: fls. purplish, nodding, to 1 in. across. N. Amer., N. Eu., Asia.

Róssii (*Sieversia Rossii*). To 7 in.: radical lvs. interrupted-pinnate and glabrous, the lfts. 3-lobed: fls. yellow, 1 to a st. Arctic regions.

rubéllum: name sometimes applied to hybrid between *G. rivale* and *G. urbanum*, with petals salmon-pink.

sibíricum: hort. name: fls. bright red, coppery: to 10 in.

stríctum: *G. aleppicum* var.

sylváticum. To 2 ft.: radical lvs. with few lateral lfts. and a large cordate elongate-ovate terminal lft.: sts. 1-, rarely 2-fld.; fls. yellow, to 1 in. across. Iberian Peninsula, Morocco.

tiroléns e. Reported as a hybrid between *G. montanum* and *G. rivale.*

triflòrum (*G. ciliatum. Sieversia ciliata*). To 1½ ft.: lvs. of numerous lfts. deeply cut into linear-lanceolate silky-ciliate segms.: fls. purplish, to ¾ in. across. N. Amer.

turbinàtum (*Acomastylis turbinata*). To 1 ft.: lvs. pinnate into 11–33 segms.: fls. yellow, ¼ in. long. Mont. to Ariz.—Probably a geographical var. of *G. Rossii.*

urbànum. To 2 ft.: lvs. with coarsely toothed often 3-parted lfts.: fls. yellow, about ½ in. across. Eu., Asia.

GEVUÌNA (also but not originally spelled *Guevina*). *Proteaceæ.* One evergreen tree native in Chile and occasionally grown in S. Calif. **G. Avellàna.** Chilean Nut. Chile Hazel. To 40 ft.: lvs. alternate, odd-pinnate, shining: fls. white, in axillary racemes: fr. coral-red, about size of cherry, the seed with edible kernel.—Propagated by seeds or cuttings of green wood under glass.

GHERKIN: *Cucumis.*

GIBBÆUM. *Aizoaceæ.* A Mesembryanthemum segregate comprising tufted succulents having an ovoid or globose body unequally lobed or notched and bearing stalked fls. in the fissure; petals numerous; stigmas 6–7. S. Afr.

álbum. Growths crowded, of 2 lvs. pressed together to form an ovoid body to 1½ in. long, 1 in. wide and ¾ in. thick, whitish and velvety: fls. white, 1 in. across.

Cómptonii (*Rimaria Comptonii*). Plant-body 1 in. long and ⅓ in. thick, united about half way, glaucous: fls. rose, 1 in. across.

díspar. Growths of 2 unequal lvs. pressed together to form an obliquely globose body to ¾ in. long and 1 in. across, densely grayish-pubescent: fls. lilac-pink, ½ in. across.

gemìnum. Branches prostrate, to 3 in. long: growths cylindrical, to 1 in. long and ¼ in. thick, with a fissure below middle, velvety, whitish-green: fls. magenta, ½ in. across.

gibbòsum (*M. gibbosum*). Sts. prostrate, 1 in. long: lvs. semi-terete, yellowish-green: fls. reddish, ½ in. across.

Hèathii (*M. Heathii. Rimaria Heathii*). Lvs. pressed together into an obovoid body to 1¾ in. high, 1¼ in. wide and ¾ in. thick, whitish-green: fls. white, 1½ in. across.

Lúckhoffii. Plant-body about ½ in. long and thick, united about half way, glaucous: fls. rose, ¾ in. across.

mólle. Plant-body 1 in. wide and ¾ in. thick, with small notch, light green, soft: fls. rose, 1 in. across, stamens white.

Nélii. Forming dense clumps: lvs. about 1 in. long and ¼ in. wide and thick, gray-green: fls. red, 2 in. across.

pachypòdium (*M. pachypodium*). Growths to 4 in. long and ½ in. thick, covered with soft gray pubescence: fls. pale rose, 2 in. across, on stalks to 4 in. long.

pervíride (*M. perviride*). Forming clumps, sts. short, prostrate: plant-body 1½ in. long and about ⅓ in. wide and thick, deep green: fls. red.

petrénse (*Argeta petrensis*). To 1½ in.: lvs. short and thick, to ½ in. long and wide and ⅓ in. thick, whitish-green: fls. solitary, nearly sessile, rosy-purple, 1 in. across; stigmas 6, filiform.

pilósulum (*M. pilosulum*). Growths to 1½ in. long and 1¼ in. thick, unequally lobed in upper part, pubescent: fls. rose-pink, ½ in. across, stamens white with yellow anthers.

pubéscens (*M. pubescens*). Growths to 1¼ in. long and ½ in. thick, unequally lobed, silvery-pubescent: fls. rose-pink, ½ in. across, stamens white.

velùtinum (*M. velutinum. Mentocalyx velutinus*). Lvs. pressed together and erect when young, becoming spreading, of unequal size, to 2½ in. long, 1¾ in. broad and 1 in. thick, dull green and velvety: fls. white or pinkish, fragrant, to 2 in. across.

GÍLIA. *Polemoniaceæ.* Herbs with alternate entire or divided lvs. and blue, yellow, pink or white funnelform or salverform fls.; grown in the flower-garden, mostly annuals. Of easy cult. Seeds are sown where plants are to grow, in sunny open places. As treated here the genus includes Hugelia, Leptodactylon, Linanthus and Navarretia.

abrotanifòlia. Ann. to 2 ft.: lvs. 3-pinnately dissected into very narrow segms.: fls. pale blue, in dense terminal clusters. Calif.

achilleæfòlia. Ann. to 2 ft., glandular-pubescent: lvs. 2-pinnately dissected into linear segms.: fls. blue, in dense terminal clusters. Calif.

aggregàta. Scarlet G. or Skyrocket. Per. or bien. to 2½ ft.: lvs. 1–2-pinnately dissected into linear segms.: fls. scarlet varying to white, in a long thyrse. W. N. Amer. Var. **Brídgesii** is a low form, to 6 in. high. Mts., Calif.

androsàcea (*Linanthus androsaceus*). Ann. to 1 ft.: lvs. palmately divided, segms. filiform: fls. white, pink, violet or yellow, salverform, to 1 in. long, in dense heads. Calif.

attenuàta. Per. to 3 ft.: lvs. with linear-mucronate divisions, upper ones glandular-pubescent: fls. white, corolla-tube often pinkish, to 1¾ in. long, with acuminate lobes, infl. thyrsiform. Wyo., Colo.

aùrea (*Linanthus aureus*). Ann. to 8 in.: lvs. of 3–5 palmate oblong lobes, opposite: fls. yellow, throat brownish, to ½ in. long, in cymes. Calif., Nev., N. Mex.—A form with white to violet fls. is known.

califórnica (*Leptodactylon californicum*). Prickly-Phlox. Shrub to 3 ft.: lvs. palmately divided into 5–9 rigid linear lobes ⅓ in. long: fls. rose or lilac, 1½ in. across, in few-fld. clusters. Calif.

capillàris (*G. leptalea*). Much branched erect ann. to 6 in., glandular-puberulent: lvs. linear-lanceolate, to ¾ in. long: fls. white to pale pink, about ¼ in. long, solitary in axils, funnelform. Wash. to Calif. and Nev.

capitàta. Ann. to 2½ ft.: lvs. 2–3-pinnately dissected into linear segms.: fls. light blue, in heads about 1 in. across at end of naked peduncles. Wash. to Calif.

coccínea: *Collomia biflora.*

congésta. Per. to 8 in., webby-hairy: basal lvs. simple, to 2 in. long, st.-lvs. pinnately divided: fls. white, to ⅛ in. long, leafy-bracted, in head-like infl. S. D. to Sask., Wyo. and B. C.

coronopifòlia: *G. rubra.*

densiflòra (*Linanthus grandiflorus. Leptosiphon densiflorus*). Ann. to 2 ft.: fls. lilac or pink to white, funnelform, to 1 in. long, in dense heads, corolla-lobes broadly obovate, tube short and tapering. Calif.

densifòlia (*Hugelia densifolia*). Per. to 2 ft., woolly-tomentose when young: lvs. linear and rigid, entire or lobed: fls. deep blue, in dense clusters, corolla-lobes linear-oblong, tube slender. Calif.

dianthoìdes (*Fenzlia dianthiflora. Linanthus dianthiflorus*). Ground-Pink. Ann. to 6 in., tufted: lvs. entire, thread-like, to 1 in. long: fls. lilac or pink varying to white, funnelform, ¾ in. long, in few-fld. clusters, corolla-lobes toothed. S. to Lower Calif.

dichótoma (*Linanthus dichotomus*). Evening-Snow. Ann. to 1 ft.: fls. white with brownish-purple throat, tubular-funnelform, to 1¼ in. long, in few-fld. clusters. Calif.

globulàris. Per. to 6 in., sts. densely woolly: lvs. entire or pinnatifid, linear to oblong, to 2½ in. long: fls. white. Mts., Colo.

grandiflòra: *Collomia grandiflora;* see also *G. densiflora.*

laciniàta. Ann. to 8 in.: lvs. 2-pinnately dissected into linear segms.: fls. rose, blue, pale lilac to white, in few-fld. clusters. Peru, Chile, Argentina.

leptalèa : *G. capillaris.*

leptomèria. Ann. to 8 in.: lvs. linear-oblong, to 2 in. long, pinnately lobed or toothed, mostly basal, glandular-pubescent: fls. white to pale rose, to ¼ in. long. Ore., Calif., Colo. and N. Mex.

lineàris: *Collomia linearis.*

liniflòra (*Leptosiphon liniflorus. Linanthus liniflorus* and *pharnaceoides*). Ann. to 1½ ft.: fls. white or blush, funnelform, ½ in. long, in a panicled cyme. Calif.

longiflòra. To 20 in.: lvs. entire or pinnatifid with filiform lobes: fls. white to somewhat bluish, to 1⅝ in. long. Neb. to Utah, south to Ariz. and Tex.

lùtea (*Leptosiphon* and *Linanthus parviflorus. G. micrantha*). Erect often bushy ann. to 5 in.: lvs. palmately divided into 3–7 linear lobes: fls. yellow, white or rose-pink with yellow center, salverform, tube about ¾–1¼ in. long, corolla ¼ in. across, in heads, calyx-lobes linear and pungent. Calif.—Forms of this species are sold as *Leptosiphon aureus, hybridus, luteus* and *roseus.*

micrántha: *G. lutea.*

montàna (*Linanthus montanus*). Per. to 10 in., base usually woody, much branched, sts. erect or ascending: lvs. palmately lobed or divided, webby-hairy: fls. white, to ⅓ in. long. Utah to Ida., Calif. and Ore.

multicaùlis. To 1½ ft., branching from base: lvs. pinnately parted into linear segms.: fls. blue or pinkish, in few-fld. clusters. Calif.

multiflòra. Plant many-stemmed, to 2 ft., sts. gray-hairy: lvs. usually pinnately 3–7-parted, lobes linear, upper ones sometimes entire: fls. purplish or bluish, about ½ in. long. W. Tex. to Ariz.

nivàlis: a white-fld. form of *G. tricolor.*

nudicaùlis (*Gymnosteris nudicaulis*). Ann. to 4 in.: bracts under fls. lanceolate, to ¾ in. long: fls. white or yellowish, ½ in. long. Ore., Ida., Nev.

Núttallii (*Leptodactylon Nuttallii*). Per. to 9 in., with woody base: lvs. simple or palmately divided into 3–7 linear or lanceolate lobes, to ¾ in. long: fls. white, rarely rose, ⅓ in. long, in clusters or sometimes solitary. Calif.

parviflòra: see *G. lutea.*

pulchélla. Skyrocket. Per. to 2 ft.: lvs. pinnately dissected into linear segms.: fls. crimson to white, in a narrow panicle. Mont. to Wash.

púngens (*Leptodactylon pungens*). Per. to 6 in., with woody base, densely leafy: lvs. palmately divided into 3–5 lobes, to ½ in. long: fls. white, pink or yellowish, ¾ in. long, solitary. Ore. to Calif. and Nev.

rigídula. Per. to 1 ft.: lvs. pinnately divided into linear rigid segms.: fls. blue, rotate, scattered. Tex. to Mex.

rùbra (*G. coronopifolia. Ipomopsis auarantiaca, elegans* and *sanguinea*). Standing-Cypress. Bien. or per. to 6 ft.: lvs. pinnately dissected into needle-like segms.: fls. scarlet, yellow dotted with red inside, in a narrow terminal panicle. S. C. to Fla. and Tex.

squarròsa (*Navarretia squarrosa*). Skunkweed. Ann. to 1 ft.: lvs. to 1½ in. long: fls. blue, ½ in. long, the calyx-lobes spine-tipped. B. C. to Calif.

tenuiflòra. Ann. to 3½ ft.: lvs. mostly basal, 1–3-pinnatifid into narrow segms. to 10 in. long: fls. lilac to magenta, to ¾ in. long, in open panicles, corolla tubular-funnelform with broad lobes. Calif.

trícolor. Birds-Eyes. Ann. to 2½ ft.: lvs. 2-pinnately dissected into linear segms.: fls. with lilac or violet lobes, yellowish tube and throat marked with purple, borne in loose clusters. Calif. Var. **ròsea** has rose fls.

virgàta (*Hugelia virgata*). Ann. or bien. to 15 in.: lvs. filiform, the upper 3-parted, to 1 in. long: fls. blue with yellow throat, to ⅔ in. long. Calif.

GILIBÉRTIA. *Araliaceæ.* Shrubs or trees with simple, entire or 3-lobed lvs., small fls. in umbels, and berry-like frs.; grown under glass or in the open far S. For cult. see *Polyscias.*

japónica (*Dendropanax japonicum*). Lvs. entire or 3-lobed, about 3 in. long: fls. in umbels about 1 in. across. Japan.—Planted in Calif.

GILLÈNIA (*Porteranthus*). *Rosaceæ.* Two N. American per. erect branching herbs with 3-lobed or -parted lvs. and white or pinkish long-stalked fls. in terminal panicles; grown in the wild- or about rock-gardens and of easy cult. Propagated by seeds and by division.

stipulàta. American Ipecac. To 4 ft.: lfts. cut-lobed, the stipules broad and leaf-like: fls. to ½ in. across. N. Y. to Ga. and La.

trifoliàta. Indian Physic. Similar to preceding but lfts. toothed and stipules small and awl-shaped. Ont. to Ga. and Mo.

GILLIFLOWER: *Mathiola incana.*

GILL-OVER-THE-GROUND: *Nepeta hederacea.*

GINANNIA: *Holcus.*

GINGER: *Zingiber.* **Wild:** *Asarum.*

GÍNKGO. *Ginkgoaceæ.* One deciduous resinous tree native in China, **G. bíloba** (*Salisburia adiantifolia*), the Maidenhair-Tree. To 120 ft.: lvs. fan-shaped, long-stalked, cut or divided in middle: staminate fls. in catkins: frs. drupe-like, long-stalked, yellowish. Hort. forms are: **aùrea** with bright yellow lvs.; **fastigiàta** of pyramidal habit; **laciniàta** with deeply divided lvs.; **macrophýlla** with larger lvs.; **péndula** with pendulous branches; **variegàta** with lvs. variegated yellow.—Grown as a street or ornamental tree, hardy N. and of easy cult. in good soil. Propagated by stratified seeds, layers, cuttings, and named vars. by grafting and budding. The pistillate tree is undesirable because of the strong-smelling frs., and propagation by cuttings rather than by seeds is, therefore, sometimes advised.

GINKGOÀCEÆ. Ginkgo Family. Only 1 genus of 1 species, Ginkgo, grown for ornament. The family was founded in 1897; the genus had theretofore been placed in the Coniferæ. In geologic times the ginkgoes were widespread in several species.

GINSENG. Two woods species of Panax (which see) grown for the roots which are much prized by the Chinese for medicinal uses. The native American species is chiefly grown or gathered in the United States and Canada for export. The plants are readily raised when provided with shade and constant moisture, but in land well drained of surface water. Slat or lath sheds afford good sun protection. The soil should be fertile and deep for the production of the best roots. The plant is grown from seeds that are commonly stratified or buried about a year and then sown in beds; but a good proportion may germinate the first year if sown as soon as ripe and not allowed to become dry. Autumn or spring are proper times for transplanting to permanent quarters, where the plants may stand 4 or 5 inches apart in either direction. The root matures for market in about five years; but some of the profit in ginseng culture has come from raising seeds, which should be produced rather freely at three years and abundantly at five years and thereafter; and seedlings may be sold at one and two years old.

GIRASOLE is the plant commonly known as Jerusalem artichoke but it is not an artichoke and has nothing to do with Jerusalem: it is supposed that Jerusalem, in this relation, is a corruption of the Italian name girasole. The plant is a stout tall-growing perennial, *Helianthus tuberosus* (which see), hardy throughout the country. The "artichokes" are the subterranean potato-like tubers which are nutritious alike to man and beast. It persists and becomes a weed unless the ground is completely cleaned of tubers when the crop is harvested. Propagation is by the tubers, planted in autumn or spring. On good ground the crop needs little attention except to keep down the competing weeds. The yield is heavy and should be valuable.

GLABROUS: not hairy or pubescent or tomentose; incorrectly used in the sense of smooth (not rough).

GLADÌOLUS. Gladiolus, Gladioli. *Iridaceæ.* Cormous plants of perhaps 200 species, abundant in S. Afr. and others in trop. Afr. and Medit. region, now very popular for summer and autumn bloom and also for earlier flowering under glass. Many specific names are known to be in the country, as recorded below, but the common garden or hortulan gladiolus does not now represent a single species in its original form, but a modification or probably a series of blends of a few species that were early introduced to cult. or that have proved to be specially useful for horticultural purposes. It is probable that *G. blandus, G. cardinalis, G. dracocephalus, G. psittacinus, G. purpureoauratus, G. oppositiflorus, G. Saundersii, G. primulinus* have mostly contributed to the origin of the common hortulan gladioli. One of the early forms, a reputed hybrid, was *G. gandavensis;* and subsequently as the complexion of the modified hortulan kinds began to assume its present character, such names as *G. hybridus, G. Lemoinei, G. Nanceianus, G. Childsii, G. Froebelii, G. turicensis* and *G. princeps* were current but they are of little interest to contemporaneous growers. The kinds of hortulan gladioli are numerous now and of great excellence, the merits residing particularly in the shape of the flower, its size and color and markings, substance, season, keeping qualities, size and character of spike. With the exception of *G. primulinus,* in various degrees of modification, one does not now recognize straight botanical species in the common garden gladioli. In recent years many species have been intro. from Afr. by seeds. This important group of plants is represented in the American Gladiolus Society and the New England Gladiolus Society.

The flower of the gladiolus is borne from a green spathe of two leaves or valves. The perianth has 6 colored parts all united below into a tube which is mostly curved; the 3 upper parts or segments are larger than the 3 lower and often arched or hooked over them. The stamens are 3, attached deep in the tube, and the anthers are long and slender. Stigmas are 3. The ovary is inferior, 3-celled, ripening into a 3-valved many-seeded capsule.

Gladioli are tender and should be grown between the spring and autumn frosts, although the corms often persist even in northern states if well protected with ground covering. Open sunny exposure is best. Strong corms set in good earth the first of May yield plants that should begin to bloom by late July or the first of August. The ground should be well prepared and have good drainage. The use of stable manure the year previous should produce good results, but it should not be applied with the corms. The corms are planted as soon as the ground becomes warm, or in succession for later bloom, 3 to 6 inches deep; the greater depth is advisable only on warm open land and with strong corms; the plants usually stand up better with the deeper planting. For strong specimen spikes the plants may go 5 to 8 inches apart, but for mass effects they may be grown twice as thick. Planted 5 inches deep and 3 to 5 inches apart, the plants probably will not require staking. If considerable quantities are to be grown, the plants may be in rows that are wide enough apart to allow of easy tillage by hand or horse.

Before freezing weather the plants are lifted, the tops are removed, and the corms are stored in a cool dry place until spring. See that the corms are firm, clean and dry and well cured before being put away.

Named varieties or particular colors are propagated by means of the cormlets that form around the old corms or bulbs. The cormlets are planted in drills in spring, taken up in autumn and stored as are the regular flowering corms. In the second or third year the plants should bloom. New varieties or strains are grown from seeds, which are sown and plants handled as are the cormlets.

The gladiolus is well adapted to use as cut-flowers. The flowers open in the morning, and then the spike may be cut before it has bloomed much, with a long stem. Remove the old flowers. Provide fresh cool water daily, cut off a little of the stem end, and all the buds on the spike will open.

Áckermanii: listed name of unknown botanical standing.

alàtus. Little plant, to 1 ft. or less: lvs. linear and rigid, basal or 2 or 3 on st.: fls. 3–5, dark red and pink, segms. very unequal, lower segms. green and pink, upper segm. to 1½ in. long. S. Afr. Var. **namaquénsis** (*G. namaquensis*) is somewhat more robust with flame-colored fls.

aléppicus. To 3 ft.: lvs. grass-like: fls. dark purple or violet, on a one-sided 5–7-fld. spike. Palestine.

anatólicus: listed name.

angústus. Sts. simple, 2–3 ft.: lvs. linear, to 2 ft. long and ¼ in. or less broad: fls. 2–6, long-tubed, white, 3 lower segms. purple-marked. S. Afr.

blándus. Sts. to 2 ft. long, sometimes branched: lvs. about 4, to 1 ft. long and ¾ in. wide: fls. 4–8, white and red-tinged, sometimes pure white and sometimes pink, segms. acute, upper one ¾ in. broad and others narrower. S. Afr.

brenchleyénsis: a hort. form closely allied to *G. gandavensis.*

brevifòlius. St. to 2 ft.: lvs. mostly basal, linear, to 2 ft. long: fls. 4–12, pink or lilac, the curved tube ¾ in. long and about equalling segms., lower segms. marked purple in throat. S. Afr.

byzantìnus. Resembling *G. communis* but more robust, with larger dark purple fls., lower segms. with white central line. Medit. region.

callístus. Stout, to 3 ft. and more; allied to *G. blandus,* but differs in greater size, more robust branched infl., 3 upper segms. blotched at throat, anthers declined and violet: lvs. plane, glabrous, ensiform: perianth-tube somewhat curved, segms. white with pale rose tint, the 3 upper ones with red spots. Cape Province.

cardinàlis. Sts. to 4 ft. long: lvs. 2–3 ft., glaucous-green: fls. 5–10 or more, bright scarlet and crimson, upper segm. largest and hood-shaped, lower ones white-blotched. S. Afr., sometimes hanging from cliffs.—Early intro. to cult. and supposed to be one of the parents of *G. gandavensis.* Var. **élegans** is a hort. form.

carmíneus. `St. to 1½ ft.: lvs. linear, to 8 in. long: fls. 3 in. across, carmine, tube white outside, two of inner segms. with dark pale-centered spot. S. Afr.

Cólvillei. Rather small, very early flowering, spikes short: fls. open or flaring with pointed segms., scarlet with oblong blotches at base. Hybrid *G. tristis* var. *concolor* with pollen of *G. cardinalis,* one of the earliest garden forms. Var. **álbus,** The Bride, has white fls. This old strain is still in cult.; hardy in the middle S. There are several forms of it.

commùnis. St. to 2½ ft.: lvs. 3 or 4, about 1 ft. or less long: fls. 4–8, about 1½ in. long, narrow, bright purple, segms. nearly equal in length, anther shorter than filament. France, Germany; hardy in middle sections.

Coòperi. Much like *G. psittacinus,* but perianth-tube longer and segms. more acute. S. Afr.

crassifòlius. St. to 3 ft.: lvs. 6, to 2 ft. long, stiff, with thick ribs: fls. numerous, bright red, 1 in. long, curved tube and segms. nearly equal. S. Afr.

cuspidàtus. St. simple, 2–3 ft.: lvs. 3 or 4, linear and rigid, to 2 ft.: fls. 4–8, white or pale pink, tube 2-3 in. long and segms. shorter, 3 lower segms. purple-blotched. S. Afr.

Dàvisoniæ. Lvs. sword-shaped or linear-lanceolate, sparingly minutely pubescent, 10–12 in. long and to ½ in. or more broad, mostly basal: spike simple, to 10 in. long, 7-11-fld., the fls. nearly erect, rose-colored, the 3 inferior segms. somewhat lined and spotted and about 1 in. long. Cape Province.

débilis. Very slender, simple, to 1½ ft.: lvs. 3, with long point, one of them equalling or exceeding the st.: fls. 1-3, white, two of segms. with lilac or red spot, segms. about ¾ in. long. S. Afr.

dracocéphalus. St. simple, 2 ft. or less: lvs. to 1½ ft. long and 1 in. broad: fls. few, yellowish-green and spotted dull purple, tube much curved and 2 in. or less long, upper segms. hooded and to 1 in. broad. S. Afr.

formòsus. St. to 2½ ft.: lvs. narrow-linear, to 1 ft. long: fls. mauve-purple, tube ½ in. long, segms. to 1¼ in. long. S. Afr.

gandavénsis. An old garden form that long persisted and plants of similar character are yet seen: sturdy late-blooming plant with broad lvs.: spike dense and rather long; fls. of medium size, bright red and red-yellow, streaked and pencilled, the upper segms. horizontal or hooded. Hybrid, *G. psittacinus* being stated as one parent and *G. cardinalis* the other, but *G. oppositifolius* may be involved; important foundation of much later breeding.

grácilis. St. very slender, to 2 ft.: lvs. 2–3, linear and apparently terete, rigid: fls. 2-5, fragrant, pale blue or lilac, segms. unequal, limb to 1½ in. long, the lowest longest and prominently cuspidate. S. Afr.

grándis. St. slender and terete, to 2½ ft.: lvs. 2-3, linear, strongly ribbed, to 1½ ft. long: fls. 1-5, fragrant, yellowish and tinged purplish-brown, tube to 2½ in. long and segms. shorter. S. Afr.

hirsùtus. St. hairy, simple, to 2 ft.: lvs. 4-6, rigid and very strongly ribbed, short, hairy: fls. 3-6, bright red, tube 1½ in. long and segms. of similar length. S. Afr.

hortulànus. Hortulan or Garden Gladioli. An inclusive group, for the prevailing cult. kinds of gladiolus to which no recognized botanical specific name will now apply, which cannot be included in any of the species. They are perhaps descendants more or less directly from *G. psittacinus*, variously obscured and modified. They are large strong very floriferous plants of sturdy growth, and heavy spikes of fls. in many shades and markings, but most of them with tints of lilac and violet, the upper segms. sometimes hooded and often the fl. spread wide open. There are hundreds of named vars. or seedlings.

ignéscens. Much like *G. psittacinus* in fl., but with very long narrow lvs. which are 5 or 6 and nearly or quite basal: st. 2-3 ft.: spikes 2-4-fld., very open: perianth scarlet, 3 in. long, the upper segm. horizontal. Madagascar.

illýricus (*G. Reuteri*). To 1½ ft. or more: lvs. 6-10 in. long, slender, sheaths 2-edged: fls. 4-8, reddish changing to bluish, the basal segm. somewhat acute and exceeding the obtuse lower lateral segms., anthers shorter than filaments. Eu.

imbricàtus. To nearly 3 ft.: lvs. 2 or 3, one of them developed into a rather broad ribbed blade about equalling st.: fls. 6-10, purple-red, opening wide, lower segms. with lighter marks, anther shorter than the filament. Eu.

inflàtus. Lvs. 3, very narrow or subterete and rigid, the longest exceeding the st.: fls. 1-4, pink, the curved tube to 1 in. long, and the limb of equal or somewhat greater length, 3 upper segms. to ¾ in. broad. S. Afr.

Leichtlínii. St. 2 ft.: lvs. 4, about 12 in. long and less than 1 in. broad: fls. 6-8, bright red, the 3 lower smaller segms. red at tip, then yellow, and bearing minute red spots. Transvaal.

Mùrieliæ (*Acidanthera Murieliæ* of hort.). To 3½ ft.: lvs. to 2 ft. long and 1½ in. wide, erect: fls. cream-white suffused pink toward base, corolla-tube to 5 in. long, curved, slightly fragrant. Abyssinia.

namaquénsis: *G. alata* var.

nànus: *Babiana pygmæa.*

odoràtus. Hybrid between *G. hirsutus* and *G. Spofforthianus.*

oppositiflòrus. St. 3-4 ft., sometimes branched: lvs. about 4, to 1½ ft. long and 1 in. broad: fls. many in a 2-sided spike, white, about 3 in. long, segms. acute. S. Afr.

orchidiflòrus. St. mostly simple, to 1½ ft.: lvs. 3 or 4, linear, to 1 ft. long: fls. 4-6, greenish-yellow, tube ½ in. long, upper segm. hooded and 1 in. long, 3 lower ones decurved. S. Afr.

palúster (*G. triphyllus*). To 1½ ft.: lvs. about 3, lowest one rather broad, ribbed, and about equalling the st.: fls. 3-5, purple-red, with short curved tube and lower segms. rather longer, perianth not flaring, anther shorter than filament. Eu.

permeábilis. St. to 2 ft.: lvs. 3-4, to 1 ft. long: fls. pink or lilac, curved tube ½ in. long, segms. ¾ in. long. S. Afr.

prǽcox: *Anapalina revoluta.*

primúlinus. St. 2-4 ft., stout: lvs. about 3, to 1½ ft. long and 1 in. broad: fls. 3-5, primrose-yellow throughout, upper segms. hooded and 2 in. long and more than 1 in. broad, 3 lower much smaller and deflexed, central upper segm. drooping like an eye-lid. Rain-forests, trop. Afr.—Now entering into horticultural kinds with notable results. See *G. Quartinianus.*

prínceps: listed name of unknown botanical standing.

psittácinus. St. 3-4 ft.: lvs. about 4, rigid, to 2 ft. long and 2 in. broad: fls. several or many, 3 in. or more long, upper segms. hooded and dark crimson, lower much smaller mixed red and yellow. S. Afr.—Early cult.

Quartiniànus. St. 2-3 ft., strong: lvs. 3 or 4, rigid, to 1½ ft. long and ¾ in. broad: fls. 6-9, blood-red to pale yellow, 3 in. or more long, upper segms. hooded, lower ones deflexed and much smaller. Trop. Afr.—*G. primulinus* is thought by some to be a color form of this species.

recúrvus. St. slender, to 2 ft.: lvs. 3, middle one 1 ft. or more long, lowest little more than a sheath: fls. 3-6, fragrant, about 3 in. long, 3 upper segms. broad and lilac, lower segms. yellow with mauve or lilac markings. S. Afr.

Reùteri: *G. illyricus.*

Saùndersii. St. 2-3 ft.: lvs. 4-6, strongly ribbed, to 2 ft. long and 1 in. broad: fls. 6-8, bright scarlet with large white blotch on 3 lower shorter segms., upper segms. acute and 1 in. broad. S. Afr.

ségetum. Cornflag. St. 2 ft. and more: lvs. 3 or 4, about 1 ft. long: fls. bright purple, open or flaring, the segms. obovate-obtuse, anther longer than filament. Medit. region; sometimes seen S.

Stánfordiæ. Fls. delicate pink with yellowish-white on lower segms., 2 in. long, tube very short, lower side segms. shorter than middle one. S. Afr.

triphýllus: *G. paluster.*

trístis. St. simple, to 2 ft.: lvs. 3, terete, to 1½ ft. long, 3-5-ribbed: fls. 3 or 4, fragrant, yellowish-white with purplish on the keels, the curved tube to 2 in. long. Var. **cóncolor.** Fls. nearly or quite white. S. Afr.

undulàtus. Little plant, 1 ft. high: lvs. 4-6, to 1 ft. long and ¾ in. broad: fls. 4-6, about 3 in. long, milk-white with red keels. S. Afr.

villòsus. St. simple, to 2 ft.: lvs. 3, the lower without blade, the others to 1 ft. long and linear, sheaths hairy: fls. 3 or 4, bright red or lilac, about 2 in. long. S. Afr.

Watsònius. St. very slender, to 1½ ft.: lvs. about 3, one of them with blade to 1 ft. long, the others little more than sheaths: fls. 1-4, bright red, the curved tube to 2 in. long, wide open, the segms. acute. S. Afr.

GLADWIN: *Iris fætidissima.*

GLAND: properly a secreting part or prominence or hair or appendage, but often used in the sense of gland-like.

GLASSWORT: *Salicornia.*

GLAUCÍDIUM. *Ranunculaceæ.* A small herbaceous genus native in Japan and China, having alternate lvs., solitary fls. with 4 petal-like sepals, no petals, and numerous stamens, and fr. a follicle. One species is sometimes grown in the rock-garden.

palmàtum. Per. to 2 ft. and more: lvs. palmately lobed, maple-like: fls. rich violet, large. Japan.

GLAÚCIUM. Horned-Poppy. Sea-Poppy. *Papaveraceæ.* Glaucous herbs with orange-colored juice, lobed or dissected lvs., and large yellow or red solitary fls.; grown as annuals in the flower-garden. They thrive in any garden soil in sunny locations. Propagated by seeds.

anatalyénsis: listed name of unknown botanical standing.

corniculàtum (*G. phæniceum*). Ann. to 1½ ft.: fls. red with black spot at base of each petal: fr. bristly-hairy, linear. Eu.

Físcheri: an invalid name of no known botanical standing.

flàvum (*G. luteum*). Per. or bien. to 3 ft.: fls. golden-yellow or orange, 2 in. across: fr. linear, to 1 ft. long. Eu.; nat. in E. N. Amer. Var. **Seùperi** (*G. Seuperi*) has violet spots at base of yellow petals. Var. **trícolor** has parti-colored fls.

leiocárpum. Per. to 1½ ft.: fls. yellow: fr. to 4 in. long. Medit. region.

lùteum: *G. flavum.*

phœníceum: *G. corniculatum.*

rùbrum: probably a hort. form of *G. corniculatum*

Seùperi: *G. flavum* var.

squamígera. Ann. to 1½ ft.: basal lvs. lyrate-pinnatifid, petioled, st.-lvs. usually trifid, sessile: fls. orange: fr. bristly-hairy. Caucasus, Russia.

trícolor: *G. flavum* var.

GLAUCOTHEA: *Erythea armata.*

GLAUCOUS: covered with a "bloom" or a whitish substance that usually rubs off. See *Pruinose.*

GLAÚX. *Primulaceæ.* One succulent but not showy closely lvd. per. herb native in salt-marshes and sea-coasts of the northern hemisphere. **G. marítima.** To 1 ft., pale or glaucous: lvs. opposite, oval or oblong, to ½ in. long: fls. with purplish or white calyx and no petals, very small, solitary in the axils; sometimes planted in brackish places.

GLAZIOVA: *Syagrus.*

GLECOMA: *Nepeta hederacea.*

GLEDÍTSIA. Honey Locust. *Leguminosæ.* Large broad-headed deciduous usually spiny trees with pinnate lvs., small greenish polygamous fls. mostly in racemes, and large flattened pods.

Honey locusts are planted as specimens and for shade; they are adapted to most soils, but *G. sinensis* and *G. japonica* are not hardy North. Propagated by seeds which should previously be soaked in hot water, or rare varieties may be grafted on *G. triacanthos*.

aquática (*G. monosperma*). Water or Swamp Locust. To 60 ft., with simple somewhat flattened spines to 5 in. long: pods oval, 1–2 in. long, usually with 1 seed. S. C. to Fla. and Tex.

cáspica. To 40 ft., very spiny: pods to 8 in. long, curved. W. Asia.

elegantíssima: a bushy unarmed form of *G. triacanthos*.

hórrida: *G. japonica*.

japónica (*G. horrida*). To 70 ft., with simple or branched somewhat flattened spines to 4 in. long: pods to 1 ft. long, twisted. Japan, China.

koraiénsis: listed name, probably referable to *G. japonica*.

macracántha. To 50 ft., with large spines: pods to 1 ft. long, somewhat convex. China.

monospérma: *G. aquatica*.

sinénsis. To 40 ft., with conical often branched spines: pods to 7 in. long, almost straight. China.

texàna. Hybrid between *G. triacanthos* and *G. aquatica:* pods to 5 in. long, straight.

triacánthos. Sweet Locust. To 140 ft., with simple or 3-branched spines to 4 in. long, unarmed in var. **inérmis:** pods to 1½ ft. long, becoming twisted. Pa. to Fla. and Tex. Var. **Bujòtii** has drooping branchlets.—In the Middle West pods are ground into livestock feed, being highly nutritious; heavy bearing hort. vars. have been developed.

GLIRICÍDIA. *Leguminosæ.* Trees and shrubs native in trop. Amer., with pinnate lvs., papilionaceous fls. in racemes, and flat pods with thickened margins; grown for ornament in warm regions and along roadsides and boundaries.

maculàta: *G. sepium*.

sèpium (*G. maculata*). Madre. To 30 ft.: fls. pink, or lilac, and white, in profusion in spring before the lvs.: pods to 5 in. long. Cent. Amer., Colombia.

GLOBE-FLOWER: *Trollius europæus*.

GLOBULÀRIA. *Globulariaceæ.* Herbs and subshrubs with alternate lvs. and small fls. in globular heads; native mostly in the mts. of S. Eu. and Asia. Adapted to the rock-garden where they need partial shade and well-drained soil. Propagated by seed or division.

Alýpum. To 2 ft., shrubby: lvs. oblong, 3-toothed at apex or entire: fls. violet-blue, the heads to ¾ in. across. S. Eu.

bellidifòlia. Much like *G. cordifolia* but lvs. not notched at tip; perhaps a var. of that species.

cordifòlia. Prostrate subshrub to 4 in.: lvs. obovate or spatulate, about 1 in. long, notched only at tip: fls. blue, the heads about ½ in. across. S. Eu.

incanéscens. Per. to 4 in.: lvs. nearly orbicular, notched at apex: fls. blue, upper lip undivided, the heads about ½ in. across. Italy.

nàna: *G. repens*.

nudicaùlis. Per. to 10 in.: lvs. obovate, to 3 in. long, entire: fls. blue, the heads to ¾ in. across. S. Eu.

rèpens (*G. nana*). Prostrate, sts. woody: lvs. club-shaped, entire, ⅙ in. or less long: fls. bluish, the heads ½ in. across. S. Eu.—Much like a dwarf *G. bellidifolia;* variable in cult., and the tiny plant is not frequent.

trichosántha. Globe-Daisy. Per. to 8 in.: lvs. spatulate, to 1 in. long, finely toothed: fls. blue, the heads about ½ in. across. Asia Minor.

vulgàris (*G. Willkommii*). Per. to 1 ft.: lvs. obovate or lanceolate, nearly entire: fls. blue, rarely white. S. Eu., Caucasus.

Wíllkommii: *G. vulgaris*.

GLOBULARIÀCEÆ. Globularia Family. Three genera of herbs and shrubs native in S. Eu. and S. W. Asia, with alternate simple lvs., bisexual fls. in dense bracted heads, having 5-parted calyx, 2-lipped gamopetalous corolla, 4 stamens, superior 1-celled ovary, and fr. a nutlet inclosed in the calyx. The family is placed near Acanthaceæ in the natural sequence. Only Globularia is grown for ornament.

GLOCHÍDION. *Euphorbiaceæ.* Trees and shrubs of trop. Asia and Pacific Isls.: lvs. alternate, simple, usually entire: fls. solitary or in clusters, axillary, staminate of 3–8 overlapping sepals and pistillate with short stout stigmas: carpels 2-ovuled: fr. a caps. Sometimes cult. in warmer parts of Calif.

álbum (*Phyllanthus albus*). Shrub or small tree: lvs. large, entire, villous beneath: fls. small, in axillary clusters: fr. white. Philippines.

GLOMERATE: in dense or compact cluster or clusters.

GLORIÒSA. Glory-Lily. *Liliaceæ.* Climbing herbs with tuberous roots, lvs. prolonged into tendrils, and red or yellow lily-like fls. solitary in the axils of the upper lvs., the perianth-segms. distinct and reflexed or spreading.

Glory-lilies are grown under glass, and out-of-doors in the South. Tubers should be potted from January to March for bloom in summer and autumn. Propagated by offsets or division of the tuber.

Plántii: *G. virescens*.

Roehrsiàna: a garden plant; probably a form of *G. Rothschildiana*.

Rothschildiàna. Lvs. broadly lanceolate: fls. crimson, yellow and whitish at base, to 3 in. long, the perianth-segms. broadly lanceolate and sometimes wavy-margined, strongly reflexed. Trop. Afr.

símplex: *G. virescens*.

supérba. Lvs. lanceolate: fls. yellow changing to red, to 3 in. long, the perianth-segms. narrowly lanceolate and much crisped, usually reflexed. Trop. Afr. and Asia. Var. **grandiflòra** is a hort. form.

viréscens (*G. Plantii. G. simplex*). Lvs. usually ovate: fls. bright red or yellow, to 2 in. long, perianth-segms. oblanceolate, acute, not crisped. Trop. Afr.

GLORY-BOWER: *Clerodendrum.* **-Bush:** *Tibouchina.* **-Flower:** *Eccremocarpus.* **-of-the-Snow:** *Chionodoxa.*

GLOSSOCOMIA: *Codonopsis clematidea.*

GLOTTIPHÝLLUM. *Aizoaceæ.* Stemless very succulent perennials, separated from Mesembryanthemum: lvs. many, tongue-shaped to nearly cylindrical: fls. solitary, sessile or short-stalked, large, yellow; stigmas 7–10. S. Afr.

bigibberàtum: *G. semicylindricum*.

compréssum. Lvs. erect, of unequal size, to 4 in. long and ¾ in. wide, compressed at apex: petals to 2 in. long.

depréssum (*M. depressum*). Lvs. pressed to ground, to 3 in. long and ¾ in. wide, apex incurved: fls. to 3½ in. across.

Haàgei. Lvs. of unequal size, to 4 in. long and ¾ in. wide at base, grayish-green: fls. golden-yellow, paler at base, shining, to 4 in. across.

làtum (*M. latum*). Lvs. of unequal size, to 3½ in. long and 1 in. wide, incurved: fls. 2 in. across. Var. **cultràtum** (*M. lucidum*) has longer-stalked fls. and lvs. not incurved.

linguifórme (*M. linguiforme*). Lvs. tongue-shaped, recurved, to 2½ in. long and 1½ in. wide, upper edge very acute and cartilaginous: fls. to 2½ in. across.

lóngum (*M. longum. M. pustulatum*). Lvs. tongue-shaped, erect, to 4 in. long and ¾ in. wide, often pustulate or blistered at base: fls. to 3 in. across, long-stalked.

Neìlii. Lvs. to 3 in. long, 1¾ in. wide and ½ in. thick, square to oblong, chalky-green or tinged purple: fls. 2 in. across.

parvifòlium. Lvs. ascending or erect, usually of unequal size, to 1½ in. long and ¼ in. thick, glaucous: petals 1 in. long.

propínquum. Lvs. tongue-shaped, to 3 in. long, ¾ in. wide and ¼ in. thick, pale: fls. 2 in. across.

semicylíndricum (*M. bigibberatum. M. bidentatum*). Sts. prostrate: lvs. half-cylindrical, to 4 in. long and ¼ in. wide, with 2 teeth on each side: fls. 1½ in. across.

GLOU-GLOU: *Acrocomia aculeata.*

GLOXINIA: *Sinningia.*

GLUME: a small chaff-like bract; in particular, one of the two empty bracts at the base of the grass spikelet.

GLYCÈRIA (*Panicularia*). Manna-Grass. *Gramineæ.* Mostly tall per. grasses with flat lvs. and spikelets borne in terminal panicles; native in wet places in Eu., Asia and N. Amer. They are coarse meadow grasses of moist lands, and sometimes planted for ornament in wettish places. See *Grasses.*

aquática: *Catabrosa aquatica.*

grándis. Reed Meadow-Grass. To 5 ft.: lvs. to 1 ft. long and ½ in. wide, rough above: panicles 1 ft. or more long, the spikelets usually purple. N. Amer.

spectábilis: *Catabrosa aquatica.*

GLYCÌNE. *Leguminosæ.* Herbs twining or erect, with pinnate lvs., papilionaceous not showy fls. in axillary racemes, and narrow long pods which are constricted between the seeds; native in Old World tropics.

One species is grown as a forage and cover-crop, green-manure, and the seeds sometimes for human food. Seeds should be sown in drills 18–20 inches apart in rows 2½–3 feet apart after danger of frost is over.

Àpios: *Apios americana.*

floribúnda: *Wisteria floribunda.*

híspida: *G. Max.*

Máx (*G. Soja. G. hispida. Soja Max*). Soybean. Hairy ann. to 6 ft., erect: lvs. of 3 ovate lfts.: fls. white or purple, not conspicuous: pods to 3 in. long, brown and hairy, hanging. China, Japan.—Much grown.

sinénsis: *Wisteria sinensis.*

Sòja: *G. Max.*

GLYCÓSMIS. *Rutaceæ.* Small spineless evergreen trees or shrubs, one of them a good ornamental under glass and in the open in Fla.: lvs. pinnate: fls. small, white and fragrant, in panicles; stamens 10: fr. berry-like. **G. pentaphýlla** (*G. cochinchinensis*), India, Malaya and Philippines, is a bush: lfts. mostly 5–7 but sometimes only 1, long lance-oblong, to 6 in. long: fr. about ⅓ in. diam., pinkish and translucent, with 1 or 2 seeds.

GLYCYRRHÌZA. *Leguminosæ.* Per. herbs or subshrubs with pinnate lvs., papilionaceous fls. in axillary racemes or spikes, and short flattened pods; *G. glabra* is grown for economic purposes, the roots furnishing licorice.

Licorice should be grown in rich moist soil. Propagated by division of the roots as well as by seeds.

glàbra. Licorice, Liquorice. To 3 ft.: lfts. elliptical to oblong, obtuse: fls. pale blue, small: pod glabrous or nearly so. Medit. region and Cent. Eu.

lepidòta. Wild Licorice. To 5 ft.: lfts. oblong-lanceolate, mucronate, to 2 in. long: fls. yellow, to ½ in. long: pod densely covered with hooked prickles. B. C. to Mo. and Ark.

GLYPTOSTRÒBUS. *Taxodiaceæ.* One small Chinese tree differing from the genus Taxodium chiefly in the elongated rather than peltate cone-scales. **G. pénsilis** (*G. sinensis. G. heterophylla*). Lvs. deciduous, linear and 3-ranked or imbricated and scale-like on the fruiting branches: cones ovoid, ¾ in. long. Planted in warmer parts of U. S.

GMELÌNA. *Verbenaceæ.* Trees and shrubs of Asia and Australia, sometimes planted on our southern borders: lvs. opposite: fls. yellow or brownish, irregular, 2-lipped, in panicled cymes or racemes: fr. a fleshy drupe.

arbòrea. Deciduous tree to 60 ft.: lvs. cordate-ovate, to 9 in. long, entire, pubescent beneath: panicles to 1 ft. long: fr. ¾ in. long. India, Malaya.

GNAPHÀLIUM. *Compositæ.* Woolly herbs of wide distribution, having alternate lvs. and heads of small obscure disk-fls.; pappus of bristles; somewhat on the order of everlastings. Sometimes planted for ornament.

decúrrens. Ann. or bien. to 3 ft.: lvs. lanceolate, to 3 in. long, decurrent on st., white-woolly beneath: heads ¼ in. long, in corymbose clusters of 2–6, bracts of involucre yellowish-white or brownish. N. Amer.

fœ́tidum: *Helichrysum fætidum.*

lanàtum: *Helichrysum petiolatum.*

Leontopòdium: *Leontopodium alpinum.*

palústre. Ann., low-spreading, to 8 in., loosely woolly: lvs. broadly spatulate to oblong, to ¾ in. long: heads leafy-bracted, bracts of involucre brownish with white tips. Neb. to New Mex., B. C. and Calif.

sylváticum. Per. to 1½ ft.: lvs. linear, to 2 in. long: heads ¼ in. long, in spikes, bracts of involucre yellowish with brown spot toward tip. Eu., N. Asia, N. E. N. Amer.

GNETÀCEÆ. Gnetum Family. Three widely distributed genera, of which only Ephedra is occasionally cult., although this genus has recently been segregated in a separate family, Ephedraceæ. It includes the remarkable Welwitschia (or Tumboa) of S. W. trop. Afr. The family is one of the gymnosperms (with the conifers). Trees or shrubs with large or scale-like lvs., unisexual fls., and fleshy or winged frs. The plants have little ornamental value.

GOAT-NUT: *Simmondsia californica.*

GOATS-BEARD: *Aruncus, Tragopogon.*

GOATS-RUE: *Galega officinalis.*

GOBO: *Arctium Lappa.*

GODÈTIA. *Onagraceæ.* Ann. flower-garden herbs related to Œnothera, commonly erect, with narrow alternate lvs., showy bright red, lilac, purple or white diurnal fls. in leafy racemes or spikes, and capsular frs.

Godetias should have light soil and sunny exposure. Propagated by seeds sown where wanted or under glass for transplanting.

amœ̀na. Farewell-to-Spring. Slender to 3 ft., mostly an open grower, with scattered fls.: lvs. linear to lanceolate, to 2 in. long: fls. lilac-crimson or red-pink varying to white, to 2 in. across, often double: caps. 1½ in. or more long, slender. Calif. to B. C. Var. **Líndleyi** has a large spot in center of petals.

azaleaflòra is a double-fld. bright carmine form of *G. grandiflora.*

Bóttiæ. Slender, to 3 ft.: lvs. linear to lanceolate, to 2½ in. long: fls. pink or light crimson, to 2 in. across. S. Calif.

carmínea: probably *G. grandiflora* var.

densiflòra: *Boisduvalia densiflora.*

Góddardii. To nearly 2½ ft.: lvs. obovate to linear, to 1½ in. long: fls. pink- to purple-crimson, with or without dark "eye," in short dense spikes: caps. sessile, terete, to ½ in. long. Calif.

grandiflòra (*Œnothera Whitneyi*). Stout, to 1 ft., compact and very leafy: lvs. oblong, to 1½ in. long: fls. aggregated, rose-red varying to white, with darker blotch in center of petals, to 5 in. across: caps. sessile, less than 1 in. long. Calif. Var. **carmínea** is a carmine-red form.—Known in several dwarf or condensed cult. forms.

lépida. Rather tall, erect, branched, the st. flattened above: lvs. oblong- to ovate-lanceolate: fls. rather close together near ends of branches, about 1¼ in. across, petals pale purplish with darker spot in middle at end: caps. short and thick, gray-hairy. Calif.—Little known in cult.

lilácina: hort. name.

Líndleyi: *G. amæna* var.

parviflòra. Branching from base, the sts. a few in. to 2 ft. or more long: lvs. narrow-lanceolate to linear, to 1 in. long: fls. rose-red, to ¾ in. long. Calif.

quadrivúlnera. Simple or branched, to 18 in.: lvs. obovate or oblong, the upper ones much narrower: fls. scattered or separated, lilac or pale crimson with darker spot near apex of more or less dentate petals, about ¾ in. across: caps. sessile, 4-sided, ½–1 in. long. Calif. to Columbia River.—Little seen in cult.

ròsea: hort. name.

rubicúnda is a lilac-crimson color form of *G. amæna.*

Schwáminii is a more or less double-fld. pink form of *G. amæna.*

vimínea. Strict, short-branched, to 3 ft., sts. whitish: lvs. linear to lanceolate, entire: fls. purple or crimson with dark center, petals to 1 in. long. Calif., Ore.

Whítneyi: *G. grandiflora.*

GOLDBÁCHIA. *Cruciferæ.* One species, **G. lævigàta,** from Persia and Asia Minor. Erect ann. to nearly 4 ft., glabrous, glaucous: lvs. obovate to ovate-oblong, entire or nearly so: fls. violet, small, in elongate racemes: silique 4-sided, usually 2–3-celled with conspicuous constrictions between each.—Allied to Raphanus but differing in shape and nature of the silique or pod.

GOLD-DUST: *Alyssum saxatile.* **-Tree:** *Aucuba japonica* var. *variegata.*

GOLDEN-BELLS: *Emmenanthe penduliflora, Forsythia.* **-Chain:** *Laburnum anagyroides.* **-Club:** *Orontium aquaticum.* **-Cup:** *Hunnemannia fumariæfolia.* **-Eardrops:** *Dicentra chrysantha.* **-Eggs:** *Œnothera ovata.* **-Fleece:** *Thymophylla tenuiloba.* **-Glow:** *Rudbeckia laciniata* var. *hortensia.* **-Shower:** *Cassia Fistula.* **-Star:** *Chrysogonum virginianum.* **-Stars:** *Bloomeria crocea.* **-Top:** *Lamarckia aurea.* **-Tuft:** *Alyssum saxatile.* **-Wave:** *Coreopsis Drummondii.*

GOLDENRAIN-TREE: *Kœlreuteria paniculata.*

GOLDENROD: *Solidago.*

GOLDENSEAL: *Hydrastis canadensis.*

GOLDFIELDS: *Baeria.*

GOLD-FLOWER: *Hypericum Moserianum.*

GOLDILOCKS: *Linosyris vulgaris.*

GOLDTHREAD: *Coptis.*

GOMÈSA. *Orchidaceæ.* Brazilian epiphytes with 1–3-lvd. pseudobulbs and yellow or yellowish-green fls. in pendulous axillary racemes beneath the pseudobulb, the dorsal sepal and petals similar, the lip shorter than the sepals. They grow best in the temperate house; see *Orchids.*

planifòlia. Pseudobulbs to about 3 in. high: racemes many-fld., to 10 in. long, fragrant; lateral sepals partially united, the lip with 2 crests. Aug., Oct.–Feb.

GOMPHOCÁRPUS. *Asclepiadaceæ.* Per. herbs or subshrubs differing from Asclepias in the hoods without crests or appendages; one species grown out-of-doors in Calif.

téxtilis. To 3 ft.: lvs. opposite, linear-lanceolate, about 3 in. long: fls. white with violet-lobed crown: fr. bladdery, pale green with bristly hairs, to 4 in. long. Habitat unknown.

GOMPHOLÒBIUM. *Leguminosæ.* Australian shrubs with simple or compound lvs., yellow or red papilionaceous fls., and ovoid or globular inflated pods; one species may be planted in S. Calif.

latifòlium. Large glabrous shrub: lvs. digitate, of 3 linear or linear-lanceolate lfts. to 2 in. long: fls. yellow, 1 in. or more across, in loose racemes, the keel densely fringed.

GOMPHRÈNA. *Amaranthaceæ.* Erect or prostrate per. and ann. herbs, *G. globosa* grown as an "everlasting," having clover-like, white, red or violet heads; useful for bedding, for cut-fls. and for winter decoration. For cult. see *Everlastings;* grown readily from seeds.

aùrea: *G. globosa* var.

decúmbens. Ann., prostrate or decumbent, the much-branched sts. to 2 ft. long: lvs. oblong or oval, to 3 in. long: heads subtended by 2 bracts, white, ½ in. or less across. Tex., Mex. to S. Amer.

globòsa. GLOBE AMARANTH. Ann., erect, branching, somewhat stiff, to 1½ ft.: lvs. oblong to elliptic, to 4 in. long, ciliate on edge: heads subtended by 2 leafy bracts, purple, orange, rose, white, variegated, about 1 in. across, not as papery as most everlastings. Old World tropics. Color forms include **álba, aùrea, cárnea, ròsea, rùbra.** Var. **nàna** is listed as growing to 8 in. and of compact habit.

Haageàna. Per. to 2½ ft. but grown as ann.: lvs. oblanceolate to oblong-linear, to 4 in. long: heads subtended by 2 bracts, light red with yellow florets, 1 in. across. Tex., Mex.

nàna: *G. globosa* var.

nítida. Ann. to 2½ ft., usually erect: lvs. obovate to oval, to 2½ in. long: heads subtended by 2 lvs., bracts white, ½ in. across. Ariz. to Mex.

GONGÒRA. *Orchidaceæ.* Trop. American epiphytes having pseudobulbs which bear usually 2 plaited upright-spreading lvs. and a pendulous raceme from near the base, the fls. with the dorsal sepal and the small petals attached to the column, the lateral sepals spreading and the lip with a pair of erect and variously horned or bristle-bearing side lobes and more or less compressed mid-lobe. Grown in the temperate greenhouse; for cult. see *Orchids.*

armeniaca. Pseudobulbs ovoid, to 2½ in. long: lvs. lanceolate-elliptic: scapes drooping, to about 20-fld.; sepals apricot-colored or salmon with reddish-purple spots, reflexed; petals very small; lip inflated, yellow and fleshy, fragrant. Cent. Amer.

atropurpùrea. Pseudobulbs 2–4 in. long, grooved: lvs. 2: racemes pendulous, many-fld.; fls. 1½–2 in. across, dark purplish-brown, fragrant. Venezuela, Trinidad, British Guiana.

Chárlesworthii. Scape arching, to 1½ ft. long, 16–20-fld.; fls. nearly white, sepals barred with light brownish-purple. Hab.?

galeàta (*Acropera Loddigesii*). Pseudobulbs about 1¾ in. long: lvs. to 1 ft. long and 1¾ in. wide: fls. brownish-yellow or wine-colored, on arching pedicels, in racemes to 8 in. long. June–Sept. Mex.

maculàta: *G. quinquenervis.*

quinquenérvis (*G. maculata*). Pseudobulbs ovoid-oblong, 2-lvd., furrowed: lvs. oval to elliptic-lanceolate: fls. yellow spotted with dark red, in loose racemes to over 2 ft. long. Jan.-Sept., Nov.–Dec. Trop. Amer.

Scaphéphorus. Pseudobulbs ovoid: scape arching, up to 32-fld., to nearly 2 ft. long; sepals and petals reddish-brown or yellowish-white spotted with dark purple; lip yellow and rose. Peru.

speciòsa: *Coryanthes speciosa.*

GONIOLIMON: *Limonium.*

GONIOPHLEBIUM: *Polypodium subauriculatum.*

GONÓLOBUS. *Asclepiadaceæ.* Mostly trop. herbaceous or woody plants of Amer., chiefly trailing or climbing: lvs. opposite, mostly heart-shaped: fls. in clusters or umbel-like cymes, usually dark colored, corolla rotate or campanulate, 5-lobed, anthers short, stigma flat-topped.

gonocárpos (*G. lævis*). Sts. high-climbing: lvs. broadly ovate, 4–8 in. long, acuminate, basal auricles overlapping, petioled: fls. brownish-purple, conical in bud, few, in cymes. Va. to Ala. and Tex.

lævis: *G. gonocarpos.*

GOOBER: *Arachis hypogæa.*

GOODENIÀCEÆ. GOODENIA FAMILY. Herbs, subshrubs or rarely shrubs of 12 genera mostly in Australia, characterized by bisexual fls. with very small calyx, 5-lobed corolla, 5 stamens, inferior or partially superior 1–2-celled ovary, and fr. a caps., drupe or nut. Brunonia and Leschenaultia may be planted.

GOÒDIA. *Leguminosæ.* Australian shrubs with compound lvs. of 3 entire lfts., papilionaceous fls. in racemes, and flat pods; one species is grown in S. Calif. for ornament.

lotifòlia. Tall, much branched: lfts. ovate, to ¾ in. long: fls. yellow, the standard purple at base, in racemes to 4 in. long: pods to 1 in. long.

GOOD KING HENRY: *Chenopodium Bonus-Henricus.*

GOODYÈRA (*Peramium*). *Orchidaceæ.* Terrestrial herbs with creeping rhizomes and lvs. (clustered near the base) commonly variegated;

fls. in terminal spikes with dorsal sepal and petals connivent into a helmet and lip entire, saccate. Grown in shady places out-of-doors; see *Orchids.*

Dawsoniàna: *Hæmaria discolor* var.

decípiens (*G. Menziesii. Epipactis decipiens*). To 17 in. tall: lvs. to 4 in. long, dark green veined centrally with white: fls. white, in dense spikes. Summer. N. Amer.

Ménziesii: *G. decipiens.*

pubéscens (*Epipactis pubescens*). Downy Rattlesnake Plantain. To 16 in. high: lvs. to 3 in. long, dark green with white reticulations: fls. white, in dense cylindrical spikes. Summer. E. N. Amer.

rèpens (*Epipactis repens*). Lesser Rattlesnake Plantain. To 12 in. tall: lvs. to about 1¾ in. long, dark green, self-colored or with indistinct white veins: fls. white, in one-sided spikes. July–Aug. N. Eu., N. Asia, Japan, N. N. Amer. Var. **ophioìdes** with distinctly white-veined lvs. is the more common American representative. Newf. to N. C., west to Alaska and Minn.

tesselàta (*Epipactis tesselata*). Loddiges Rattlesnake Plantain. To about 14 in. tall: lvs. to 2½ in. long, dark green veined with lighter green: fls. whitish, in loosely subsecund or spiral spikes. July–Sept. E. N. Amer.

GOORA NUT: *Cola acuminata.*

GOOSEBERRY: *Ribes;* see *Currant.* **Barbados-:** *Pereskia aculeata.* **Cape-:** *Physalis peruviana* and *pruinosa.* **Ceylon-:** *Dovyalis hebecarpa.* **Hill-:** *Rhodomyrtus tomentosa.* **Otaheite-:** *Phyllanthus acidus.* **-Tree:** *Phyllanthus acidus.*

GOOSEFOOT: *Chenopodium.*

GORDÒNIA. *Theaceæ* (*Ternstrœmiaceæ*). Trees or shrubs in warm Asia and 2 in the U. S., with alternate simple lvs., showy white fls. solitary in the axils, and capsular frs.; the American species below are hardy in the southern states and succeed in moist peaty or sandy soil. Propagated by seeds, layers or greenwood cuttings under glass.

alatamáha (*Franklinia alatamaha. G. pubescens*). The specific name is commonly but not originally spelled *altamaha.* Tree to 20 ft., deciduous: lvs. to 6 in. long, bright green and shining above, pale beneath, turning scarlet in autumn: fls. 3 in. across, very short-stemmed. Ga., but now known only in cult.; hardy to Mass.; blooms in autumn. —The name Franklinia is now preferred by some authors.

anómala: *G. axillaris.*

axillàris (*G. anomala*). Large evergreen shrub: lvs. to 6 in. long, dark green above: fls. to 3 in. across, nearly sessile. S. China.

Lasiánthus. Loblolly Bay. To 60 ft., evergreen: lvs. to 6 in. long, dark green and shining above: fls. 2½ in. across, long-stemmed. Va. to Fla. and La.

pubéscens: *G. alatamaha.*

GORMANIA: *Sedum.*

GORSE: *Ulex.*

GOSSÝPIUM. Cotton. *Malvaceæ.* Many trop. shrubs, or woody herbs, sometimes tree-form, of eastern and western hemispheres, with alternate lvs. which are palmately lobed or ribbed, large white, yellow or purplish fls. in an involucel of bracts, and capsular frs. or "bolls" whose seeds bear fleece or lint furnishing the cotton of commerce, and sometimes with an additional fuzz or wool. The different species and races are supposed to be extensively hybridized, and the botany of the genus is difficult. The origin of the cult. cottons is not well understood.

Cotton is grown as an annual field crop in the southern United States. It requires a long season and plenty of moisture throughout the growing period, and dry weather for harvesting. About 1 bushel of seed is customary to plant an acre. The rows should be 3–4 feet apart and the plants in the row 1–2 feet apart. It is rarely grown as an ornamental plant, and it usually does not thrive in economic collections under glass; it is strictly not a horticultural subject and is not further discussed in this Hortus.

arbòreum. Tree C. of India. To 10 ft., with trailing branches: lvs. 3–7-lobed ⅔ or more their depth: fls. purple-red, the bracts of involucel united at base:, seeds with persistent fuzz. Old World.

barbadénse. Sea-Island or Tree C. To 8 ft.: lvs. 3–5-lobed half or more their depth: fls. yellow tinged purple, bracts of involucel nearly or quite distinct: seeds without persistent fuzz, bearing a long staple. Trop. Amer.

brasiliénse. Closely resembling *G. barbadense* but with larger lvs. and fls.: lvs. glabrous, cordate, lobes 5 and acuminate and the middle one longest. Trop. Amer.

herbàceum. Levant C. Ann. herb: lvs. 5–7-lobed less than half their depth: fls. yellow with purple center, bracts of involucel joined at base: seeds with persistent gray fuzz. Arabia, Asia Minor.

hirsùtum. Upland C. Ann. or mostly so, to 5 ft.: lvs. 3-lobed about half their depth: fls. white or light yellow, becoming pink or purple, the involucel bracts not united: seeds with persistent greenish fuzz. Trop. Amer.; probably the principal source of American upland cottons. Var. **religiòsum** is of trailing or climbing habit, with pubescent lvs. and rust-colored fuzz.

índicum. Chinese or Indian C. Small ann. or per.: lvs. 3-lobed to about half their depth: fls. yellow, involucel bracts united at base: seeds with persistent reddish fuzz. E. Asia.

mexicànum. Mexican C. Shrubby: lvs. 3–5-lobed to about ⅓ their depth: fls. pale yellow or white tinged pink, bracts of involucel not joined: seeds with persistent gray fuzz. Mex.

obtusifòlium. Ceylon or Oriental C. Shrub: lvs. 3–5-lobed to less than half their depth: fls. yellow with purple center, involucel bracts united: seeds with pubescent gray or reddish fuzz. Ceylon.

peruviànum. Peruvian C. Lvs. divided ½ or ¾ their depth: fls. yellow, involucel bracts distinct; seeds with persistent gray, rusty or greenish fuzz. Cent. and S. Amer.

punctàtum. Jamaica C. Woody: lvs. divided ½ their depth: fls. yellow with brown center, involucel bracts distinct: seeds with persistent gray or rusty fuzz. Trop. Amer., Afr.

Stúrtii. Medium-sized shrub: lvs. broad-ovate, to 2 in. long, entire, glaucous: fls. lavender with dark center, about 3 in. across. Australia.

vitifòlium. Closely resembling *G. barbadense* but the lvs. hairy beneath and fls. often thrice longer than involucel. Trop. Amer.

GOURD. A general or indefinite name applied to various fruits of cucurbits, plants allied to the pumpkins, cucumbers and melons, usually to those with hard and durable shells. The yellow-flowered gourds of American gardens are *Cucurbita Pepo* var. *ovifera;* the white-flowered gourds are *Lagenaria siceraria.* The snake or serpent gourds are either *Lagenaria siceraria* or *Trichosanthes Anguina.* White or wax gourd is *Benincasa hispida.* Dishcloth gourds are Luffas, mostly *L. cylindrica.* The maté gourd of Paraguay, used as a utensil, is a small form of *Lagenaria siceraria.* Gooseberry gourd is *Cucumis Anguria,* hedgehog gourd *C. dipsaceus,* and ivy gourd *Coccinia cordifolia.* Calabash gourds are *Lagenaria siceraria,* but the calabash itself is not a gourd but the fruit of a tropical tree, *Crescentia Cujete.* Sometimes the word gourd is applied in a general way to all the cultivated species of Cucurbita. In North America the word is employed for fruits grown as ornaments or curiosities rather than for food.

All the gourds denoted above are annual plants (or treated as such) of the simplest cultivation, requiring the treatment accorded pumpkins, cucumbers and melons. Seeds are commonly sown where the plants are to stand, as soon as the weather is warm and settled. If wanted earlier, they may be started in pots or boxes, but they do not transplant readily if the roots are disturbed. All of them are frost tender. The vines make good screens and covers if given support. See *Cucurbita, Pumpkin.*

GOURLIÈA. *Leguminosæ.* Probably only one species, native of Chile. **G. spinòsa** (*G. chilensis. G. decorticans* and var. *subtropicalis. Lucuma spinosa*). Small spiny tree to 12 ft.:

lvs. of 3 pairs of small ovate lfts.: fls. orange-yellow streaked red, in short loose racemes: fr. about 1 in. diam., brownish. In S. Calif.

GOUTWEED: *Ægopodium Podagraria.*

GOVERNORS-PLUM: *Flacourtia indica.*

GRABÒWSKIA. *Solanaceæ.* Spiny shrubs with entire sometimes fleshy lvs., small funnel-shaped violet, pale blue or whitish fls. with exserted stamens, and fr. a berry; native in S. Amer., one grown in Calif. for ornament.

boerhaaviæfòlia (*G. glauca*). Lycium-like shrub with graceful drooping habit, axillary spines ¼ in. long: lvs. oval to oblong, to 1½ in. long, gray-green: fls. white or pale blue, inconspicuous, in clusters or solitary: fr. to ½ in. long. Peru.

glaùca: *G. boerhaaviæfolia.*

GRAFTAGE (French *greffage*) comprises the general subject of propagating or growing plants by means of a cutting or part taken from one plant and inserted on another. The reasons for the operation are chiefly two: to perpetuate a variety, clon or variation (as Fameuse apple or Caractacus rhododendron) that does not come true from seed and is not readily raised from cuttings; to propagate a species that does not produce seed in its adopted country and does not grow acceptably from cuttings. It differs from the making of cuttings in the fact that the severed part, or cion, grows on another plant, or stock, rather than in the soil; the particular variety or species does not grow on its own root.

There are two general kinds of grafting, differing in practice but not in principle,—one of which inserts a piece of branch in the stock (grafting proper), and one that employs only a bud surrounded with adjacent bark with little or no wood attached (budding). In both cases the success of the operation depends on the growing together of the cambium of the cion and that of the stock. The cambium is the new and growing tissue which lies underneath the bark and on the outside of the wood. Therefore, the line of demarcation between the bark and the wood should coincide when the cion and stock are joined. The greater part of grafting and budding is performed when the cion or bud is nearly or quite dormant, that is, usually in winter and early in spring, and budding may be undertaken then, or late in summer when the buds have nearly or quite matured but the bark is still slipping.

When the parts are joined, the wounded or exposed surfaces are securely covered with wax or waxed cloth to prevent evaporation as well as to hold the cions and surfaces securely in place. A good wax for covering the exposed parts is made as follows: Resin 4 parts by weight; beeswax, 2 parts; tallow, 1 part or raw linseed oil ½ part. In making the wax, the materials are first broken up and melted together. When thoroughly melted the liquid is poured into a pail or tub of cold water. It soon becomes hard enough to handle, and it is then pulled and worked over until it becomes tough or "gets a grain," at which stage it attains the color of very light colored manila paper. When wax is applied by hand, the hands must be well greased. If much grafting is to be done a melted wax consisting of 6 pounds resin, 1 pound beeswax and 1 pint raw linseed oil is an advantage because of more rapid application. This wax is kept liquid in a heater and applied with a brush. Water-soluble asphalt emulsion may be used instead of wax and requires no heater.

As the prime object of grafting is to perpetuate a kind of plant that does not reproduce itself from seed or of which seed is very difficult to obtain, cions or buds are therefore taken from this plant and set into whatever kind of stock is available on which they will grow. Thus, if one wants to propagate the Fameuse apple, one does not for that purpose sow seeds of it, but takes cions or buds from a Fameuse tree and grafts them into some other apple tree. The stocks are usually obtained from seeds. In the case of the apple, young plants are raised from seeds obtained mostly from cider mills, without reference to the variety from which they came. Toward the end of the second growing season they are budded or grafted; and thereafter they bear fruit like that of the tree from which the cions were taken. In this example the cion and stock are of the same species, *Malus sylvestris*, but in other cases the two may represent quite different kinds of plants; and in that case one must make sure that the two parts are congenial the one to the other. Thus, the pear is made dwarf by grafting it on the quince; *Magnolia Soulangeana* varieties may be grown on *M. acuminata;* spruces of different species may be successfully grafted on the Norway spruce.

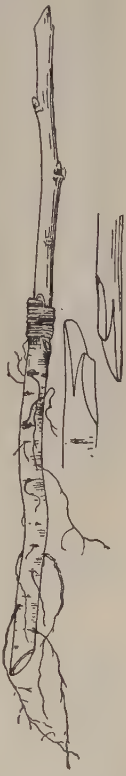

Fig. 1. Whip-graft. At right, the stock and cion ready to be joined. Left, the parts put together and tied.

Grafting proper, as we have seen, is the insertion of a small branch (or cion), usually bearing more than one bud. In grafting on small stocks, it is customary to employ the whip-graft (Fig. 1). Both stock and cion are cut across diagonally, and a split made in each, so that one fits into the other. The graft is tied securely with a band, and then, if it is above ground, it is also carefully waxed.

In larger limbs or stocks up to about 3 inches in diameter out-of-doors the usual method is the cleft-graft. This consists in cutting off the stock, splitting it from the top for a short distance and inserting a wedge-shaped cion in one or both sides of the split, taking care that the cambium layer of the cion matches that of the stock. The exposed surfaces are then securely covered with wax. Grafting in the open is usually performed early in the spring, just before the buds swell. The cions should have been cut before this time, when they were perfectly dormant. Strong terminal growth or vigorous suckers make the best cions. Cions may be stored in sand in the cellar or in the ice house, or they may be buried in the field. Cold storage at 32° F. is satisfactory. The object is to keep them fresh and dormant until they are wanted.

If it is desired to change the top of an old plum, apple or pear tree to some other variety, it is usually accomplished by means of the cleft-graft (Fig. 2). On large limbs (2 inches in diameter or larger) the inlay- or bark-graft is an advantage because the stubs of the stock do not have to be split. In this graft (Fig. 3) two parallel slits are made in the bark of the stock, their width apart just equal to the diameter of the cion. The bark is then removed as shown in the figure, A, and the cion, A, cut with one flat face, is fitted in the slot and secured with two small wire nails. All cut surfaces are covered with wax.

If the tree is very young, budding or whip-grafting may be employed. On an old top the cions should begin to bear when three or four years old. All the main limbs should be grafted. It is important to keep down the suckers or water-sprouts from around the grafts, and part of the remaining top should be cut away each year until the top is entirely changed over (which will result in two or four years).

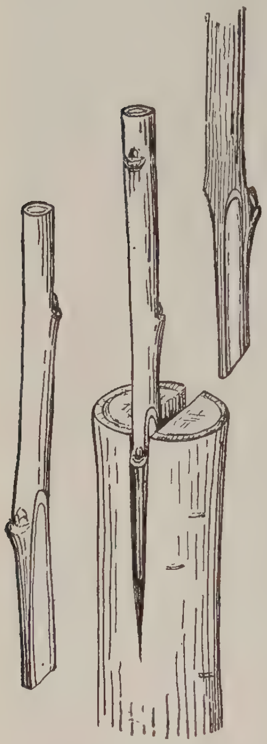
Fig. 2. Cleft-graft. Stock in center, with one cion set and another one to be set on the right; at the left, to show how the cion is shaped.

For grafting small mostly pot-grown material under glass the veneer-graft is commonly employed (Figs. 4, 5). The cion is cut to a slant at the lower end and one face shaved or champered to correspond with a matrix in the stock. The two are bound together, with raffia or waxed cord, and as the subjects are usually kept close in a frame to prevent drying out, the work is not sealed with wax. Many woody ornamental plants are grafted in this fashion.

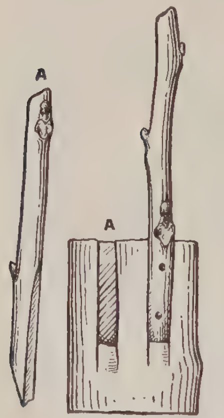

Fig. 3. Inlay- or bark-graft. Left, cion cut ready for insertion. Right, stock with cion inserted and nailed. Slot cut ready for ciont at A.

Budding consists in inserting a bud underneath the bark of the stock, and the commonest practice is that shown in the illustration. Budding is mostly performed in July, August and early September, when the bark is still loose or will peel. Twigs are cut from the tree which it is desired to propagate, and the buds are cut off with a sharp knife, a shield-shaped bit of bark (with possibly a little wood) being left with them (Fig. 6). The bud is then shoved into a slit made in the stock, and it is held in place by tying with raffia or rubber ties. In two or three weeks the bud will have "stuck" (that is, it will

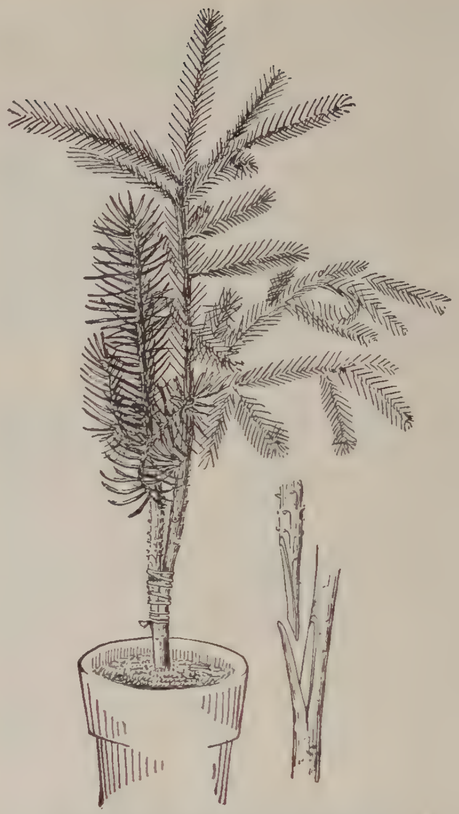
Fig. 4. Veneer-graft, or side-graft; method of making these cuts is shown in the detail.—Norway spruce.

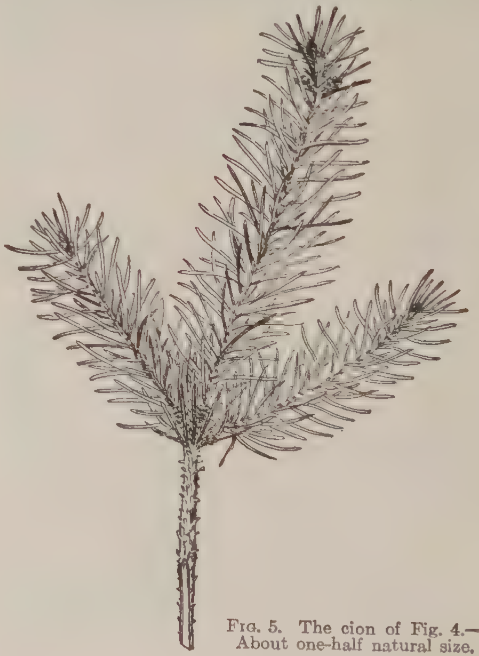
Fig. 5. The cion of Fig. 4.—About one-half natural size.

have grown fast to the stock), and the tie is cut to prevent its strangling the stock. Ordinarily the bud does not grow until the following spring, at which time the entire stock or branch in which the bud is inserted is cut off an inch above the bud; and the bud thereby receives all the energy of the stock. Budding is the commonest grafting operation in nurseries. Seeds of peaches may be sown in spring, and the plants which result will be ready for budding the same August. The following spring, or a year from the planting of the seed, the stock is cut off just above the bud (which is inserted near the ground), and in the fall of that year the tree is ready for sale; that is, the top is one season old and the root is two seasons old, but in the trade it is known as a one-year-old tree. In apples and pears the stock is usually two years old before it is budded, and the tree is not sold until the top has grown one or two years. Budding may be performed also in the spring, in which case the bud grows the same season. Budding is usually undertaken in young branches or parts, preferably in those not more than one year old.

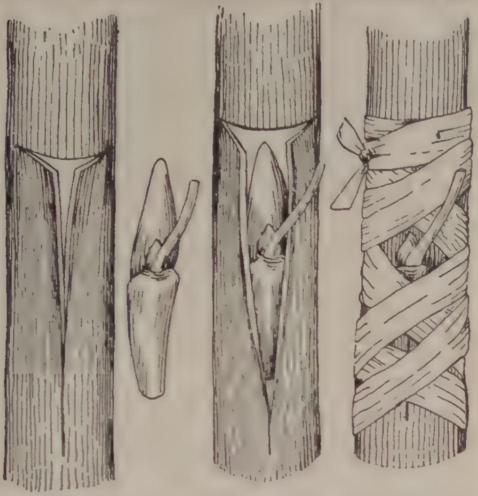

Fig. 6. Budding. Left: the bark opened to receive the bud; the bud; the bud inserted; tied.

Many other fashions of preparing the stock and cutting the cion are employed for particular plants and to satisfy the preference of the grafter. The consultant interested in the subject may consult the Standard Cyclopedia of Horticulture and other more detailed writings.

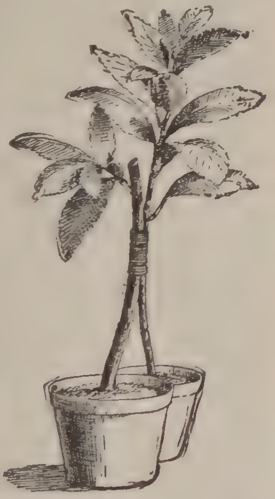

Fig. 7. The inarch. Stock at left, as it will be headed back; cion or inarch at right, which will be severed from its own root when union is complete.

Inarching, sometimes called "grafting by approach," is a special method when union between cion and stock takes place slowly and with difficulty and the cion must therefore be kept active until the two are grown together. In this case the cion is joined to the stock while it is still attached to its parent plant, much as a layer is not severed until roots are well established in the ground. The parts may be joined by the tongue of a whip-graft or by some other method (sometimes the attached surfaces of cion and stock being only cut away to young wood) and then tied together securely and waxed. When union has taken place, the cion is cut back at the top and it is severed from its own branch; it is then permanently transferred to the stock. Fig. 7 illustrates the method.

Bridge-grafting is not a method of propagation but only a means of healing or overcoming wounds. Oftenest it is employed when a tree is girdled as by mice or by winter injury. The wound is trimmed away on either edge to fresh clean bark and wood, and long cions nailed in exposed channels as detailed in Fig. 8. This is essentially the same as the inlay-graft except that both ends of the cion are inlayed. The grafts should be placed about 2 inches apart over the injured areas. The work is then waxed over to protect wound and cions alike. Shoots should be prevented from growing from the cions. In due time the wound is bridged by the ring of cions, and eventually should be completely covered by a new solid growth of wood.

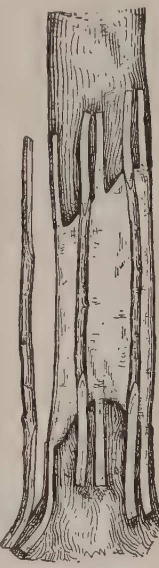

Fig. 8. Bridge-grafting, in which the cions are inlaid in slots cut in the bark.

GRAHAMIA: *Helenium aromaticum.*

GRAM: *Phaseolus aureus* and *Mungo.*

GRAMINEÆ: see Grasses.

GRAMMATOPHÝLLUM. *Orchidaceæ.* Epiphytes having pseudobulbs or thickened sts., thick strap-shaped lvs., and showy fls. in loose many-fld. racemes from the base, the sepals and petals nearly equal, the lip smaller. For cult. see *Orchids.*

speciòsum. Sts. stout, 6–10 ft. long, bearing above numerous two-ranked elongate lvs.: scapes to 6 ft. high, bearing as many as 100 fls.; fls. 3–6 in. across, yellow thickly spotted with brown. Burma, Indo-China, Malaya, Philippines.

GRANADILLA: *Passiflora.*

GRAPE. Species of Vitis (which see) grown for the berry-like edible or ornamental fruits. The grape in some of its many species, hybrids and races is grown over the greater part of North America except the regions of extreme cold. Of the native species, the Fox grape type (*Vitis Labrusca*) is of greatest importance and with its hybrids is the mainstay of grape growing east of the Rocky Mountains, reaching its greatest perfection in the fruit regions of the Hudson Valley and in proximity to the Great Lakes. The Old World grape (*V. vinifera*) grows to advantage only in the mild climate of the Pacific coast and adjacent parts, particularly California where it is grown very extensively, making up nearly seven-eighths of the commercial grape crop of the United States. The native Muscadine grape (*V. rotundifolia*) is grown in the cotton-belt as a home and local fruit but has little general commercial importance. These groups comprise three cultural classes. To these classes may be added the growing of grapes under glass, for which a separate discussion is required.

Soils of various kinds yield good grapes provided they are fairly deep and well drained. Sandy or gravelly clay loams are most desired. Usually better success results in soils not too fertile, as the resulting over-vegetative condition is likely to be non-fruitful and difficult to control. Grapes are naturally drought-resistant.

Propagation of most of the eastern-grown varieties of grapes is by stem-cuttings about one foot in length, usually with 3 buds, made from prunings. These are taken in winter and are stored in moist sand or sawdust to callus. The cuttings are planted out in the nursery-row in early spring, placing the top bud level with the surface of the ground; they make marketable vines at the end of the first or second season. New and rare varieties are sometimes propagated by single-eye hardwood cuttings in a frame or under glass. Muscadine cuttings cannot be rooted easily, so that propagation of this species is mainly by stem-layers, a method adapted also to the other species. Old World grapes must be grafted on cuttings or young plants of native American stocks, usually *Vitis riparia* and *V. rupestris*, otherwise the vines are likely to be destroyed by the grape root-louse (Phylloxera), in regions where the pest has been introduced. If the viniferas are grown on their own roots, propagation is by means of cuttings of dormant one-year-old canes.

Planting and distance vary with region and variety. Either one-year or two-year-old rooted cuttings may be planted, usually in early spring. In the East rows are commonly 8–10 feet apart with vines 8–10 feet apart in the rows which should extend north and south except on steep slopes where contour planting is desirable to control erosion. On arbors and against buildings a vine may occupy more space. Muscadine grapes are planted 12 x 12 feet, or even 15 x 20 feet with vigorous varieties on rich ground.

Tillage is a prime requisite. The most successful cultural method is to plow or disk the vineyard in late autumn or early spring and till continuously throughout the growing season or until the middle or last of July when a cover-crop of oats, rape, buckwheat, millet, or a mixture of some of them is sown. Home plantings may be successful in sod provided the vines are mulched with manure or straw to keep down the grass and if they receive nitrate. Nitrate of soda at the rate of 1 pound to the vine applied in early spring helps to stimulate growth on poorer soils. A complete fertilizer may also benefit the vines indirectly by its effect on the cover-crop.

Pruning of the vine is essential to success in grape-growing. To understand the pruning of American vineyard grapes, the operator must grasp this principle: *Fruit is borne on shoots of the present season, which arise from wood of the previous season called a cane.* To illustrate: A growing shoot of 1940 makes buds. In 1941 a shoot arises from each bud; and near the base of this shoot the grapes are borne (1 to 4 clusters on each shoot). While every bud on the 1940 shoot may produce shoots in 1941, only the strongest of these new shoots bear fruit. The skilled grape grower can tell by the looks of his cane (as he prunes it in winter) which buds will give rise to the best grape-producing wood the following season. The larger and stronger buds usually give best results; but if the cane itself is very big and stout, or if it is very weak and slender, he does not expect good results from any of its buds. A hard well-ripened cane the diameter of a man's little finger is the best size. Another principle to be mastered is this: *A vine with limited space in a vineyard should bear only a limited number of clusters,*—say 30 to 60.

A shoot bears clusters near its base; beyond these clusters the shoot grows on into a long leafy cane. An average of two clusters may be reckoned to a shoot. If the vine is strong enough to bear 60 clusters, 30 good buds must be left at the pruning (which is December to late February).

The essential operation of pruning a grape vine, therefore, is each year to cut back a limited number of good canes to a few buds, and to cut off entirely all the remaining canes or wood of the previous seasons growth. If a cane is cut back to 2 or 3 buds, the stub-like part that remains is called a spur. Present systems, however, cut each cane back to 8 to 12 buds (depending on variety and vigor of vine), and 3 or 4 canes are left.

The top of the vine does not grow bigger from year to year, after it has once covered the trellis, but is cut back to practically the same number of buds each year. Since these buds are on new wood, it is evident that they are each year farther and farther removed from the head of the vine. To obviate this difficulty, new canes are chosen each year or two from near the head of the vine, and the two-year or three-year-old wood is cut away.

At planting the vine is cut back to 2 or 3 good buds. The hole in which the plant is to be set should be large enough to allow a full spreading of the roots. Fine soil should be worked around the roots and firmed with the feet. If the season should be dry, a mulch of coarse litter may be spread around the vine. If all the buds start, the strongest one or two may be allowed to grow. The canes arising from these buds should be staked and allowed to grow through the season; or in large plantations the first-year canes may be allowed to lie on the ground. The second year the weaker cane is removed and the stronger cut back to 2 buds. The two shoots arising from these may be grown to a single stake through the second summer, or they may be spread on a trellis. These are the canes which form the permanent arms or trunk of the vine. From them start the shoots which, in succeeding years, are to bear the fruits. With vigorous varieties under good cultural conditions a cane strong enough to form the trunk may be grown the first season after planting.

Training of the grape must be distinguished from pruning, although one is dependent on the other. A dozen systems of training may be practiced on the same trellis and from the same style of pruning,—for training is only the disposition or arrangement of the parts. On arbors, it is best to carry one permanent arm or trunk from each root over the framework to the peak.

Each year the canes are cut back to short spurs (of 2 or 3 buds) along the sides of this trunk.

In the East grapes are grown mostly on two-wire trellises; the lower wire is 2½ feet above the ground and the second wire 2½ feet higher. The wires are attached to 7–8-foot posts at intervals of every three vines. There are various systems of training. In one of the best, known as the four-cane Kniffin system, a single trunk is brought to the top wire. From this trunk four canes are chosen, two at the level of each wire, one being tied along the wire in each direction at each level. These four canes are renewed every year, using the new canes that arise from spurs near the trunk or from new canes arising from the base of the cane itself. In this and in other systems of trellis pruning it is aimed to leave about 30 to 50 buds to the vine. On arbors more buds are left as the vines have more room. In pruning arbor vines about half or three-quarters of the previous seasons growth is removed, always leaving the more vigorous wood.

The vinifera grapes require much the same mode of pruning as the others except that in field culture with some varieties they are usually not trained on wires or even to posts. The old trunk is kept short and stump-like, by constant pruning forming a head of short branches and spurs. The canes are cut back every year nearly to this head. A mature head after four or more years will bear 5 to 20 spurs, depending on variety, vigor, distance of planting and other factors.

In harvesting table grapes the mature clusters are cut carefully from the vines with a knife or shears and placed in shallow boxes or lugs which are hauled to the packing-house. A large part of the eastern crop is packed in climax baskets and sold either in the local or general market. Grape-juice factories take large quantities of grapes in some districts, as do the wineries of central New York and particularly California. Much of the California crop is dried for raisins.

Yields vary greatly. In the East vines trained on trellises may be expected to yield at the rate of 10 to 20 pounds (25–60 bunches) of fruit to the vine, or 1½–4 tons an acre depending on the variety and the vigor of the vines. Individual vines on arbors may yield more than this. Some long-keeping varieties, as Catawba, can be held in common storage at about 40° F. for three to five months. At 30° F. an even longer storage season is possible. In California the acre yields are usually much greater than in the East.

Because of the great variation in hardiness, ripening season, and resistance to disease the planter, in choosing varieties, should be sure that they are adapted to his particular region. Many varieties are self-sterile so that two or more should be planted near together. Varieties are listed below in order of their ripening. Commercial varieties are starred.

Short-season varieties for the East of more than average hardiness: Moore Early, Winchell, Champion, Fredonia, Portland, Ontario, Lucile.

Varieties adapted to fruit regions of New England, New York and Michigan: Seneca, Portland, Fredonia, Diamond, *Worden, *Delaware, *Concord, Herbert, *Niagara, Agawam, Barry, *Catawba, Sheridan.

Varieties requiring a long season to be grown only in regions south of New York: Iona, Missouri Reisling, Sheridan, Catawba, Golden Muscat, Jefferson, Goethe.

Varieties recommended for Florida: Csaba, Brilliant, R. W. Munson, Ives, *Carman, *Ellen Scott, Armalaga, Fern, Herbemont.

Muscadine varieties for planting in the South: Eden, Scuppernong, Thomas, Flowers, James, Mish.

Varieties of bunch grapes successful in the southern states: Moore Early, Winchell, Diamond, Brighton, Delaware, Ives, Carman, Catawba, Jefferson, Herbemont.

Vinifera varieties grown as table grapes on the Pacific Coast: Mission, Muscat of Alexandria, Malaga, Thompson's Seedless, Flame Tokay, Purple Cornichon, Emperor.

Varieties of good keeping quality: Seneca, Vergennes, Catawba, Mills, Herbert, Barry, Agawam, Keuka, Canandaigua, Dutchess, Lindley.

In many parts of the East, grapes yield sufficient fruit for home use without spraying of any kind. Under some conditions the diseases black-rot and downy-mildew may largely destroy fruit and foliage. Control of both is possible by thorough spraying with bordeaux mixture, 4 pounds copper sulfate, 4 pounds slaked lime, 50 gallons water. This should be applied just before the plants are in bloom and several times later at two- to three-week intervals. The grape root-worm is often a destructive pest. Spraying the foliage with powdered lead arsenate 3 pounds to 50 gallons water, when the injury is first seen on the leaves, will help control the insect.

Under glass, or in "the grapery," various kinds of *Vitis vinifera* may be grown successfully either with heat or without it. With careful choice of varieties and the protection that may be given both vine and fruit, and the skill that is likely to be applied by the gardener in such circumstances, superior grapes for the table may be produced; it is an old and accepted method in horticultural annals, although it has fallen into relative disuse.

The grapery may be a glass lean-to against a building or wall, or a separate independent structure. The method of growing is the same in either case. The vines are set about 4 feet asunder in a single row or line in the space between the central walk and the side of the structure. The roots are supposed to feed both inside and outside the house, openings being left in the foundation to allow them to reach the outer border. A good deeply prepared outside border several feet wide is required, and it has been customary to underlay this with a sloping cement, brick or rubble bottom to insure quick drainage of surface water; much of course depends on the particular place and climate. Weeds and bushes should not be allowed to grow on the border. One strong cane is trained up under the glass roof but hanging some 18 inches below it. This vine is pruned to spurs. The number of clusters is controlled by pruning to reduce the number of buds or by thinning in which unwanted fruit-clusters are removed soon after the berries have set. If the grapery is heated, clusters may be left to ripen on the vines till November and December. Usually the vines are laid down and covered for the winter, the heat being discontinued. The leading variety for growing under glass is Black Hamburg, particularly for the cold grapery. Alexandria, Barbarossa, Chasselas

Musque, Gros Coleman, Muscat Hamburg, are among those more particularly adapted to the warm grapery or long-ripening season.

GRAPEFRUIT: *Citrus paradisi;* see *Citrus Fruits* (page 183).

GRAPE, OREGON-: *Mahonia nervosa.* **Sea-:** *Coccolobis uvifera.* **Tail-:** *Artabotrys.*

GRAPTOPÉTALUM. *Crassulaceæ.* Segregate from the American species formerly included in Cotyledon, native in Ariz. and Mex., distinguished particularly by rotate corolla with petals united at base and illustrated with dots or transverse bands: stemless or nearly so, with thick lvs. forming a small rosette as in Echeveria. Eight species are known.

amethýstinum (*Echeveria amethystina. Pachypytum amethystinum*). Short-stemmed, to 4 in. high, with rosette of very thick flattened lvs., oblanceolate and obtuse, 1½ in. long, ¾ in. wide: infl. few-fld.; petals pale greenish-yellow marked with red. Mex.

Órpetii. Rosettes to about 3 in. diam., lvs. relatively thin, acuminate and cuspidate, glabrous: fl.-sts. about 3 in. tall; fls. about ½ in. across, yellow marked with red. Ariz.

paraguayénse (*Cotyledon paraguayensis. G., Echeveria, Byrnesia, Sedum Weinbergii*). Per. with rosette of thick broad lvs. obtusely keeled beneath, glaucous, to nearly 2 in. long, either basal or borne on a st. to 7 in. long: fls. white spotted with red, in cymes from axils of upper lvs. seldom produced. Mex.—Of easy cult. from plantings of lvs.

Weìnbergii: *G. paraguayense.*

GRAPTOPHÝLLUM. *Acanthaceæ.* Shrubs with opposite often colored lvs. and red or purple tubular 2-lipped fls. in short cymes or panicles; native in Australia and Polynesia. One is grown in the greenhouse and is now a common shrub in trop. Amer. Propagated by cuttings.

horténse: *G. pictum.*

píctum (*G. hortense*). To 8 ft.: lvs. oval, to 6 in. long, entire, purplish or green marked with yellow: fls. purple or crimson, 1½ in. long, stamens exserted. New Guinea.

GRASS: see *Grasses.* **Aleppo-:** *Sorghum halepense.* **Barnyard-:** *Echinochloa Crus-galli.* **Basket-:** *Oplismenus compositus.* **Beach-:** *Ammophila.* **Beard-:** *Andropogon, Polypogon.* **Bent-:** *Agrostis.* **Bermuda-:** *Cynodon Dactylon.* **Billion-Dollar-:** *Echinochloa Crus-galli* var. *frumentacea.* **Blue-:** *Poa.* **Blue-eyed-:** *Sisyrinchium.* **Bottle-brush-:** *Hystrix patula.* **Brome-:** *Bromus.* **Brook-:** *Catabrosa aquatica.* **Canary-:** *Phalaris.* **Carpet-:** *Axonopus compressus.* **Centipede-:** *Eremochloa ophiuroides.* **Citronella-:** *Cymbopogon Nardus.* **Cloud-:** *Agrostis nebulosa.* **Colorado-:** *Panicum texanum.* **Cotton-:** *Eriophorum.* **Crab-:** *Digitaria sanguinalis.* **Dog-:** *Agropyron.* **Dune-:** *Elymus arenarius.* **Eel-:** *Vallisneria.* **Esparto-:** *Stipa tenacissima.* **Feather-:** *Stipa.* **Finger-:** *Chloris.* **Fish-:** *Cabomba caroliniana.* **Fountain-:** *Pennisetum Ruppelii.* **Guinea-:** *Panicum maximum.* **Hair-:** *Agrostis hiemalis, Deschampsia.* **Hares-tail-:** *Lagurus ovatus.* **Herds-:** *Phleum pratense.* **Hungarian-:** *Setaria italica* var. *nigrofructa.* **Johnson-:** *Sorghum halepense.* **June-:** *Poa pratensis.* **Lawn-, Korean:** *Zoysia japonica.* **Lemon-:** *Cymbopogon citratus.* **Lyme-:** *Elymus.* **Manila-:** *Zoysia Matrella.* **Manna-:** *Glyceria.* **Mascarene-:** *Zoysia tenuifolia.* **Meadow-:** *Poa.* **Meadow-, Reed:** *Glyceria grandis.* **Means-:** *Sorghum halepense.* **Melic-:** *Melica.* **Napier-:** *Pennisetum purpureum.* **Natal-:** *Tricholæna rosea.* **Oat-, Tall:** *Arrhenatherum elatius.* **-of-Parnassus:** *Parnassia.* **Orange-:** *Hypericum gentianoides.* **Orchard-:** *Dactylis glomerata.* **Palm-:** *Setaria palmifolia.* **Pampas-:** *Cortaderia.* **Para-:** *Panicum purpurascens.* **Pepper-:** *Lepidium.* **Plume-:** *Erianthus.* **Quack-:** *Agropyron.* **Quake-:** *Bromus brizæformis.* **Quaking-:** *Briza.* **Rabbit-tail-:** *Lagurus ovatus.* **Ravenna-:** *Erianthus Ravennæ.* **Reed-:** *Phragmites maxima.* **Rescue-:** *Bromus unioloides.* **Rhodes-:** *Chloris Gayana.* **Ribbon-:** *Phalaris arundinacea* var. *picta.* **Rice-:** *Oryzopsis.* **Ruby-:** *Tricholæna rosea.* **Rye-:** *Lolium.* **St.-Augustine-:** *Stenotaphrum secundatum.* **Scurvy-:** *Cochlearia.* **Silk-:** *Agrostis hiemalis.* **Spear-:** *Poa alpina, Stipa.* **Spike-:** *Desmazeria sicula, Leptochloa fascicularis.* **Squirrel-tail-:** *Hordeum jubatum.* **Star-:** *Aletris, Hypoxis.* **Sudan-:** *Sorghum vulgare* var. *sudanense.* **Switch-:** *Panicum virgatum.* **Tape-:** *Vallisneria.* **Tunis-:** *Sorghum virgatum.* **Uva-:** *Gynerium sagittatum.* **Velvet-:** *Holcus lanatus.* **Vernal-, Sweet:** *Anthoxanthum odoratum.* **Wheat-:** *Agropyron.* **Whitlow-:** *Draba verna.* **Winter-, Peruvian:** *Phalaris tuberosa* var. *stenoptera.* **Wire-:** *Eleusine indica, Poa compressa.* **Witch-:** *Panicum capillare.* **Yellow-eyed-:** *Xyris.* **Zebra-:** *Miscanthus sinensis* var. *zebrinus.*

GRASSES. *Gramineæ.* Horticultural grasses are the kinds grown for ornament and interest in distinction from the pasture and meadow grasses, the forage or fodder kinds, and the cereal grains. Two general purposes are served by the ornamental grasses,—the flower-garden interest, and the lawn-planting interest.

The grasses that find place in the flower-garden are mostly hardy annuals, prized for their feathery or otherwise ornamental sprays which are employed as greenery in living bouquets or dried and used in winter bouquets being prepared as are the other "everlastings" (which see). These annual grasses are grown readily from seeds, usually sown where the plants are to stand in open sunny places. Sometimes the smaller kinds are grown to maturity in pots for table decoration, the little brizas and the delicate kinds of aira and agrostis being well adapted to the purpose. The leading annual grasses listed as ornamentals are in Agrostis, Aira, Anthoxanthum, Avena, Brachypodium, Briza, Bromus, Chloris, Coix, Deschampsia, Desmazeria, Digitaria, Echinochloa, Eleusine, Eragrostis, Euchlæna, Festuca, Holcus, Hordeum, Koeleria, Lagurus, Lamarckia, Oryza, Oryzopsis, Panicum, Paspalum, Pennisetum, Phalaris, Polypogon, Scleropoa, Secale, Setaria, Sorghum, Triticum, Zea, Zizania.

The grasses adapted to yard, landscape or border planting are mostly large-growing perennial species; and some of them also yield excellent material for dry bouquets, as the bottle-brush-grass (Hystrix), eulalia (Miscanthus), and pampas-grass. In warm countries the bamboos are commanding examples. See *Bamboo.* The perennial grasses are usually multiplied by division of the clumps or by the stolons or offsets that may arise; seeds (when procurable) should give blooming plants the second year. Important perennial grasses are Agropyron, Agrostis, Alopecurus, Ammophila, Ampelodesma, Anatherum, Andropogon, Anthoxanthum, Aristida, Arrhenatherum, Arundinaria, Arundo, Axonopus, Bambusa, Brachypodium, Briza, Bromus, Catabrosa, Cephalostachyum, Chimonobambusa, Chloris, Chusquea, Cortaderia, Cymbopogon, Cynodon, Cynosurus, Dactylis, Dendrocalamus, Deschampsia, Elymus, Eragrostis, Eremochloa, Erianthus, Euchlæna, Festuca, Glyceria, Gynerium, Holcus, Hordeum, Hystrix, Koeleria, Leptochloa, Lolium, Melica, Melinis, Miscanthus, Molinia, Neyraudia, Notholcus, Oplismenus, Oryzopsis, Panicum, Paspalum, Pennisetum, Phalaris, Phleum, Phragmites, Phyllostachys, Pleioblastus, Poa, Pseudosasa, Saccharum, Sasa, Semiarundinaria, Setaria, Shibatæa, Sinarundinaria, Sorghum, Stenotaphrum, Stipa, Thamnocalamus, Thysolæna, Tricholæna, Trisetum, Uniola, Vetiveria, Zoysia.

A third class of grasses comprises the sod-forming kinds employed in the making of sward for lawns, but in this case the plants are not raised and treated separately and need not be separately listed here. See *Lawn.* The meadow and pasture grasses are of the same or similar nature and often the same species, but these kinds are not directly within the purview of this work, although entered botanically.

A fourth set of grasses comprises the large forage kinds. These are not specially discussed in this book, although the species are entered. Important fodder and forage grasses are entered under the genera Echinochloa, Eleusine, Euchlæna, Panicum, Pennisetum, Setaria, Sorghum, Zea, as well as the herbage of the small grains in the genera Avena, Hordeum, Oryza, Secale, Triticum.

A fifth group includes the cereal grains and sugar-cane, not included here beyond brief accounts of the species under their generic headings, as Avena, Hordeum, Oryza, Saccharum, Secale, Sorghum, Triticum, Zea.

GRASS-NUT: *Brodiæa laxa.*

GRASSWORT, STARRY: *Cerastium arvense.*

GRATÌOLA. *Scrophulariaceæ.* Herbs with opposite sessile lvs., white or pinkish fls. solitary in the axils, having entire or 2-lobed upper lip and 3-lobed lower lip, and fr. a caps.; rarely cult.

officinàlis. Per. to 1 ft., with creeping rhizomes: lvs. lanceolate, toothed: fls. pink or white, with yellow throat, to ¾ in. long, pedicelled. Eu., Asia.

GREASEWOOD: *Salvia apiana, Sarcobatus.* In the West applied also to other plants that are not horticultural subjects and not included here.

GREENBRIER: *Smilax.*

GREENHOUSE. A glasshouse or structure in which plants are maintained or grown. Originally the word was applied to those houses in which plants are merely preserved or kept green in the winter, but this signification is now little known in America. Special types of glasshouses are the conservatory, in which plants are kept or displayed; stove or hothouse, in which plants are grown in a high temperature; the propagating pit, in which the multiplication of plants is carried forward; forcing-house in which special plants are made to yield their products far out of their natural period or sequence; and the houses of various temperatures, as cold, cool and intermediate.

GREENÒVIA. *Crassulaceæ.* Tufted per. herbs native in Canary Isls., formerly included in Sempervivum: lvs. in dense rosettes, entire, fleshy: fls. yellow, with many narrow petals.

diplocýcla. To 8 in.; rosette to 10 in. across, always single, without offsets: lvs. spatulate, densely ciliate, to 3 in. long: fls. ½ in. across, in a large rather dense infl.

dodrentàlis (*G. gracilis*). To 10 in., with many long-stemmed offsets: lvs. spatulate, in rosettes to 2 in. across: fls. ¼ in. long, in a flattish 12-fld. infl.

grácilis: *G. dodrentalis.*

holochrỳsum: probably *Æonium holochrysum.*

rosulària pestalózzæ: listed name.

GREENS. Pot-herbs are sometimes known as "greens," particularly those that come in early spring when green food is specially welcome. Such greens may be spinach, kale, dandelion, dock, pigweed and other plants grown or gathered that make acceptable eating when cooked in a pot. Accounts of the most important of these plants will be found under their appropriate alphabetic entries.

Christmas greens, or "green," are various kinds of plants that hold their foliage and color in winter and can be employed in decoration. Some of these plants are grown for the purpose, but the larger part of the durable ones are gathered from the wild including such kinds as holly, laurel, galax, smilax. The indiscriminate and destructive gathering of such wildings is to be discouraged, and other means of Christmas decoration should be developed for the large undertakings. It is more important to the education and the sentiment of the people that wild life be protected than that showy temporary public displays of this nature, of growths unrelated to plant-growing and environment, be multiplied.

GREGORIA: *Douglasia Vitaliana.*

GREÌGIA. *Bromeliaceæ.* S. American terrestrial herbs with stiff lvs. in rosettes and rose-colored fls. in a simple infl. For cult. see *Bromeliaceæ;* sometimes grown for ornament and oddity.

sphacelàta. To 3 ft.: lvs. spreading or recurving, spiny-margined: fls. rose, in dense axillary heads, bracts spiny. Chile.

vulcánica. St. very short: lvs. 2 ft. or more long, spiny-margined, white-scaly beneath: fls. with white tube and red spreading segms., in heads to 3 in. across. Colombia.

GREVÍLLEA. *Proteaceæ.* Many shrubs and trees with alternate lvs., bisexual fls. borne in pairs in a raceme and having long filiform showy styles, and fr. a leathery follicle; native in Australia and New Caledonia.

Grown for ornament and avenue trees in warm regions and sometimes as juvenile pot-plants in the greenhouse. Propagated by seeds.

Bánksii. Shrub or tree to 20 ft.: lvs. with 3–11 linear or lanceolate segms. to 4 in. long, margins revolute, silky-tomentose beneath: fls. red, in dense terminal secund racemes to 4 in. long. Queensland. Vars. **álba** and **Fórsteri** are listed.

bipinnatífida. Shrub to 4 ft., sometimes prostrate: lvs. to 4 in. long, pinnately cut into 9–21 oblong or pinnatifid segms.: fls. red, in loose secund racemes to 4 in. long, sometimes panicled. W. Australia.

crithmifòlia. Shrub to 4 ft.: lvs. to 1 in. long, pinnately cut into 3–5 narrow-linear segms.: fls. in short dense sessile racemes. W. Australia.

Endlicheriàna. Shrub to 7 ft.: lvs. linear, to 4 in. long, silvery-pubescent on both sides: fls. in dense racemes to ¾ in. long, said to be mauve. W. Australia.

eriostàchya. Shrub to 6 ft.: lvs. narrow-linear, to 8 in. long, usually pinnately cut into 3–5 segms.: fls. in dense secund terminal tomentose racemes to 6 in. long. W. Australia.

Hilliàna. Tree to 60 ft.: lvs. entire, deeply divided at end into 2 or 3 lobes, or pinnatifid into 5–7 lobes, to 1 ft. long, silvery-pubescent beneath: fls. red varying to pink and white, in dense cylindrical axillary racemes to 8 in. long. Queensland, New S. Wales.

juniperìna (*G. sulphurea*). Small shrub: lvs. spreading, linear, stiff and pungent-pointed, to 1 in. long, margins revolute, silky-pubescent beneath: fls. pale yellow or tinged with red, in very short sessile racemes. New S. Wales.

leucópteris. Shrub to 8 ft.: lvs. 1 ft. or more long, pinnate into narrow-linear segms. to 10 in. long, tomentose beneath: fls. in loose many-fld. panicled racemes to 4 in. long, said to be white. W. Australia.

obtusifòlia. Spreading or procumbent much branched shrub: lvs. oblong-linear, margins revolute, rusty-pubescent beneath: fls. in short loose secund racemes. W. Australia.

oleoìdes. Shrub: lvs. linear or lanceolate, to 4 in. long, margins recurved, tomentose beneath: fls. bright red, in short nearly sessile racemes. New S. Wales, Victoria.

ornithópoda. Glabrous shrub: lvs. to 3½ in. long, divided into 3 lanceolate lobes: fls. small, in short axillary racemes, said to be white. W. Australia.

paniculàta. Shrub to 8 ft.: lvs. 1–2-divided into 3 terete pungent-pointed segms.: fls. small, in axillary short racemes. N. Australia.

polybótrya. Tall shrub: lvs. oblong or oblong-lanceolate, to 1½ in. long: fls. in dense cylindrical panicled racemes or spikes to 2 in. long. N. and W. Australia.

punícea. Small shrub: lvs. oblong or nearly oval, to 2 in. long, margins recurved, tomentose beneath: fls. bright red, in short dense racemes. New S. Wales.

robústa. Silk-Oak. Tree to 150 ft. but sometimes grown as a decorative pot and florists plant: lvs. fern-like, 2-pinnate into lanceolate entire or lobed segms. with recurved margins: fls. orange, in secund racemes to 4 in. long on short leafless branches. Queensland, New S. Wales.—Formerly much grown from seeds in pots under glass as a decorative subject.

rosmarinifòlia. Shrub to 6 ft.: lvs. linear, to 1½ in. long, margins revolute, silky-pubescent beneath: fls. reddish, in short dense sessile racemes. New S. Wales.

sulphùrea: *G. juniperina.*

Thelemanniàna. Shrub to 5 ft.: lvs. to 2 in. long, divided into many linear segms.: fls. pink tipped with green, in secund terminal racemes to 1½ in. long. S. and W. Australia.

Wîlsonii. Glabrous shrub to 5 ft.: lvs. 2–3-ternately divided into linear stiff pungent-pointed segms. to 1 in. long: fls. in loose racemes. W. Australia.

GRÈWIA. *Tiliaceæ.* Trees and shrubs native to warm regions in the Old World, with alternate simple lvs., small fls. solitary or cymose, and fr. a drupe; sometimes planted for ornament.

bîloba (*G. parviflora* var. *glabrescens*). Shrub to 8 ft., twigs glabrous: lvs. ovate, to 5 in. long, doubly serrate or sometimes remotely 3-lobed, glabrous: fls. pale yellow, about ⅜ in. across: fr. orange to red. N. and Cent. China; stands in S. New England. Var. **parviflòra** (*G. parviflora*) has tomentose twigs and lvs. densely stellate-pubescent beneath. China and Korea.

cáffra. Shrub or small tree: lvs. oblong, to 3 in. long, finely toothed: fls. purple. S. Afr.; grown in S. Calif. and similar regions.

occidentàlis. Shrub: lvs. ovate, to 2 in. long, toothed: fls. purple. S. Afr.; to be grown in mild climates.

parviflòra: *G. biloba* var.

GRÈYIA. *Melianthaceæ.* Small S. African trees and shrubs with alternate simple lvs., showy fls. in axillary racemes, and fr. a leathery caps.; one showy species is planted for ornament in the S. and Calif. or sometimes under glass. Propagated by seeds or cuttings of half-ripened wood.

Sútherlandii. Small tree but blooming as a little bush: lvs. orbicular to oblong, to 3 in. long, heart-shaped at base, coarsely and irregularly toothed: fls. bright scarlet, petals about ½ in. long, in dense racemes to 10 in. long, the showy stamens long-exserted.

GRINDÈLIA. Gum-Plant. *Compositæ.* Coarse per. herbs native in W. N. Amer., with alternate lvs. and rather large solitary heads (usually gummy) of yellow ray- and disk-fls.; pappus of deciduous awns or bristles.

Sometimes grown for ornament in the regions where they grow, succeeding on poor land. Propagated by division, cuttings or seed.

cuneifòlia: *G. humilis.*

hirsùtula. Per. to 1½ ft., sts. pubescent: lvs. oblong to oblong-spatulate, to 3 in. long, pubescent, acute or obtuse, toothed or entire: heads to 2¼ in. across, ray-fls. bright yellow, tips of involucral bracts erect. Calif.

hùmilis (*G. cuneifolia*). Per. to 5 ft., st. becoming woody: lvs. lanceolate to spatulate, to 3½ in. long, glabrous, remotely serrulate, leathery: heads to 1¾ in. across, ray-fls. orange-yellow. Calif.

integrifòlia. To 3 ft.: lvs. spatulate to lanceolate, basal to 1 ft. long, entire or toothed: heads to 2½ in. across. B. C. to Ore.

lanceolàta. Bien. to 4 ft., several sts. from woody base: lvs. linear to lanceolate-oblong, usually to 2½ in. long, rarely to 4 in., acute, margins serrate: heads to 1½ in. across. Tenn. to Ala., Tex. and Mo.

latifòlia: *G. robusta* var.

nàna. To 1½ ft.: lvs. oblanceolate, to 2½ in. long: heads to ⅓ in. across. Wash. to Wyo. and Calif.

oregàna. To 3 ft.: lvs. oblanceolate or lanceolate, to 8 in. long, entire or slightly toothed: heads ¾ in. across. B. C. to Ore. and Ida.

robústa. To 2 ft.: lvs. ovate to lanceolate, to 2 in. long, toothed: heads 1½ in. across, involucre with conspicuous leafy bracts. Calif. Var. **latifòlia** (*G. latifolia*) has larger clasping lvs.

rubicaùlis. Per. to 3 ft., sts. hairy above middle: lvs. oblong-spatulate, to 4 in. long, obtuse, dentate to entire: heads to 2 in. across, ray-fls. bright yellow, tips of involucral bracts recurved. Calif.—The material under this name in the trade may be *G. hirsutula.*

squarròsa. To 2 ft., per. or bien.: lvs. oblong-ovate or ovate, toothed: heads to ¾ in. across. Man. to Mex.

GRISELÍNIA. *Cornaceæ.* Evergreen shrubs or trees native in New Zeal. and Chile, allied to Aucuba, with alternate leathery shining lvs., small diœcious fls. in panicles or racemes, and fr. a berry; grown out-of-doors in Calif.

littoràlis. To 50 ft.: lvs. ovate or oblong-ovate, to 4 in. long: panicles to 3 in. long. New Zeal. Var. **variegàta** is listed.

lùcida. To 25 ft.: lvs. ovate or oblong, to 7 in. long, very unequal at base: panicles to 6 in. long, the pistillate fls. without petals. New Zeal.

GRISLEA: *Combretum coccineum.*

GROMWELL: *Lithospermum.* **False:** *Onosmodium.*

GROSSULARIA: *Ribes.*

GROUND-CEDAR: *Lycopodium complanatum.* **-Cover:** see *Lawn.* **-Pine:** *Lycopodium obscurum.* **-Pink:** *Phlox subulata, Gilia dianthoides.*

GROUNDNUT: *Apios americana, Arachis hypogæa, Panax trifolium.*

GROUNDSEL: *Senecio.* **-Bush:** *Baccharis halimifolia.* **Giant:** *Ligularia Wilsoniana.*

GRU-GRU: *Acrocomia.*

GRUMIXAMEIRA-TREE: *Eugenia Dombeyi.*

GRUSÒNIA. *Cactaceæ.* Two species allied to Opuntia but differing in the longitudinally ribbed cylindrical joints.

Bradtiàna (*Opuntia Bradtiana*). Thicket-forming, to 7 ft. tall, joints to 3 in. diam.; ribs 8–10, somewhat tuberculate; spines 15–25, to 1½ in. long, yellowish-brown becoming white: fls. bright yellow, to 1½ in. across. Mex.

santamarìa. Plants spreading, to 2 ft. high, joints to 1½ ft. long and 1½ in. diam.; ribs 8–9; spines about 20 and to ½ in. long and plum-colored: fls. rose-red, yellow toward center, 1 in. long. Magdalena Isl., Lower Calif.

GUABA: *Inga vera.*

GUAÌACUM. Lignum-Vitæ. *Zygophyllaceæ.* A half dozen trop. American trees and shrubs with very hard resinous wood, pinnate lvs. and small blue or purple fls., fr. a strongly angled caps.; sometimes planted for ornament and interest in S. Calif. and S. Fla. One species natively reaches the keys of Fla.

guatemalénse. Small tree to 16 ft.: lfts. 4–6 pairs, linear-oblong: fls. before the lvs., several together from the axils, azure-blue, petals glabrous: fr. reddish or orange, obovate, about ½ in. or more long. Guatemala.

officinàle. Tree to 15 or 30 ft.: lfts. 2–3 pairs, to 2 in. long, oval to broad-obovate: fls. blue or rarely white, ½ in. long, in clusters at ends of twigs, petals slightly tomentose at least at tip: fr. yellow, broadly obcordate or unequal-sided, to ¾ in. long. W. Indies, N. S. Amer.

GUAJILOTE: *Parmentiera edulis.*

GUAMA: *Inga laurina.*

GUANABANA: *Annona muricata.*

GUAVA: *Psidium.* **Chilean:** *Myrtus Ugni.* **Para:** *Britoa acida.*

GUAYMOCHIL: *Pithecellobium dulce.*

GUAYULE: *Parthenium argentatum.*

GUEVINA: *Gevuina.*

GUILANDINA: *Cæsalpinia Bonduc.*

GUILIÉLMA. *Palmaceæ.* A few species in trop. Amer., of monœcious spiny feather-palms, allied to Bactris: tall, cespitose or trunk solitary, ringed, gray, very spiny: petiole and rachis spiny: spadix from lowermost axils or just beneath the crown, the peduncle spiny; fls. thickish, the staminate (stamens 6) and pistillate intermixed but ends of branches staminate: fr. ovoid, oblong or ovoid-conic, drupe-like with edible flesh; seed 1. For cult. see *Palm.*

Gasipàës (*Bactris Gasipaës. G. speciosa. G. utilis* is probably the same). Pejibaye or Gachipaes. Peach Palm. An important fruit-tree in Cent. and S. Amer., known under many vernacular names: trunks mostly few or several, sometimes single, to 60 ft., carrying attractive crown of arching-drooping foliage: lvs. 8–12 ft. long, deep green above, somewhat lighter underneath; pinnæ many, strongly ribbed, bifid at apex, setose on ribs and margins: fr. 1–2 in. long, ovoid to inverted top-shaped, yellow, orange, brownish-red, in heavy hanging clusters, of superior quality, very attractive; a seedless form is known. An important food fruit in parts of the American continental tropics. Little known in U. S.

speciòsa: *G. Gasipaës.*

ùtilis: see *G. Gasipaës.*

GUINEA-HEN WEED: *Petivèria alliacea.*

GUIZÒTIA. *Compositæ.* Trop. African herbs with opposite sessile lvs. and yellow heads of ray- and disk-fls., solitary or clustered; pappus none. One species is sometimes cult. for the seeds, which yield oil.

abyssínica (*G. oleifera*). Ann. to 5 ft.: lvs. lanceolate, to 9 in. long, toothed: heads ¾ in. across, in corymbs.

oleífera: *G. abyssinica.*

GUM: *Nyssa.* **Arabic Tree:** *Acacia nilotica.* **-Plant:** *Grindelia.* **Sweet:** *Liquidambar Styraciflua.* **-Tree:** *Eucalyptus.*

GUMBO: see *Okra.*

GUMI: *Elæagnus multiflora.*

GUNNÈRA. *Haloragidaceæ.* Per. herbs with creeping rhizomes, radical lvs., small mostly unisexual fls. in spikes or panicles, and drupaceous frs.

Some of the kinds are grown for the bold foliage effects of large clumps. Rich moist soil is necessary, and preferably a sunny position. Winter protection should be provided, and they are not hardy in the North. Propagated by division and seed.

chilénsis (*G. scabra*). Lvs. palmately lobed and cut, to 6 ft. across, the fleshy petiole to 6 ft. long and covered with stiff hairs: fls. in spikes to 3 ft. high: fr. red. Chile, Ecuador, Colombia.

manicàta. Differs chiefly in the lvs. being peltate and the petiole covered with reddish spiny hairs. S. Brazil.

scàbra: *G. chilensis.*

GUTENBERGIA: *Erlangea cordifolia.*

GUTIERRÈZIA. *Compositæ.* Herbs or sub-shrubs native mostly in W. N. Amer., allied to Grindelia, having alternate linear entire lvs. and small heads of yellow ray- and disk-fls.; pappus of chaffy scales.

Saróthræ. MATCHWEED. To 2 ft., many-stemmed: heads in panicled cymes, ray- and disk-fls. each 3–7. Man. to Calif.

GUTTA-PERCHA: *Palaquium;* also other plants not mentioned in this book.

GUTTÍFERÆ (incl. *Clusiaceæ*). GARCINIA FAMILY. Woody plants in the tropics of both hemispheres, a few of which are planted in our southernmost parts: lvs. mostly opposite or whorled and simple, often thick and mostly evergreen: fls. regular, polypetalous, sometimes bisexual but plants for the most part diœcious or polygamous, solitary or cymose, the stamens prevailingly many and distinct or somewhat united: fr. drupe-like, berry-like or sometimes capsular, 2-celled or more, the styles more or less united. Hypericaceæ is sometimes united with this family. With us the genera Calophyllum, Clusia, Garcinia and Mammea are planted.

GUZMÀNIA. *Bromeliaceæ.* Trop. American terrestrial or epiphytic herbs with stiff lvs. in basal rosettes and yellow or white fls. in spikes borne amongst the lvs., often showily bracted; grown under glass. Cult. as for *Bromelia* and *Tillandsia.*

lingulàta. Epiphytic with stout st.: lvs. to 1½ ft. long and 1 in. wide: fls. with yellowish tube and purplish limb, in dense drooping heads, the bracts red. Trop. Amer. Var. **cardinàlis** is listed as having more vivid red bracts.

musàica. Terrestrial, rarely epiphytic, stemless: lvs. to 20 in. long and 3 in. wide, transversely lined above with dark green and beneath with purple: fls. yellowish, the bracts golden-yellow striped with rose. Colombia.

Záhnii. Stemless or nearly so, to 20 in.: lvs. in rosettes of 20–30, to 2 ft. long, spreading: scape red, erect, slightly shorter than lvs., bracts scarlet, corolla bright yellow. Panama.

GYMNADENIA: *Habenaria.*

GYMNADENIOPSIS: *Habenaria.*

GYMNOCALÝCIUM. *Cactaceæ.* A genus of the Echinocactus subtribe, of more than a score of S. American species, known by the naked axils of scales on ovary and fr., ribs usually broad and tubercled, spines stout and mostly awl-like, fls. white, yellow or pink, with a definite but short tube and borne from upper areoles: plant simple or cespitose, mostly globular. Cult. as for Echinocactus. See *Cacti.*

Anisítsii (*Echinocactus Anisitsii*). Cylindrical, 4 in. long; ribs 11 and strongly tubercled; spines 5–7 and all radial, to 2 in. long: fls. white, greenish outside, 1½ in. long. Paraguay.

Baldiànum: *G. platense* var.

Bodenbenderiànum (*Echinocactus Bodenbenderianus*). Globular, to 3 in. diam., gray-green; ribs 11–14 and tubercled, areoles woolly when young; spines usually 3 and ⅓ in. long and bent backwards: fls. pink with brownish central stripe, to 1½ in. long. Argentina.

cæspitòsum: listed name.

chubuténse. Solitary, depressed-globose, to 4 in. high and 6 in. diam., gray-green; ribs 15, low, wide; radial spines 6–7, stout, to 1½ in. long; central 1, if present: fls. red, to 2 in. long. S. Argentina.

Dámsii (*Echinocactus Damsii*). Globular, flattened on top; ribs 10–12, wide, straight, tubercled; spines alike, white, tipped brown, usually 6–8: fls. white, outer segms. green tipped red: fr. red, oblong. Paraguay.

Delaètii: *G. Schickendantzii* var.

denudàtum (*Echinocactus denudatus*). Somewhat globose or depressed, to 6 in. diam.; ribs 5–8; spines 5 or 8 and all radial, appressed: fls. white or pale rose. S. Brazil to Argentina.

Froehlichiànum: *Pyrrhocactus Froehlichianus.*

gibbòsum (*Echinocactus gibbosus*). Usually taller than broad, to 8 in. high, but sometimes depressed; ribs 12–14; spines 7–12 and all radial, brown: fls. white to pinkish, something over 2 in. long. Argentina. Var. **fèrox** has spines more numerous, flexible. Var. **nìgrum** has very dark spines. Var. **Schlúmbergii** (*G. Schlumbergii*) has spines more numerous, stiff, pinkish-red to amber-yellow.

Hóssei (*Echinocactus Hossei*). Nearly globose or depressed at top; ribs 13 and tubercled, areoles white-woolly; spines usually 7 and ½ in. long and spreading or somewhat bent: fls. rose. Argentina.

hybopleùrum. Solitary, depressed-globose; ribs about 13, obtuse, areoles gray-brown-woolly; spines 3–4, grayish-white, to 1¼ in. long, central 1: fls. white to greenish outside, pinkish within. N. Argentina.

Knèbelii: probably *Mammillaria Knebeliana.*

Kurtziànum (*Echinocactus Kurtzianus*). Depressed-globose, to 6 in. across; ribs 10–18 and tubercled; radial spines 8 and spreading; central spine 1 and 1 in. long: fls. white with reddish base. Argentina.

lafeldénsis. Clump-forming, sts. globular, to 1½ in. across, top spiny; ribs 12, tubercled; spines white, brown at base, bristly, radials 12–15, divergent, to ¼ in. long, central 1, if present: fls. violet-pink with darker stripe on reverse center, to 1½ in. long. Argentina.

Leeànum (*Echinocactus Leeanus*). Depressed-globose; ribs 11–14, low, indistinct, tubercled; spines slender, radials usually 10, curved, to ½ in. long, central 1, straight: fls. yellow, outer perianth-segms. purplish, to 2 in. long or more. Argentina, Uruguay.

leptánthum: *Echinocactus leptanthus.*

mazanénse (*Echinocactus mazanensis* and *E. rhodantherus*). Solitary, globular; ribs 10–11, low, obtuse, tubercled; spines curved, radials 6–8, pink to gray, central 1, to 1½ in. long: fls. white to pink, reddish center. Argentina. Vars. **brevifòlium** and **fèrox** are listed.

megalothèlos (*Echinocactus* and *Thelocactus megalothelos*). Cespitose, depressed-globose, to 6 in. wide; ribs 9–12, wide, notched; spines alike, 7–10, to ½ in. long, yellow to gray: fls. reputedly pinkish, but not seen. Paraguay.

michòga: listed name.

Mihanovíchii (*Echinocactus Mihanovichii*). Depressed-globose, to 2 in. diam.; ribs 8, triangular, strongly tubercled; spines alike, usually 6–8, yellow, curved, to ½ in. long: fls. yellowish-white with dark red outer perianth-segms., to 2 in. long. Paraguay. Var. **stenogònum** is listed.

Mónvillei (*Echinocactus Monvillei*). Depressed-globose, to 12 in. wide and 4 in. tall; ribs 13–17, tubercled, to ¾ in. high; spines all radial, 7–13, subulate, yellow, to ¼ in. long: fls. white to pale pink, to 3 in. long. Argentina, Paraguay.

Móstii (*Echinocactus Mostii*). Depressed-globose, 2 in. or more high and about twice as thick; ribs 11–14; radials 7–9, central 1, all brownish: fls. bell-shaped, pale red, to 3 in. long. Argentina.

multiflòrum (*Echinocactus multiflorus. E. Ourselianus*). Simple or cespitose, depressed to globular to short-columnar, 3½ in. or more high; ribs 10–15; spines 7–10 and all radial: fls. about 1½ in. long, pinkish to nearly white. Brazil to Argentina.

Netreliànum (*Echinocactus Netrelianus*). Globose, to 2 in. diam. or more; ribs 14, obtuse, tubercled; spines radial, usually 5–8, to ½ in. long, bristly, yellowish-brown: fls. pale yellow tipped red, to 1¾ in. long. Argentina.

nídulans. Globose, to 4½ in. diam., brownish-gray; ribs about 17, areoles to ½ in. apart; spines about 6, flexible, one usually erect, others deflexed: fls. pink, campanulate. N. Argentina.

nigriareolàtum. Globose, to 6 in. diam.; ribs usually 10, obtuse, wide; spines pale pink, curved, radials 6–8, to about ¾ in. long, central 1, to 1¼ in. long: fls. white with green throat, campanulate, to 1¼ in. long. Argentina.

occúltum: probably *Neoporteria occulta.*

Ochoterènai. Depressed-globose, glabrous to woolly on top, olive-green; ribs about 16, to ¼ in. wide, areoles white to yellow-woolly; spines 3–5, all radial, gray to yellowish-white: fls. pale pink, to 1¼ in. long, tube short. Argentina. Var. **cinèreum** is brownish-gray with triangular tubercles.

oenánthemum. Globose, to 3½ in. diam.; ribs 10–12, obtuse, to ¾ in. wide, acutely tubercled; spines all radial, usually 5, to ⅝ in. long, reddish: fls. light copper-red, to 2 in. long. Argentina.

Pflánzii (*Echinocactus Pflanzii*). Globose, to 1 ft. across; ribs 13-32 and with large low tubercles; spines 3–6, to 1½ in. long, brown or black: fls. white to pinkish, about 1¾ in. long. Argentina.

platénse (*Echinocactus platensis*). Depressed, partly hidden in ground, to 3 in. across, bluish-green or purple; ribs 8–12 and tubercled; spines 3–6 and ½ in. long, brown tipped white: fls. bluish-green outside, white within, 3 in. long. Argentina. Var. **Baldiànum** is a more depressed form and approaches *G. Quehlianum.*

prolíferum. Depressed-globose, to 2 in. diam., green tinged red; ribs usually 12; spines 12–14, to ½ in. long: fls. rose-red. Argentina.

Quehliànum (*Echinocactus Quehlianus*). Depressed-globular, to 6 in. diam. and 1¾ in. tall; ribs 8–13, with rounded tubercles; spines all radials, usually 5, to ½ in. long, yellow to brownish-yellow: fls. white with red center, to 2¼ in. long. Argentina.

rhodántherum: *G. mazanense.*

Sagliòne (*Echinocactus Saglionis*). Globular, to 1 ft. across; ribs 13–32 and with large low tubercles, areoles 1½ in. apart; spines 8–10 or more, 1½ in. long, brown or black: fls. white or pinkish, 1½ in. long. Argentina.

Schickendántzii (*Echinocactus Schickendantzii*). Usually simple and sometimes depressed, to 4 in. diam.; ribs mostly 7; spines 6 or 7 and all radial: fls. white or pinkish, 2 in. long. Argentina. Var. **Delaètii** (*Echinocactus Delaetii*) has more rounded tubercles and longer fls. which are reddish in bud.

Schlúmbergii: *G. gibbosum* var.

Sigeliànum. Depressed-globose, to nearly 3 in. diam., smooth on top; ribs 10, low; spines radial, 3, to ½ in. long, very stiff: fls. not known. Argentina.

Spegazzìnii (*Echinocactus loricatus*). Depressed-globular, 2½ in. high and 6 in. across; ribs 13 and rounded; spines usually 7 and flattened to ribs, 1 in. long: fls. tinged rose, 3 in. long. Argentina.

stellàtum: probably a form of *G. Bodenbenderianum*, having fls. with a more cylindrical tube and expanding to 2 in. across.

Stúckertii (*Echinocactus Stuckertii*). Globose, to 2½ in. across and 1¾ in. high; ribs 9–11; spines all radial and to 1 in. long, pinkish or brown: fls. white, 1¾ in. long. Argentina.

Sutteriànum (*Echinocactus Sutterianus*). Globose; ribs 10 and tubercled, areoles white-woolly when young; spines usually 5 and ½ in. long and grayish-white: fls. pink with red throat. Argentina.

Urseliànum: probably *Echinocactus Urselianus.*

Velenòwskyi. Depressed-globose, to 4 in. high and 6 in. across; ribs more than 20, to ½ in. high, tubercles rounded, white-woolly when young; spines yellowish, radials 9–12, to ⅝ in. long, centrals 1-4, to 1 in. long, bulbous and reddish at base: fls. golden-yellow, to 2¼ in. across, stigma red. Argentina.

Weissiànum. Depressed-globose, to 3½ in. high and nearly 6 in. diam., pale gray-green; ribs about 19, to ⅓ in. high, areoles to ¾ in. apart; radial spines 4 or more, to 1¼ in. long, spreading; central 1, erect: fls. pink, campanulate. Argentina.

GYMNÓCLADUS. *Leguminosæ.* Two deciduous trees, one from E. Asia and the cult. species native in E. N. Amer. from N. Y. south. **G. dioìca** (*G. canadensis*). KENTUCKY COFFEE-TREE. To 100 ft.: lvs. bipinnate, the lfts. ovate: fls. regular, greenish-white, the racemes of the pistillate tree to 1 ft. long and of the staminate to 4 in.: pods to 10 in. long, red-brown. Var. **fòlia-variegàta** has variegated foliage.—Propagated by seeds and cuttings.

GYMNOGRAMMA: *Pityrogramma;* also *Coniogramme japonica.*

GYMNOSPERMS: see *Conifers, Cycads.*

GYMNOSPÒRIA. *Celastraceæ.* Trees and shrubs bearing alternate simple leathery lvs., small greenish or yellowish fls. in axillary cymes, and capsular frs.; a few species may be planted in warm regions. Propagated by seeds and cuttings.

cassinoìdes (*Catha* and *Celastrus cassinoides*). Erect glabrous evergreen shrub: lvs. ovate, acute, serrate: pedicels very short, 2 or 3 in the axils; fls. white. Canary Isls.

serràta. Evergreen shrub to 6 ft. or more, sometimes spiny: lvs. ovate to oblanceolate, finely toothed, to 3 in. long: fls. whitish. Abyssinia.

GYMNOSTERIS: *Gilia nudicaulis.*

GYMNOTHRIX: *Pennisetum.*

GYNANDRÓPSIS (*Pedicellaria*). *Capparidaceæ.* Cleome-like herbs, differing in the fact that the torus is prolonged beyond the insertion of petals and sepals into a stem-like part or androphore on which the stamens are borne, making a peduncle-like base for the gynophore (or pistil-bearing extension). Native in warm parts of the world, one of them sometimes cult. as a Cleome and by some authors referred to that genus.

pentaphýlla. Ann. to 2 ft. or less: lvs. 3–5-foliolate, lfts. obovate to oblanceolate, somewhat pubescent when young, acute or obtuse, entire or toothed: fls. white to purplish. N. Afr. and India, nat. throughout tropics.

speciòsa (*Cleome speciosa*). Ann. to 2 ft. or more, grown for ornament in warm countries: very like *Cleome spinosa* but glabrous or at least not glandular and not spiny, the androphore ¼–⅓ in. long and beyond the insertion of stamens the very long gynophore projects: petals pink or white. Mex., Cent. Amer.

GYNÈRIUM. *Gramineæ.* Tall per. grasses with long flat lvs. and diœcious spikelets borne in large terminal plume-like panicles; differs from Cortaderia, the true pampas-grasses, in technical characters of the florets; native in trop. Amer. One is sometimes planted for ornament in warm countries. See *Grasses.*

argénteum: *Cortaderia Selloana.*

jubàtum: *Cortaderia rudiuscula.*

saccharoìdes: *G. sagittatum.*

sagittàtum (*G. saccharoides*). UVA-GRASS. To 40 ft.: lvs. to 6 in. long and 3 in. wide, edges finely toothed: panicles to 3 ft. long, the branches drooping, pistillate very silky. Trop. Amer.

GYNOPOGON: *Alyxia.*

GYNÙRA (*Crassocephalum*). *Compositæ.* Trop. herbs or rarely subshrubs with alternate entire or lobed lvs., solitary or clustered heads of disk-fls. and not very showy; pappus of white bristles.

Gynuras are grown under glass as foliage plants. They need plenty of light to bring out the color in the foliage; the soil and moisture requirements are similar to those for coleus or geraniums. They are easily grown from cuttings of growing shoots, also from seeds if obtainable.

aurantìaca. Velvet-Plant. Stout, branching, to 3 ft., densely velvety with violet or purple hairs: lvs. ovate, jagged-toothed: heads to ¾ in. across, in loose terminal clusters, yellow or orange. Java; escaping in warm regions.

auriculàta (*Senecio ovalis*). Stout per.: lvs. obovate to ovate-oblong, auriculate, somewhat clasping, few-toothed, the veins black-lined on both surfaces: heads in lax corymbs on elongate pedicels. China.

GYPSÓPHILA. *Caryophyllaceæ.* Ann. and per. herbs, usually hardy N., very branching or spreading, slender, with scant foliage when in bloom: fls. small and numerous, axillary or paniculate, rosy or white; native in Eu., Asia and N. Afr.

A few species are grown for the dainty mist-like effects in rock-gardens, in the border, and as trimming in bouquets. Propagated by seeds, division and sometimes by cuttings.

acutifòlia. Per., tall and much branched, the infl. glandular: lvs. narrow-lanceolate and acute, to 5 in. long and 1 in. or more broad, obscurely 3-nerved: fls. larger than in *G. paniculata*, white. Caucasus.

alpígena: listed name.

altíssima. Per. to 2 ft.: lvs. to 3 in. long and ¼ in. wide: fls. white, in many-fld. panicles. E. Eu. to Cent. Asia.

arenària: *G. fastigiata.*

cerastioìdes. Mouse-ear G. Per., downy, creeping, to about 4 in. high: lvs. obovate, soft-hairy on both sides: fls. to ⅔ in. across, white with pink veins. Himalayas.

collìna. Subshrubby, to 1 ft. or more: lvs. linear, rather fleshy: fls. white or pink, in panicles. E. Eu.

Éhrlei: a double-fld. form of *G. paniculata.*

élegans. Ann. to 1½ ft., with upright forking sts.: lvs. lanceolate: fls. white or rosy, ¼ in. or more across. Caucasus. Color vars. are **ròsea, álba grandiflòra, atrosanguínea,** and **carmínea.**—Good bouquet plant; grown somewhat under glass.

fastigiàta (*G. arenaria*). Per. to 1½ ft. or more: lvs. linear, to 1 in. long, acute, somewhat fleshy, usually pubescent: fls. pale pink, in many-fld. panicles. Eu.

fraténsis: hort. name for a pink-fld. creeping or ascending form to 8 in. high.

glabràta: hort. name for dwarf mat-forming pink-fld. form.

Gmélinii. Per., glabrous: lvs. linear, somewhat fleshy and 3-sided in cross-section: fls. purplish-pink, in lax panicles. Russia.

grandiflòra álba: *G. elegans* var.

libanótica. Per. to 1 ft., much branched, glaucous: lvs. stiff and fleshy, about ½ in. long and ⅙ in. wide: fls. pink. Asia Minor.

Mánginii. Per., roots thick, fleshy: lvs. smooth, glaucous: fls. rather large, light rose, in small panicles. Siberia.

multiflòra: hort. name, probably form of *G. elegans.*

muràlis. Ann., diffusely branched, to 1 ft.: lvs. very small and narrow: fls. solitary, axillary, rosy. Eu.; adventive in E. U. S. Var. **álba,** fls. white.

Oldhamiàna. To 2½ ft.: lvs. lanceolate to linear, to 2½ in. long: fls. in terminal cymes to 1½ in. across. Japan.

pacífica. Per. to 3 ft., much branched: lvs. fleshy, ovate-oblong, sessile: fls. pale rose or purple. Siberia.

paniculàta. Babys-Breath. Per. with large root, diffusely branched, to 3 ft. or more, glaucous: lvs. linear-lanceolate, to 4 in. long and ⅜ in. broad, sharp-pointed: fls. white, in loose panicles. Eu., N. Asia; escaped in N. Amer. Var. **flòre-plèno** has double fls. Other varietal names are **álba, compácta** and **grandiflòra.** See *Galium Mollugo* and *G. aristatum.*

perfoliàta (*G. scorzonerifolia*). Per., tall, usually smooth but sometimes hairy near top: lvs. perfoliate: fls. purplish. Medit. region.

prostràta: *G. repens.*

rèpens (*G. prostrata*). Per. to 6 in., trailing or prostrate, not glaucous: lvs. linear: fls. white or rosy, in few-fld. panicles. Alps and Pyrenees. Var. **álba,** fls. white. Var. **Bódgeri** is said to be of more compact habit with double pink fls. blossoming about two weeks earlier than other forms. Var. **monstròsa** is larger and var. **ròsea** has rose fls.

Rokejèka. Per. to 2 ft., slightly glaucous, much branched: lvs. fleshy, oblong- or linear-lanceolate: fls. pink or violet. Egypt, Asia Minor.

ròsea: hort. name for *G. viscosa.*

scorzonerifòlia: *G. perfoliata.*

silenifòlia: hort. name for form said to be trailing with white to pink fls.

Stèvenii. Per. to 1 ft., somewhat glaucous: lvs. linear, keeled: fls. white. Caucasus.

Strúthium. Per. to 15 in., glabrous: lvs. narrowly awl-shaped, to 1¼ in. long, fleshy, glaucous, obtuse to mucronate: fls. pink, in globose and condensed head-like structures. Spain.

Súndermannii: listed name.

transsylvánica (*Banffya petrea*). Erect: lvs. linear, keeled: fls. in clusters, with colored calyx. E. Eu.

trichótoma. Erect, glaucous: lvs. broad-oblong: fls. very small, in branching panicles. Asia Minor.

viscòsa (*G. rosea* of hort.). Per. to 10 in., glabrescent below and viscid above: lvs. oblong-lanceolate, to 1 in. long, acuminate: fls. pink, on pedicels 3–4 times as long as calyx. Asia Minor.

GYROTHECA: *Lachnanthes.*

H

HAAGEA: *Porfiria.*

HAAGEOCEREUS. *Cactaceæ.* A genus of nocturnal cacti from Peru and Chile which are closely allied to Borzicactus but whose fls. are larger than those of the latter genus, are borne near the top of the st. and have a much longer tube.

acránthus. Cespitose, erect, slender; ribs 10–12, thick, obtuse, tubercled; radial spines usually 20–30, brown; centrals 1–2, longer: fls. white or pale pink, to 5 in. long.

austràlis: listed name.

chosicénsis (*Cereus* and *Binghamia chosicensis. Cereus, Cephalocereus, Binghamia* and *Pseudoespostoa melanostele*). Similar to *H. pseudomelanostele* but with pale rose to purple-red fls.—There is much doubt as to the application of the name *melanostele.*

decúmbens (*Cereus* and *Borzicactus decumbens*). Branches procumbent or ascending, forming clumps; ribs 20; radial spines about 30; central spines to 1¾ in. long: fls. white, 2 in. across, fragrant: fr. pink.

laredénsis. Cespitose, erect, to 3 in. high, reddish-green; ribs about 18, narrow, low; spines 40–45, awl-shaped, yellow, erect: fls. white.

Olwinskiànus: listed name.

pacalaénsis. Cespitose, tall, erect, to 2½ in. diam.; ribs about 15; spines amber-colored: fls. bright pink.

platinospìnus: *Borzicactus platinospinus.*

pseudomelanostèle (*Cereus* and *Binghamia pseudomelanostele*). To 3 ft.; ribs 18–22, areoles close together, bearing many white and yellow spines to 1 in. or more long: fls. white, 2 in. long.

versícolor (*Cereus* and *Cephalocereus versicolor*). To 5 ft. high and 3 in. diam., in clumps branched from base; ribs about 12, rounded, low; spines straight, yellow with reddish-brown zones, radials 15–30, to ¼ in. long, centrals 1–2, to 1¾ in. long: fls. white or cream-colored within, to 4 in. long: fr. yellow. Var. **aureispìnus,** spines golden-yellow. Var. **spinòsior** is listed.

HAÁSTIA. *Compositæ.* Tufted New Zeal. alpine woolly perennials with low much branched sts. covered by the persistent lvs.: fls. all discoid, in large flattened solitary heads borne on very short peduncles or sessile and sunk among the uppermost lvs.

recúrva. Tufts to 10 in. across and 4 in. high, covered with a dense orange-red to brownish-red wool: lvs. obovate to broadly spatulate, to ¾ in. across, slightly overlapping, strongly recurved at the middle and covered with long straight hairs which extend through a dense mat of wool: heads to ¾ in. across.—A form with white tomentum (var. **Wállii**) is known but may not be in cult.

HABENÀRIA. Rein or Fringed Orchis. *Orchidaceæ.* Terrestrial orchids with tuberous roots, mostly leafy simple sts., and fls. of various sizes and colors in terminal racemes or spikes, 2 petals usually smaller than the sepals, the lip entire or lobed, often fringed, spurred at base. There are various interpretations of the group resulting in several generic names. Grown in bog-gardens or moist places out-of-doors; see *Orchids.*

blephariglóttis. White Fringed O. To about 31 in. high: lvs. to 8 in. long and 1½ in. wide: fls. pure white, the lip fringed. July–Sept. Newf. to Fla. and Miss.

bracteàta: *H. viridis* var.

ciliàris (*Platanthera* and *Blephariglottis ciliaris*). Yellow Fringed O. To 40 in. high: lvs. to 1 ft. long and 2¼ in. wide: racemes to 8 in. long; fls. orange or yellow, lip deeply fringed. July–Aug. Vt. to Fla., west to Mich. and Tex.

clavellàta (*Gymnadeniopsis clavellata*). Small Green Wood O. To 1½ ft. high: lvs. to about 7 in. long: racemes to 3½ in. long; fls. greenish or yellowish-white. June–Sept. Newf. to Fla. and Tex.

conópsea (*Gymnadenia conopsea*). Fragrant O. To about 33 in. high: lvs. linear: racemes dense, many-fld.; fls. rose or purple-violet, fragrant, with spur always surpassing the ovary. Eu., Asia, Japan.

cristàta (*Platanthera* and *Blephariglottis cristata*). To 3 ft. high: lvs. to about 8½ in. long and 1 in. wide: racemes dense, to 6 in. long; fls. orange, lip fringed. Mass. to Fla. and La.

dilatàta (*Limnorchis* and *Platanthera dilatata*). Tall White Bog O. To about 43 in. tall: lvs. to 1 ft. long and 1½ in. wide: racemes commonly many-fld.; fls. white, the spur about as long as the entire lip. June–Sept. N. N. Amer. Var. **leucóstachys** (*H. leucostachys*), Sierra Rein O., differs only in the spur being longer than the lip. Alaska to Calif. and Ariz.

élegans (*H. Michaelii. Piperia Michaelii*). To about 30 in. high: lvs. (commonly withered at flowering time) to about 8 in. long and 2 in. wide: racemes long, commonly dense, to 14 in. long; fls. greenish-white or white, very small; lip simple, spur slender and much longer than the lip. B. C., Mont., Ida., Wash., Ore., Calif.

fimbriàta: *H. psycodes* var. *grandiflora.*

flàva (*Perularia flava*). To 2 ft. high: lvs. few, to about 9 in. long and 2 in. wide: racemes commonly dense, to about 8¼ in. long; fls. yellow-green, lip with a tubercle near base. Apr. (in S.)–Sept. N. S. to Fla. and Tex.

grandiflòra: *H. psycodes* var.

Hoòkeri (*Lysias Hookeriana*). Hookers O. To 16 in. high, with 2 basal oval or rounded lvs. to 7 in. long: fls. yellowish-green, lip simple with spur about ¾ in. long. June–Sept. N. S. to Pa. and Ia.

hyperbòrea (*Limnorchis hyperborea*). Tall Northern Green O. To over 3 ft. tall: lvs. to 1 ft. long and 1¾ in. wide: spikes loose or dense; fls. greenish, spur about as long as lip. June–Aug. Newf. to Alaska, south to Pa., Utah and Ore.; also Greenland and Iceland.

íntegra. Small Southern Yellow O. To about 2 ft. high, sts. angled, with 1–3 linear-lanceolate lvs. along basal third: racemes dense, many-fld., to about 4 in. long; fls. orange-yellow, lip scalloped or entire, spur straight and longer than lip. July–Sept. Pine barrens from N. J. to Fla. and Tex., Tenn.

Keìskei. Plant small: lvs. 1–3, oblong, to 1½ in. long, acute, base somewhat cuneate: fls. few, in lax racemes; sepals ovate, to ⅛ in. long; lip 3-lobed, to ½ in. long and as wide, the mid-lobe obcordate with lateral lobes ovate-oblong. Japan.

lácera (*Blephariglottis lacera*). Ragged or Green Fringed O. To 30 in. high: lvs. to about 8⅓ in. long and 2 in. wide: racemes loose or dense; fls. yellowish- or whitish-green; lip 3-lobed, deeply fringed or lacerate, spur nearly 1 in. long. June–Aug. Newf. to Ga., Miss., Ark. and Minn.

leucophæa. Prairie White Fringed O. To 4 ft. tall, sts. angled: lvs. lanceolate, to 8 in. long: racemes loose, to 8¾ in. long; fls. white; lip 3-lobed, fringed, spur longer than lip. June–Aug. N. S. to Me. and N. Y., Ohio to Minn. and Tex.

leucóstachys: *H. dilatata* var.

Michaèlii: *H. elegans.*

nívea (*Gymnadeniopsis nivea*). Southern Small White O. Sts. to 3 ft. high, slender: lvs. 2–3 near base, linear-lanceolate, to about 10¼ in. long, becoming longer toward the base: fls. in loose racemes to 6 in. long, white; lip entire, shorter than spur. May–Sept. Pine barrens of N. J. south to Fla., Ala. and Tex.; also Cuba.

odoratíssima (*Gymnadenia odoratissima*). Small Fragrant O. Similar to *H. conopsea* but more slender, with spur equal to the ovary or shorter. Eu.

orbiculàta (*Lysias orbiculata*). To 22 in. high, sts. with several bracts: lvs. 2, basal, orbicular to oblong-elliptic, to 10 in. long and 7⅛ in. across, silvery beneath, green and shining above: racemes loose; fls. greenish-white with simple lip and spur to 1⅛ in. long. Newf. to Alaska, south to W. Va., west to Wash.

psycòdes (*Platanthera* and *Blephariglottis psycodes*). Small Purple Fringed O. To about 3 ft. high: lvs. to nearly 9 in. long and 2¾ in. wide: racemes many-fld.; fls. purple, lilac or rarely white, fragrant; lip 3-lobed, fringed, the spur to ¾ in. long. June–Aug. Newf. to Ga., Tenn. and Minn. Var. **grandiflòra** (*H. grandiflora. H. fimbriata. Blephariglottis grandiflora. Platanthera fimbriata*). Large Purple Fringed O. To about 32 in. high: lvs. to 9 in. long and rarely 4 in. wide: racemes loose or dense; fls. lilac or rarely white, fragrant; lip 3-lobed, fringed to about the middle. June–Aug. Newf. to N. C. and Tenn.

radiàta. To 2 ft. high, slender, leafy below: racemes 1-few-fld.; sepals green; petals white; lip white, 3-lobed with the lateral lobes broad and fringed and the mid-lobe narrow and entire. July–Aug. Japan.

víridis var. **bracteàta** (*H. bracteata. Cœloglossum bracteatum*). Satyr O. To about 17 in. high: lvs. rarely to 6 in. long: spikes to 5 in. long, with leafy bracts commonly much exceeding the small green fls. May–Aug. N. Amer., Eu., Asia.

HABÉRLEA. *Gesneriaceæ.* A few herbaceous tufted perennials with basal lvs., and nodding tubular irregularly 5-lobed fls. borne on scapes; native in the Balkans.

Ferdinándi-Cobúrgii. Differs from *H. rhodopensis* in smaller size, lvs. glabrous above, smaller dark blue fls. with upper lip twice as broad as long.

rhodopénsis. To 6 in., soft-hairy: lvs. obovate- or ovate-oblong, to 3 in. long, coarsely toothed, thick: fls. pale lilac, 1 in. long and broad.

HABRÁNTHUS. *Amaryllidaceæ.* Bulbous herbs with linear lvs.: scape in most species single-fld., in a few 2–4-fld.; spathe tubular below, unilateral and bifid above; fls. pink, yellow, red, declinate, perianth-tube short, segms. unequal, stamens declinate, of four lengths: caps. trilobed. S. Amer., Brazil to Argentina.

Ándersonii (*Zephyranthes Andersonii*). To 6 in.: lvs. narrowly linear, to 6 in. long: fls. yellow veined with red outside, 1½ in. long, tube nearly wanting. S. Amer.

brachyándrus (*Hippeastrum brachyandrum*). Bulb ovoid, 1 in.: lvs. few, to 12 in. long: scape to 12 in., tapered upward; fls. single, funnelform, 3 in. across, orchid-pink above shading to dark reddish-purple below. S. Amer.

praténsis: *Hippeastrum pratense.*

robústus (*Zephyranthes robusta*). To 9 in.: lvs. linear, recurved-spreading, appearing after fls.: fls. rose-red, to 3 in. long, with short greenish tube. Argentina.

texànus (*Zephyranthes texana*). To 8 in.: lvs. narrowly linear, to 4 in. long: fls. yellow, coppery and striped with purple outside, 1 in. long, in summer. Tex.—Perhaps the same as *H. Andersonii.*

HABROTHAMNUS: *Cestrum elegans* and *fasciculatum.*

HACKBERRY: *Celtis.*

HACKMATACK: *Larix laricina.*

HACQUÈTIA. *Umbelliferæ.* One European per. herb sometimes grown in the rock-garden and propagated by division. **H. Epipáctis.** To 8 in.: lvs. basal, deeply palmately lobed: fls. yellow, polygamous, in short-stalked umbels subtended by large involucral lvs. Apr.–May.

HÆMÁNTHUS. Blood-Lily. *Amaryllidaceæ.* African low bulbous herbs with broad basal lvs. and red or white fls. in dense heads terminating the solid scape, the perianth-tube short; grown for the summer and autumn bloom.

The plants should have a night temperature of 50–55°. Bulbs should be rested over winter and started into growth in spring. Propagated by offsets.

álbiflos. To 1 ft.: lvs. thick and fleshy, to 8 in. long and 4 in. wide, ciliate on edges: fls. white, ¾ in. long, in heads 2 in. across. S. Afr.

coccíneus. To 10 in.: lvs. thick and fleshy, to 2 ft. long and 8 in. broad: fls. red, 1 in. long, in heads to 3 in. across. S. Afr.

Kátharinæ. To 1 ft.: lvs. thin, to 14 in. long and 6 in. broad: fls. bright red, 2½ in. long, in heads to 9 in. across. S. Afr.

multiflòrus. To 1½ ft.: lvs. to 1 ft. long arising from special st., with short petiole, usually 3–4 in number: fls. blood-red, to 1 in. long, in dense umbels 3–6 in. across: berry scarlet. Trop. Afr.

puníceus. To 15 in.: lvs. thin, to 1 ft. long and 4 in. wide: fls. pale scarlet to white, 1 in. long, in heads to 4 in. across. S. Afr.

HÆMÀRIA. *Orchidaceæ.* Terrestrial Asiatic orchids with creeping rootstocks, lvs. near the base and small fls. in terminal spikes or racemes, the lip adnate to the column, with a sac at base. Grown for the attractive foliage; for cult. see *Orchids.*

díscolor. Lvs. ovate to elliptic, to 3 in. long and 1¼ in. wide, dark green above and bright purplish beneath: fls. Oct.–Feb. Malaya, China, Philippines. Var. **Dawsoniàna** (*Goodyera Dawsoniana*) has lvs. beautifully veined with red.

HÆMATÓXYLUM. *Leguminosæ.* One species is employed for the heartwood which is used in making dyes and for medicinal purposes; sometimes planted in warm countries for ornament. **H. campechiànum,** Logwood, Bloodwood Tree, is a tree to 45 ft. high, with pinnate lvs. of 2–4 pairs of obovate usually emarginate lfts. to 1 in. long, bright yellow fragrant fls. in axillary racemes, and flat pods narrowed at both ends, to 1¼ in. long. Cent. Amer. and W. Indies.—Propagated by seeds.

HÆMODORÀCEÆ. Bloodwort Family. Small family sometimes included in Amaryllidaceæ or distributed in that family and Liliaceæ but distinguished by woolly perianth that is not wholly adnate to or free from the more or less inferior ovary. There are 9 genera, mostly of the southern hemisphere but one or two in the E. U. S. They are per. usually stoloniferous non-bulbous herbs with equitant lvs., and a persistent perianth inclosing the caps. Conostylis, Lachnanthes, Lophiola, Tecophilæa and Wachendorfia are listed.

HÀKEA. *Proteaceæ.* Australian evergreen shrubs or low trees with alternate lvs., bisexual fls. borne in pairs in short axillary racemes or clusters, and woody capsular frs.; differs from Grevillea chiefly in the long terminal wings on the seeds.

Hakeas are grown out-of-doors in southern United States and withstand slight frost. They are drought-resistant and do best in light well-drained soil. Propagated by seeds in winter or early spring and the seedlings kept in boxes for the first year. As the capsules are very hard, they must be dried for some time before discharging the seeds. Hakeas may also be propagated by cuttings. Well adapted to California.

aciculàris (*H. sericea*). Tall shrub, similar to *H. gibbosa* but with nearly glabrous instead of hairy branchlets, and differing from *H. pugioniformis* in the glabrous perianth. New S. Wales, Victoria, Tasmania.

auriculàta. Shrub to 2 ft. or more: lvs. cuneate, to 3 in. long, prickly-toothed or -lobed, auriculate at base: fls. in clusters. W. Australia.

cristàta. Shrub to 8 ft.: lvs. broad-obovate to oblong, to 3 in. long, prickly-toothed, stiff and glaucous: fls. white, in short racemes. W. Australia.

cucullàta. Shrub to 14 ft.: lvs. cordate-orbicular, to 4 in. across, entire or prickly-toothed, sessile, stiff: fls. in clusters. W. Australia.

dactyloìdes. Tall shrub: lvs. linear- or oblong-lanceolate, to 4 in. long, prominently 3-nerved, stiff: fls. numerous. New S. Wales.

ellíptica. Shrub to 10 ft.: lvs. oval, to 4 in. long and 2 in. wide, parallel-veined, wavy-margined, rusty-pubescent when young: fls. white, in sessile clusters. W. Australia.

erinàcea. Shrub to 3 ft.: lvs. to 1 in. long, of 3–5 cylindrical stiff segms. which are entire or divided: fls. in sessile clusters. W. Australia.

eucalyptoìdes: *H. laurina.*

gibbòsa. Shrub to 10 ft.: lvs. needle-like, to 3 in. long, entire, stiff and spiny-tipped: fls. white, in sessile clusters. New S. Wales, Victoria.

glabélla. Shrub to 15 ft.: lvs. obovate or oblong, to 3 in. long, usually prickly-toothed, auriculate at base: fls. white. W. Australia.

ilicifòlia: *H. varia.*

incrassàta. Shrub to 3 ft.: lvs. linear-lanceolate or oblong-linear, to 2 in. long, entire, thick: fls. in sessile clusters. W. Australia.

laurìna (*H. eucalyptoides*). Sea Urchin. Shrub or tree to 30 ft.: lvs. lanceolate or narrow-elliptic, to 6 in. long and 1 in. wide, parallel-veined, entire: fls. crimson, in sessile globose clusters, with long yellow styles. W. Australia.

marginàta. Shrub to 8 ft.: lvs. lanceolate, to 1½ in. long, with prominent midrib and margins, thick and stiff. W. Australia.

multilineàta. Tall shrub: lvs. linear-lanceolate to oblong, to 8 in. long, with many small nerves, pubescent, thick: fls. in spike-like racemes to 3 in. long. S. and W. Australia.

pectinàta: *H. suaveolens.*

platyspérma. Lvs. cylindrical, to 5 in. long, thick and stiff: fls. in sessile clusters. W. Australia.

propínqua. Tall shrub: lvs. needle-like, to 1½ in. long, rather thick and smooth, crowded: fls. very small, clustered. New S. Wales.

pugionifórmis. Shrub to 8 ft.: lvs. needle-like, to 2 in. long, stiff and spiny-tipped: fls. white, in sessile clusters, the styles long, differing from *H. gibbosa* in the pubescent perianth. New S. Wales, Victoria, Tasmania.

ruscifòlia. Shrub to 8 ft.: lvs. ovate-oblong to lanceolate, to 1 in. long, entire and spiny-tipped: fls. white, small, in dense clusters. W. Australia.

salígna. Shrub to 8 ft.: lvs. oblong or lanceolate, to 6 in. long, entire, pale or grayish-green: fls. white, small, in dense clusters, the styles long. Queensland, New S. Wales.

serícea: *H. acicularis.*

speciòsa is listed in the trade, but the name is not known to have any botanical standing.

suavèolens (*H. pectinata*). Shrub to 10 ft.: lvs. needle-like, to 4 in. long, usually branched into stiff spiny-tipped segms.: fls. white, fragrant, in dense racemes. W. Australia.

trifurcàta. Shrub to 10 ft., much branched: lvs. cylíndrical; to 3 in. long, divided into 3 segms., stiff; sometimes with few flat oblong lvs.: fls. in sessile clusters. W. Australia.

vària (*H. ilicifolia*). Shrub to 8 ft.: lvs. to 2 in. long, prickly lobed or pinnatifid: fls. small, in clusters. W. Australia.

HALERPESTES: *Ranunculus Cymbalaria.*

HALÈSIA (*Mohrodendron*). Silver-Bell. Snowdrop-Tree. *Styracaceæ.* Attractive deciduous shrubs or trees with alternate toothed lvs., white bell-shaped drooping fls. in axillary clusters on branchlets of previous year in spring, and fr. a dry winged drupe.

Only *H. carolina* and *H. monticola* are hardy North. The species prefer rich well-drained soil with some shelter. They transplant readily. Propagated by seed as soon as ripe or stratified, by layers, root-cuttings or cuttings of green wood from forced plants.

carolìna (*H. tetraptera*). To 40 ft.: lvs. ovate to ovate-oblong, to 4 in. long: fls. to ¾ in. long, with shallow corolla-lobes: fr. 4-winged, to 1½ in. long. W. Va. to Fla. and Tex. Var. **Meèhanii** has smaller wrinkled lvs. and smaller fls.

díptera. To 30 ft.: lvs. oval or obovate, to 5 in. long: fls. 1 in. long, corolla deeply lobed: fr. 2-winged, to 2 in. long. S. C. to Fla. and Tex.

híspida: *Pterostyrax hispida.*

montícola. To 100 ft.; lvs. oval or oblong, to 11 in. long: fls. to 1 in. long, with shallow corolla-lobes: fr. 4-winged, 2 in. long. N. C. to Ga. and Tenn.

tetráptera: *H. carolina.*

HALÍMIUM. *Cistaceæ.* Old World herbs formerly united with Helianthemum but distinguished by fls. having short straight styles, and from the related genus Crocanthemum in lvs. opposite and in the absence of cleistogamous fls. For cult. see *Helianthemum.*

alyssoìdes (*Helianthemum alyssoides*). Lvs. ovate-lanceolate: fls. bright yellow, 1½ in. across. S. W. Eu.

formòsum: *H. lasianthum.*

halimifòlium (*Cistus halimifolius. Helianthemum halimifolium*). To 2 ft.: lvs. oblong to lanceolate, white-tomentose when young: fls. yellow with dark spots on petals, 1¼ in. across. S. Eu., N. Afr. Var. **multiflòrum** is listed as an orange-pink form.

lasiánthum (*H. formosum. Helianthemum formosum* and *lasianthum*). To 3 ft.: lvs. oval to lanceolate, to 1½ in. long: fls. yellow blotched with purple at base, 1½ in. across. Portugal. Var. **cóncolor** is listed as having clear canary-yellow fls.

Libanòtis (*Helianthemum Libanotis*). Shrub to 1½ ft., sts. erect or ascending: lvs. linear, to 1½ in. long, smooth above, gray-hairy beneath: fls. white, center yellowish, about ¾ in. across, usually in terminal clusters of 1–3 on lateral branchlets. W. Medit. region.—Distinguished from *H. umbellatum* in lvs. glabrous above and calyx smooth.

ocymoìdes (*Cistus algarvensis. Helianthemum ocymoides*). To 3 ft.: lvs. oblong-lanceolate, about ½ in. long, gray-pubescent: fls. bright yellow with purple base, 1 in. across. Spain, Portugal.

umbellàtum (*Helianthemum umbellatum*). To 2 ft.: lvs. linear or linear-lanceolate, to 1¼ in. long, gray-tomentose beneath: fls. white, 1 in. across, calyx short-hairy, often sticky. Eu.

HALIMODÉNDRON. Salt Tree. *Leguminosæ.* One deciduous ornamental shrub from salty plains of Cent. Asia. **H. halodéndron** (*H. argenteum*). To 6 ft.: lvs. of 2–4 oblanceolate lfts. to 1½ in. long, the petiole becoming spiny: fls. papilionaceous, pale purple, in lateral 2–3-fld. racemes: pods inflated, to 1 in. long.—Hardy N.; propagated by seeds, layers, cuttings over bottom heat, or by grafting on laburnum or caragana.

HALORAGIDÀCEÆ. Water Milfoil Family. Widely distributed herbs, mostly aquatic, of about 8 genera, of which Gunnera, Hippuris and Myriophyllum are grown for the ornamental foliage and habit. The family is very diverse in character of lvs., has regular often very small bisexual or unisexual fls., the calyx with 2–4 lobes, 2–4 separate petals or none, 1–8 stamens, inferior 1–4-celled ovary, and fr. a small nut or drupe. Three genera are represented by native species in N. E. U. S. and many of them are in the southern hemisphere.

HAMAMELIDÀCEÆ. Witch-Hazel Family. Shrubs and trees of about 20 genera mostly in warm temp. regions, evergreen or deciduous: lvs. alternate, simple: fls. bisexual or unisexual, in heads or racemes, with 4–5 sepals and separate petals, or petals lacking, 4 or more stamens, and 2-celled ovary: fr. a 2-beaked woody caps. The family contains many ornamental genera, as Corylopsis, Disanthus, Distylium, Fothergilla, Hamamelis, Liquidambar, Loropetalum, Parrotia, Parrotiopsis, most of them hardy N.

HAMAMÈLIS. Witch-Hazel. *Hamamelidaceæ.* Deciduous small trees or shrubs with simple toothed lvs., yellow fls. in axillary nearly or quite sessile clusters blooming in autumn or very early spring, and capsular frs. ripening in the late season or autumn following; native in N. Amer. and E. Asia and hardy N.; sometimes planted for ornament and screens.

They thrive in rather moist soil. Propagated by seeds which require two years to germinate, by layers, or by grafting on stock of *H. virginiana.*

arbòrea: *H. japonica* var.

japónica. To 30 ft.: lvs. to 4 in. long, becoming glabrous beneath: fls. to ¾ in. long, Jan.–Mar. Japan. Var. **arbòrea** (*H. arborea*) has larger lvs. and calyx deep purple inside. Var. **flàvo-purpuráscens,** petals reddish near the base, sepals deep purple within. Var. **rùbra** is listed. Var. **Zuccariniàna** is tree-like, with calyx greenish-yellow inside.

móllis. To 30 ft.: lvs. to 6 in. long, gray-tomentose beneath: fls. to ¾ in. long, Jan.–Mar., the calyx red inside. China.

populiflòrus: catalogue name.

vernàlis. To 6 ft., bearing suckers: lvs. to 5 in. long, nearly glabrous beneath: fls. to ½ in. long, Jan.–Mar., calyx dark red inside. Mo. to La. and Okla. Var. **rùbra** has petals reddish, at least near the base. Var. **tomentélla,** lvs. more or less pubescent beneath.—Considered more fragrant than most other species, but with less showy fls.

virginiàna. To 15 ft.: lvs. to 6 in. long, pubescent only on veins beneath: fls. to ¾ in. long, Sept.–Oct., calyx brownish-yellow inside. E. N. Amer. to Tex.—A tenacious common coarse bush, very attractive for its late autumn bloom.

HAMATOCÁCTUS. *Cactaceæ.* A small genus, known from Echinocactus by its thin ribs, funnelform fl. and naked axils of fl.-scales, small red berry and tuberculated seeds. See *Cacti.*

hamatacánthus (*Echinocactus hamatacanthus. E. longihamatus. Ferocactus longihamatus. Brittonia Davisii*). Globular to cylindrical, to 2 ft. tall; ribs about 13, high, notched; spines red to yellow or white, radials 8–12, to 2¾ in. long, centrals 4, half-round, lower one to 5 in. long and hooked: fls. yellow, to nearly 3 in. across, stigma yellow, 15–18-lobed. S. Tex., New Mex. and Mex. Var. **crassispìnus** has radials angular, more numerous and thicker than type. Var. **papyracánthus** has slender white spines. Var. **sinuàtus** is a smaller plant with slenderer and hooked spines.

setispìnus (*Echinocactus setispinus*). Globose to short-cylindric, to 6 in. high; ribs commonly 13; radial spines 12–16 and slender; centrals longer and 1–3: fls. yellow with a red throat, between 2 and 3 in. long, tube not longer than limb, scales fimbriate. S. Tex., Mex.

uncinàtus (*Echinocactus uncinatus. Ferocactus uncinatus*). Ovoid to briefly cylindrical, to 8 in. tall and 3 in. diam., dark blue-green, slightly glaucous; ribs 9–13, rounded, straight, wide; spines red to creamy-white, radials 7–8, the lower ones hooked, centrals 1–4, to 5 in. long, often half-round, hooked: fls. dark reddish-brown, to 1 in. long, segms. narrow, often edged pink, stigma pink, 10-lobed. W. Tex. to Cent. Mex. Var. **Wrightii** has longer more intense red spines.

HAMÈLIA. *Rubiaceæ.* Evergreen shrubs native in warm parts of Amer., with opposite or whorled entire lvs., tubular 5-lobed red or yellow fls. in terminal branching cymes, and fr. a small berry.

A few species are grown out-of-doors in southern United States. Propagated by seeds and cuttings of half ripe wood under glass.

erécta (*H. patens*). Scarlet-Bush. To 25 ft., gray-pubescent: lvs. oval or ovate, to 6 in. long: fls. scarlet or orange, to ¾ in. long: fr. dark red or purple, ¼ in. long, ovoid. Fla. to Brazil.—It has been confused in cult. with Ixora.

pàtens: *H. erecta.*

sphærocárpa. To 12 ft., hairy: lvs. oblong, to 4 in. long, undulate: fls. orange-yellow, 1 in. long: fr. purplish-black, globose. Peru.

HAMOSA: *Astragalus austrinus.*

HAPLOPÁPPUS. *Compositæ.* Per. herbs with many-fld. heads of yellow ray- and disk-fls.; pappus of bristles.

Lỳallii (*Tonestus Lyallii*). To 4 in.: lvs. oblanceolate or spatulate, entire: heads ½ in. across. Mts., B. C. to Colo.

rubiginòsus: *Sideranthus rubiginosus.*

HARBINGER-OF-SPRING: *Erigenia bulbosa.*

HARBOÙRIA. *Umbelliferæ.* One per. herb with ternately decompound lvs., small yellow fls. in long-stalked umbels, and compressed ribbed frs.; sometimes grown in sunny places in the rock-garden. **H. trachypleùra.** To 2 ft.: ultimate lf.-segms. thread-like. Mts., Colo., Wyo.

HARDENBÉRGIA. *Leguminosæ.* Australian vines with pinnate lvs. of 3–5 lfts. or sometimes reduced to 1, small papilionaceous fls. in long racemes, and linear pods; differs from Kennedia in its smaller fls. and obtuse keel shorter than the wings.

Grown in the greenhouse or in the open in the South; common in southern California. They require peaty well-drained soil if grown under glass. Propagated by seeds, and by greenwood cuttings in spring under glass.

Comptoniàna (*Kennedia Comptoniana*). Lfts. 3 or 5, ovate to narrow-lanceolate: fls. blue or violet: pods to 2 in. long. Var. **álba** has white fls.

monophýlla (*H. ovata. Kennedia bimaculata. K. monophylla. K. ovata*). Lft. 1, ovate to lanceolate: fls. violet or rose. Var. **álba** has white fls., var. **lilácina** lilac fls., and var. **ròsea** pink.

ovàta: *H. monophylla.*

rubicúnda: see *Kennedia rubicunda.*

HARDHACK: *Spiræa tomentosa.*

HARDHEADS: *Centaurea nigra.*

HAREBELL: *Campanula rotundifolia* and others.

HARICOT: *Phaseolus vulgaris.*

HARIOTA: *Hatiora.*

HARPALIUM: *Helianthus rigidus.*

HARPEPHÝLLUM. *Anacardiaceæ.* Diœcious trees with pinnate leathery lvs., fls. in compact axillary panicles, 10 stamens, 4-celled fr. with 2 of the cells small and sterile; 2 species in S. Afr., now and then planted in warm climates.

cáffrum. Kafir-Plum. Attractive tree to 30 ft. with glossy lvs.: lfts. lanceolate, to 2½ in. long: fls. white or greenish: fr. dark red, size and shape of large olive, edible.—Grown in S. Calif. and S. Fla. for ornament.

HARPÚLLIA. *Sapindaceæ.* Trees with alternate pinnate lvs., diœcious or polygamous fls. and leathery inflated capsular 2-lobed frs.; one species intro. in Fla. and Calif.; related to Xanthoceras and Ungnadia.

arbòrea (*H. imbricata. H. cupanioides*). To 35 ft. or more: lvs. of 4–5 pairs of oblong-lanceolate entire lfts. to 6 in. long, shining: fls. in drooping axillary panicles: fr. bright orange, broader than long, about 1½ in. wide, having large smooth black seeds. India, Malaya, Philippines.

cupanioìdes: *H. arborea.*

imbricàta: *H. arborea.*

HARRIMANELLA: *Cassiope.*

HARRÍSIA. *Cactaceæ.* Arching or vine-like night-blooming cacti with angled or fluted branches, areoles bearing slender needle-like spines: fls. large and showy, funnelform, white or pinkish, borne singly at areoles near end of branches, the tube scaly. Near a score of species, Fla. to Argentina. See *Cacti.*

aboríginum. Erect or reclining to 20 ft., sometimes branched; ribs 9–11, obtuse; spines radial, 7–9, to ½ in. long, gray with brown tips: fls. white, to 6 in. long, fragrant: fr. yellow, globose, to 3 in. diam. W. Fla.

adscéndens (*Cereus adscendens*). Erect or somewhat prostrate, to 7 ft. long and 2 in. diam.; ribs 7–10, low, tubercled; spines about 10, to 1½ in. long, reddish-brown to gray: fls. white, to 10 in. long. Brazil.

Bonplándii (*Cereus* and *Eriocereus Bonplandii*). Erect at first, becoming arching or clambering, to 10 ft. and more, sts. to 3 in. diam. and strongly 4-angled; spines 6–8: fls. white, closing soon after sunrise, to 8 or 9 in. long. Brazil, Paraguay, Argentina.

Bròokei (*Cereus Brookei*). Erect, branched, to 25 ft., sts. dark green; ribs 9–11, obtuse, low; spines 9–12, to 1 in. long, mostly white: fl. color not known: fr. yellowish, to 3 in. across Bahamas.

Éarlei. Usually prostrate or pendent, to 10 ft. long and 2½ in. diam., 5–7-angled when young, becoming obscurely so or smooth with age; spines gray, usually 5–8, to 2 in. long: fls. white, to 8 in. long: fr. yellow, to 2½ in. diam. Cuba.

erióphora (*Cereus eriophorus*). To about 1 ft. high, main st. 1½ in. or more diam.; ribs 8 or 9; spines 6–9, with dark tips: fls. white inside and pale pink outside, to 7 in. long. Cuba.

Férnowii (*Cereus pellucidus*). To 10 ft. tall, branched, sts. to 1 in. diam.; ribs about 9, inconspicuous; spines 8–11, to 2½ in. long, light brown with darker tips: fls. white, to 8 in. long. Cuba.

fràgrans. To 15 ft., the sts. 10–12-ridged and erect or clambering; spines 9–13 and to 1½ in. long: fls. white or pinkish, fragrant, to 8 in. long. Fla.

grácilis (*Cereus gracilis. C. repandus*). Much branched, to 20 ft.; ribs 9–11; spines 10–16 and black-tipped: fls. white, corolla 8 in. long, tube nearly 1 in. with hairs in the axils of its scales. Jamaica.

Gùelichii (*Eriocereus Guelichii*). Sts. prostrate and straggling, branched, to 2 ft. long and 1¾ in. diam., pale green; ribs 3–4, acute, furrows flattened, areoles 1–3 in. apart; spines reddish becoming gray with black tip, radials 4–5, to ¼ in. long, central 1, to 1 in. long, stouter: fls. white within and greenish outside, to 10 in. long: fr. red, globose, scaly, spineless. Argentina.

Júsbertii (*Cereus* and *Eriocereus Jusbertii*). Sts. 2 in. diam., branched; ribs 6; radial spines 7 and very short; central 1 and red or brown: fls. white, brownish-green outside, 7 in. long. Perhaps a hybrid.

Mártinii (*Cereus* and *Eriocereus Martinii*). Much branched and clambering, 6 ft. or more; radials short; central 1 and about 1 in. long, old sts. terete and spineless: fls. about 8 in. long, white or tinged pink. Argentina.

Náshii (*Cereus Nashii*). Erect, to 10 ft., much branched, sts. to 1½ in. diam.; ribs 9–11, obtuse; spines 3–6, gray: fls. probably white, to 8 in. long. Hispaniola.

pomanénsis (*Cereus* and *Eriocereus pomanensis*). Sts. prostrate or arched, glaucous; ribs 4–6; radial spines 6–8; central spine 1 and to ¾ in. long: fls. white, 6 in. long. Argentina.

portoricénsis (*Cereus portoricensis*). To 10 ft. high and 1½ in. diam., branched; ribs 11; spines 13–17 and 1 in. long: fls. white, to 6 in. long. Puerto Rico.

Règelii. Perhaps a form of *H. Martinii* with longer spines and pale pink fls. white within.

rostràta: possibly *Selenicereus hamatus.*

Símpsonii. To 18 ft., erect or reclining, simple or branched; ribs 8–10; spines 7–14 and to 1 in. long: fls. white, to 7 in. long. S. Fla.

tortuòsa (*Cereus* and *Eriocereus tortuosus*). Erect but soon arching, branches to 1½ in. diam.; ribs commonly 7; spines 6–10 and awl-like: fls. white to pink, dull outside, to 6 in. long. Argentina.

HARTMANNIA: *Œnothera.*

HARTOGIA: *Agathosma.*

HARTWÈGIA. *Orchidaceæ.* Trop. American epiphytes with pseudobulbs or fleshy sts. bearing 1 lf. and fls. in racemes, the lip saccate at base. Grown in the warm greenhouse; see *Orchids.*

purpùrea. To 1½ ft. high, slender: lvs. to 4 in. long, very fleshy, green mottled with red-purple: fl.-cluster short, racemose or paniculate at the summit of a long naked scape much longer than the lvs.; fls. purple-red. Apr.–Oct. Cent. Amer

HASHISH: see *Cannabis.*

HASTATE: of the shape of an arrow-head but the basal lobes pointed or narrow and standing nearly or quite at right angles; halberd-shaped.

HATIÒRA (*Hariota*). *Cactaceæ.* A few spineless cacti of the Rhipsalis group, the fls. without tube and rotate and petals erect, the fls. and terete slender branches always terminal; fls. open only in sunlight, blooming in winter and early spring under glass in U. S. Employed and cult. the same as Rhipsalis. See *Cacti.*

salicornioìdes (*Rhipsalis salicornioides*). Epiphyte: sts. to 6 ft. or more, cylindric, much branched and diffuse, the branchlets 1 in. long more or less and club-shaped with pedicel-like base: fls. about ⅓ in. long, salmon-colored. S. E. Brazil.

HAW, BLACK-: *Viburnum prunifolium* and *rufidulum.* **-Medlar:** *Cratægomespilus.* **Possum-:** *Ilex decidua.*

HAWKS-BEARD: *Crepis.*

HAWKWEED: *Hieracium.* **Golden Yellow:** see *Tolpis barbata.*

HAWÓRTHIA. *Liliaceæ.* S. African succulent plants without sts., the thick lvs. in dense rosettes which are sometimes elongated, and small white or greenish fls. in simple or panicled racemes on scapes. For cult. see *Succulents;* fanciers plants.

aloefòlia: catalogue name, probably for *H. cymbiformis.*

arachnoìdes. Lvs. to 2 in. long and ⅝ in. across at middle, oblong-lanceolate, pale green, pellucid, long awned at tip, margin with cuspidate teeth, on short leafy st.: fls. few in lax racemes.

atróvirens. Lvs. to ¾ in. long and ⅓ in. wide, 30–40 in a dense rosette, with 3–5 vertical green lines: fls. in loose racemes 6 in. long.

attenuàta (*Aloe attenuata*). Lvs. entire, to 3 in. long and ¾ in. across, in rosettes of 30–40, lanceolate-deltoid, covered with white tubercles running together in a series of regular transverse bands: fls. rose, to ¾ in. long, in lax racemes to 2 ft. long. Var. **claripérla,** lvs. with larger tubercles.

Cassỳtha. Leafy st. to 4 in. long: lvs. to 1¼ in. long and ¾ in. across, ovate, dull green, somewhat tubercled on upper surface and whitish along margin, all ascending with strongly raised white tubercles on reverse.

Chálwinii. Lvs. to about 1 in. long and ½ in. across, ovate-deltoid, fleshy, tubercles small, whitish in definite transverse bands

coarctàta. St. elongated to 8 in.: lvs. to 2½ in. long and ¾ in. across, white-warty: fls. lined with red, in simple infl. to 1 ft. high.

Coòperi. Lvs. to 1¾ in. long and ⅝ in. across, oblong-lanceolate, pale green, pellucid spots on upper half, margin and keel finely toothed: fls. to ¾ in. long, in simple racemes to 1½ ft. high.

cuspidàta. Lvs. to 1 in. long and ¾ in. across, obovate-cuneate, pale green, strongly recurved, smooth and awned, to ¼ in. thick in center: fls. to ⅝ in. long, in lax racemes to 1½ ft. high.

cymbifórmis. Lvs. to 1½ in. long and ¾ in. across, very thick, entire, pale and glaucescent: fls. very pale pink striped with green, in a simple infl. to 1 ft. high

denticulàta. Lvs. to 1½ in. long and ¾ in. across, oblong-lanceolate, pale green, margins denticulate, short apical awn: fls. to ⅝ in. long, in simple lax racemes.

fasciàta. Lvs. to 1½ in. long and ½ in. wide, glaucous, with transverse bands of white tubercles: fls. in loose racemes 6 in. long. Var. **cæspitòsa** is listed as a dwarf and more compact form.

glabràta. Lvs. to 5 in. long and 1 in. across, lanceolate-deltoid, no tubercles on face, reverse with scattered tubercles, upper margins white-lined: fls. to ⅝ in. long, in racemes to 3½ ft. high. Var. **cóncolor,** lvs. scabrous on reverse, covered with minute uniformly colored tubercles; considered to be a probable hybrid with *H. scabra.* Var. **perviridis** has crowded greenish-white tubercles.

Kraùsii: listed name.

lætévirens. Rosette of 20–30 oblanceolate-oblong lvs. to 1½ in. long and ⅝ in. across, pale green becoming reddish with age, tipped with pellucid awn, margins and keel denticulate: fls to ¾ in. long, in simple lax racemes to 1 ft. high.

lineàta: listed name of unknown botanical standing.

margaritífera. Lvs. to 3 in. long and 1¼ in. across, lanceolate-deltoid, both sides covered with large white tubercles, in rosettes of 30–40: fls. to ⅝ in. long, in dense racemes to nearly 2 ft. high. Var. **corállina,** lvs. to 2½ in. long, tubercles on face sparse, and those on reverse in irregular transverse bands Var. **erécta,** lvs. smaller than type with more crowded and smaller tubercles. Var. **granàta,** lvs. to 2 in. long, deltoid, smaller and more crowded tubercles. Var. **semimargaritífera,** lvs. similar in size and shape to type, facial tubercles more or less confined to faint keel.

metállica: name of unknown botanical standing, listed as having dark lvs. with irridescent spots.

pentagòna: *Apicra pentagona.*

pilífera: listed name of unknown botanical standing.

pseudorígida: *H. tortuosa* var.

rádula. Lvs. to 3 in. long and ¾ in. wide, with minute white tubercles on both sides: fls. lined with green and rose, infl. 1½ ft. high.

recúrva. Lvs. stiff, to 1½ in. long, much recurved, lined with deep green: fls. lined with red.

Reinwárdtii. Sts. to 6 in., stoloniferous: lvs. to 1½ in. long and ½ in. wide, with rows of white tubercles: fls. lined with rose, infl. 1½ ft high.

Resendeàna: listed name of unknown botanical standing.

reticulàta. Lvs. to 1¼ in. long and less than ½ in. wide, oblong-lanceolate, smooth, pale green, more or less flaccid, margin minutely scabrous: fls. to ¾ in. long, in few-fld. lax racemes to 1 ft. high.

retùsa. Lvs. to 1½ in. long and ¾ in. broad, deltoid, recurved, smooth face and not scabrous on back, very thick: fls. to ¾ in. long in lax racemes.

rígida. Sts. to 4 in.: lvs. to 2 in. long and ¾ in. wide, recurved, rough: fls. striped with brownish-green, infl. 2 ft. high.

rugòsa. Lvs. to 4 in. long and 1 in. wide, rough on both sides with whitish tubercles: fls. rose veined with green, infl. to 3 ft. high.

Schmidtiàna. To 16 in.: lvs. broadly ovate-lanceolate, to ¾ in long, tip recurved, strongly convex beneath: fls. white with green stripes, ⅜ in. long, limb 2-lobed, few in racemes on an unbranched peduncle.

semifasciàta: listed name of unknown botanical standing.

semiglabràta. Lvs. to 3½ in. long and 1 in. across, lanceolate-deltoid, bright green with few tubercles on face and many white tubercles in irregular transverse bands on reverse: fls. to ¾ in long, in dense racemes to 2 ft. high.

setàta. Lvs. to 1¼ in. long and ⅝ in. across, oblong-lanceolate, pale green and tipped with long pellucid awn, margin with fine spreading teeth: fls. to ⅝ in. long, in racemes to 1 ft. high.

Skínneri: listed name of unknown botanical standing.

subfasciàta. Lvs. to 4 in. long and 1 in. wide, with transverse bands of white tubercles beneath: infl. to 2 ft. high.

subrígida. Lvs. to 2 in. long and ¾ in. across, ovate-lanceolate, dark green, very rough with large white-tipped tubercles: fls. to ¾ in. long, in lax racemes

subulàta. Lvs. to 4 in. long and 1 in. wide, very acuminate, in dense rosettes rough with white-tipped tubercles: fls. with green nerves, infl. 3 ft. high.

tessellàta. Lvs. to 1½ in long and 1 in. across, deltoid and recurved, face dark green marked with 6 anastomosing pale green lines, reverse dull green roughened by tubercles, margin with fine teeth: fls. to ¾ in. long, in few-fld. racemes to 1 ft. high. Var. **Éngleri** is listed. Var. **incúrva,** lvs. with inflexed margins, dull purplish-green. Var. **párva,** lvs. shorter and in smaller rosettes. Var. **recúrva** is probably *H. recurva.*

tortuòsa. Sts. to 6 in.: lvs. to 2 in. long and ¾ in. wide, rough on both sides: fls. lined with rose, infl. 1 ft. high. Var. **pseudorígida** is larger, rougher and more succulent.

translùcens. Lvs. to 2 in. long and ½ in. across, lanceolate, ascending, pale green sometimes purple-tinged, face pellucid on upper third, margins with fine pellucid teeth: fls. to ⅝ in long, in few-fld. simple lax racemes to 1 ft. high.

túrgida. Lvs. to 1 in. long and ⅓ in. broad, 20–30 in dense rosettes, rounded and somewhat keeled underneath, lined with paler green toward top on upper side: fls. on very short pedicels in a few-fld. raceme.

vittàta. Lvs. to 1¾ in. long and ⅝ in. across, oblong-lanceolate, pale green, upper half of face lineate, tipped with long awn, margins finely toothed: fls. to ¾ in. long, in simple dense racemes to 1 ft. high.

HAWTHORN: *Cratægus.* **India-:** *Raphiolepis indica.* **Water-:** *Aponogeton distachyus.* **Yeddo-:** *Raphiolepis umbellata.*

HAZÁRDIA. *Compositæ.* Small Calif. shrubs or per. herbs with leathery lvs. and heads in spikes or panicles, ray-fls. inconspicuous or wanting; pappus of reddish bristles; kin to Solidago.

càna. Large shrub: lvs. obovate or oblanceolate, to 8 in. long, entire or toothed, white-tomentose: heads in panicles, ray-fls. yellow turning purple. Isls. off Calif.

HAZEL, CHILE: *Gevuina Avellana.* **Winter:** *Corylopsis.* **Witch-:** *Hamamelis.*

HAZELNUT: *Corylus;* see *Filbert.*

HEAD: a short dense spike about as broad as long; capitulum.

HEAL-ALL: *Prunella vulgaris.*

HEARTSEASE: *Viola tricolor* var. *hortensis.*

HEART-SEED: *Cardiospermum.*

HEART-SHAPED: cordate; ovate in general outline but with 2 rounded basal lobes; has reference particularly to the shape of the base of a leaf or other expanded part.

HEATH: *Erica.* **Irish-:** *Daboëcia cantabrica.* **Spike-:** *Bruckenthalia spiculifolia.*

HEATHER: *Calluna.* **Beach-:** *Hudsonia.* **Mock-:** *Ericameria ericoides.*

HÈBE. *Scrophulariaceæ.* Many shrubs or small trees of the southern hemisphere, mainly native in New Zeal., formerly united with Veronica but differing in the mostly evergreen and woody character, leathery always opposite lvs., fls. white to pink, in axillary racemes or spikes or small heads, and in technical characters of the caps. They should no longer be called Veronicas. With the exception of *H. formosa,* the names here listed are of New Zeal. species or derivatives from them.

Several New Zealand names have recently been listed in California but it is not known whether they have come into general cultivation. Those now named in Hebe are *H. Carsei, divergens, evenosa, Haastii, Matthewsii, Menziesii, pubescens, rigidula, subalpina.* Others are *Veronica acutiflora, monticola, Muelleri.* Some of the names of hebes may represent horticultural forms.

Hebes are extensively grown out-of-doors in mild climates, as in California, and sometimes under glass in the North. Several kinds are used as evergreen hedges. Propagated by seeds and by cuttings, those taken from mature plants in autumn blooming the following summer.

álbicans (*Veronica albicans*). To 4 ft., much branched: lvs. imbricated, to 1 in. long and ½ in. across, glaucous, entire: fls. white, in many-fld. racemes. By some considered a hybrid; much like *H. amplexicaulis.*

amábilis (*Veronica amabilis*). To 15 ft. or more: lvs. to 4 in. long and 1 in. across, entire: fls. white, ⅓ in. across, in racemes to 6 in. long. Considered to be a hybrid race issuing from *H. elliptica* and *H. salicifolia.*

amplexicaùlis (*Veronica amplexicaulis*). To 3 ft., sometimes decumbent: lvs. imbricated, to 1 in. long and ⅔ in. across, glaucous, entire, very thick: fls. white, ¼ in. across, in spikes to 1½ in. long.

Ándersonii (*Veronica Andersonii*). Regarded as a garden hybrid between *H. salicifolia* and *H. speciosa:* fls. white tipped with violet. Var. **variegàta** has lvs. variegated with creamy-white.

angustifòlia (*Veronica angustifolia*). To 8 ft., much branched: lvs. to 3½ in. long and ¼ in. across, keeled beneath, entire: fls. pale lilac, ⅙ in. across, in racemes to 5 in. long.

anómala (*Veronica anomala*). To 5 ft., much branched: lvs. to ¾ in. long and ⅕ in. across, keeled and shining: fls. white or pale pink, ⅓ in. across, in spikes forming short panicles.—Very like *H. buxifolia.*

Balfouriàna (*Veronica Balfouriana*). To 3 ft.: lvs. ovate, to ¾ in. long, entire, shining above: fls. pale blue, ½ in. across, in racemes to 3 in. long.

Bárkeri (*Veronica Barkeri*). Shrub: lvs. to 2 in. long and ⅔ in. across: fls. pale lilac, ¼ in. across, in racemes to 2 in. long. Cultigen.

Bóllonsii (*Veronica Bollonsii*). To 5 ft., much branched: lvs. to 3 in. long and ¾ in. across, edges thickened: fls. pale lilac, ⅓ in. across, in racemes to 4 in. long.

Buchánanii (*Veronica Buchananii*). To 1 ft., much branched: lvs. imbricated, about ¼ in. long and broad: fls. white, ⅕ in. across, in short spikes.

buxifòlia (*Veronica buxifolia*). To 5 ft.: lvs. imbricated, to ⅓ in. long and ¼ in. across, stiff and thick, entire: fls. white, ⅓ in. across, in spikes to 1 in. long.

cárnea (*Veronica carnea*). Apparently a garden hybrid with *H. speciosa* as one parent: fls. rose.

carnósula (*Veronica carnosula*). To 3 ft., often decumbent: lvs. imbricated, to ¾ in. long and ⅔ in. across, glaucous: fls. white, ¼ in. across, in dense spikes.

chathámica (*Veronica chathamica*). To 1½ ft., with prostrate or trailing sts.: lvs. oval, to 1 in. long: fls. purple, ¼ in. across, in racemes to 1 in long. Var. **erécta** is listed.

Colensòi (*Veronica Colensoi*). To 1½ ft.: lvs. to 1½ in. long and ½ in. across, nearly entire, glaucous beneath: fls. white, ¼ in. across, in racemes about 1½ in. long.

cupressoìdes (*Veronica cupressoides*). To 6 ft.: lvs. scale-like, 1/15 in. long or to ¼ in. on young plants: fls. pale purple or rarely white, ⅙ in. across, in small terminal heads.

Darwiniàna (*Veronica Darwiniana*). Small shrub: lvs. to ¾ in. long and ⅓ in. across, entire, glaucous: fls. white, ¼ in. across, in dense racemes to 1½ in long.

decúmbens (*Veronica decumbens*). To 3 ft., decumbent and much branched: lvs. to ¾ in. long and ⅓ in. across, margins bright red: fls. white, ¼ in. across, in racemes to 1 in. long.

Dieffenbáchii (*Veronica Dieffenbachii*). To 4 ft., much branched: lvs. to 4 in long and 1 in. across: fls. lilac, ¼ in. across.

diosmæfòlia (*Veronica diosmæfolia*). To 5 ft. or more, much branched: lvs. to 1 in. long and ⅙ in. across: fls. white or pale blue, ¼ in. across, in corymbose racemes 1 in. long.

Dorrien-Smíthii (*Veronica Dorrien-Smithii*). Small straggling shrub: lvs. to 3 in. long and 1¼ in. across, ciliate at margins: fls. white or lavender, ⅕ in. across, in racemes as long as lvs.

ellíptica (*Veronica elliptica. V. decussata*). To 20 ft., much branched: lvs. to 1¼ in. long and ½ in. across: fls. white or veined purple or pale blue, ⅔ in. across, in racemes to 1½ in. long. Variegated forms are listed.

epacrídea (*Veronica epacridea*). Prostrate half-hardy shrub: lvs. obovate-oblong, to ¼ in. long, leathery, glabrous, keeled, mostly obtuse: fls. white, in dense terminal heads.

formòsa (*Veronica formosa*). To 4 ft., evergreen: lvs. oval to lanceolate, to 1 in. long, nearly entire: fls. pale lilac, in short racemes. Tasmania.

Gíbbsii (*Veronica Gibbsii*). To 1½ ft.: lvs. imbricated, to ¾ in. long and ½ in. across, glaucous, white-ciliate: fls. white, ⅕ in. across, in dense-fld. spikes.

gigantèa (*Veronica gigantea*). Tree to 50 ft.: lvs. to 5 in. long and ½ in. across, coarsely toothed when young: fls. white, ⅕ in. across, in racemes to 5 in. long.

glaucophýlla (*Veronica glaucophylla*). Similar to *H. Traversii,* but lvs. much narrower, linear, glaucous and not keeled: fls. white, in slender tapering racemes.—*V. Colensoi* var. *glauca* belongs here.

gracíllima (*Veronica gracillima*). Much branched shrub: lvs. to 2½ in. long and ⅓ in. across: fls. ¼ in. across, in racemes to 5 in. long. Probably a hybrid between *H. angustifolia* and *H. salicifolia.*

Héctori (*Veronica Hectori*). To 1 ft.: lvs. densely imbricated, pairs united to middle, orbicular-oblong, to ⅛ in. long, very thick: fls. white, ¼ in. across, in small terminal heads.

Hulkeàna (*Veronica Hulkeana*). To 3 ft.: lvs. ovate, to 2 in. long, toothed: fls. pale lilac, to ¼ in. across, in panicles to 1 ft. long.

lævis (*Veronica lævis*). To 5 ft.: lvs. to ⅔ in. long and ⅓ in. across, stiff, entire: fls. white, ¼ in. across, in racemes to 1½ in. long.

leiophýlla (*Veronica leiophylla*). To 12 ft.: lvs. to 1¼ in. long and ⅓ in. across: fls. white, ⅕ in. across, in racemes to 4 in. long. Var. **strictíssima** differs in more acute lvs. and more upright racemes.

Lèwisii (*Veronica Lewisii*). To 6 ft., the branches gray-pubescent: lvs. to 2½ in. long and 1 in. across, margins with white line: fls. pale blue, ⅓ in. across, in racemes to 2½ in. long.

loganioìdes (*Veronica loganioides*). Shrub to 14 in., sts. decumbent, grayish: lvs. ovate-lanceolate, to ⅙ in. long, acute, sessile, keeled: fls. white or white with pink veins, to ¼ in. across, in racemes forming a small corymb-like head.

macrántha (*Veronica macrantha*). To 2 ft.: lvs. to 1 in. long, toothed: fls. white, ¾ in. across, in 3–8-fld. racemes.

macrocárpa (*Veronica macrocarpa*). To 8 ft.: lvs. to 6 in. long and 1 in. across: fls. white, to ⅓ in. across, in racemes to 7 in. long. Var. **latisépala** (*Veronica latisepala*) has shorter racemes and fls. deep violet.

macroùra (*Veronica macroura*). To 5 ft.: lvs. to 3 in. long and 1¼ in. broad: fls. white or bluish, ⅙ in. across, in dense racemes to 4 in. long.

obtusàta (*Veronica obtusata*). To 3 ft.: lvs. to 2 in. long and 1 in. across, with white-hairy margins: fls. bluish-white, ⅕ in. across, in racemes to 2½ in. long.

parviflòra (*Veronica parviflora*). Shrub or tree to 20 ft.: lvs. to 2½ in. long and ¼ in. across, entire: fls. white, ⅙ in. across, in racemes to 3 in. long.

pimeleoìdes (*Veronica pimeleoides*). To 1½ ft., often prostrate, much branched: lvs. to ⅓ in. long, glaucous: fls dark purple-blue, ¼ in. across, in spikes to 1 in. long.

pinguifòlia (*Veronica pinguifolia*). To 4 ft., often decumbent: lvs. imbricated, to ¾ in. long and ½ in. across, glaucous: fls. white, ⅓ in. across, in dense spikes longer than lvs.

rakaiénsis (*Veronica rakaiensis*). To 6 ft.: lvs. linear-lanceolate, to 1 in. long, entire, shining above: fls. white, ¼ in. across, in racemes to 2 in. long.—Close to *H. Traversii.*

rotundàta (*Veronica rotundata*). To 6 ft.: lvs. to 4 in. long and 1¼ in. across: fls. purple or lilac, ¼ in. across, in racemes to 6 in long.—Much like *H. macrocarpa*, but caps. almost orbicular and rounded at top.

rupícola (*Veronica rupicola*). To 4 ft.: lvs. to 1 in. long and ⅓ in. across, entire: fls. ¼ in across, in racemes to 2 in. long.

salicifòlia (*Veronica salicifolia*). To 12 ft., much branched: lvs. to 6 in. long and ¾ in. across: fls. white tinged lilac, ⅙ in. across, in racemes 6 in. or more long. Var. **commùnis** does not differ from the type. In var. **longiracemòsa** the racemes are 1 ft. or more long.

speciòsa (*Veronica speciosa. V. imperialis* is a garden name). To 5 ft.: lvs. to 4 in. long and 1¾ in. across, entire, shining: fls. dark reddish- or violet-purple, ⅓ in. across, in racemes about 4 in. long.

Tòwnsonii (*Veronica Townsonii*). To 6 ft.: lvs. to 3 in. long and ⅓ in across: fls. white, ¼ in. across, in racemes to 6 in. long.

Tràversii (*Veronica Traversii*). Small shrub: lvs. to 1 in. long and ⅓ in. across, entire: fls. white, ¼ in. across, in racemes to 3 in. long. Var. **élegans** is a slender form with narrower lvs.

vernicòsa (*Veronica vernicosa*). To 3 ft., often decumbent: lvs. to ⅔ in. long and ⅓ in. across, entire: fls white, ⅓ in. across, in racemes to 1½ in. long

HEBECLINIUM: *Eupatorium macrophyllum.*

HEBENSTRÈTIA. *Scrophulariaceæ.* Many kinds of herbs or shrubs with narrow lvs. and yellow or white fls. in dense terminal spikes, the corolla split and 4-lobed, calyx spathe-like; mostly from S. Afr.

Seed should be sown outside in April or inside if earlier results are desired; treated as annuals.

comòsa. Per. to 4 ft., with woody sts.: lvs. lanceolate, to 2 in. long, toothed: fls. yellow or white with orange-red blotch on limb, ½ in. long, in spikes to 6 in. long, fragrant at night.

dentàta. Similar to *H. comosa* but to 4 ft. high, with lvs. linear and toothed only above middle.

HÉCHTIA. *Bromeliaceæ.* Succulent terrestrial diœcious herbs with long stiff spiny-toothed lvs. in dense rosettes and small white fls. in terminal panicles.

argéntea. Fl.-sts. to 3 ft.: lvs. to 2 ft. long and 1 in. wide, silvery: fls. ⅓ in. long, in many sessile spikes forming a loose panicle to 1½ ft. long. Mex.

ròsea. Lvs. to 2 ft. long and 1 in. wide, tinged with brown: fls. bright red, ½ in. long, in loose panicles to 4 ft. long. Mex.

texénsis. Fl.-sts. to 4 ft.: lvs. to 1½ ft. long and 2 in. wide: fls. ⅓ in. long, solitary and sessile on branches of panicle, subtended by brownish bracts. Rio Grande, Tex.

HEDEÒMA. *Labiatæ.* Ann. or per. American herbs with opposite small lvs. and small blue or purple 2-lipped fls. in axillary clusters.

campòrum. Per., sts. decumbent or ascending: lvs. linear-lanceolate to oblong, to ¾ in. long, gray-hairy: corolla bluish-purple, to ½ in. long. S. D. to Kans.

Drúmmondii. Sts. to 16 in.: lvs. linear to oval, to ¼ in. long: fls. pinkish, to ¼ in. long. Tex.

pulegioìdes. AMERICAN PENNYROYAL, MOCK P. Ann. to 18 in., erect, much branched, hairy: lvs. ovate to ovate-oblong, to 1½ in. long, petioled: corolla bluish-purple, to ¼ in. long. N. S. to Fla. west to Minn. and Ark.

HÉDERA. IVY. *Araliaceæ.* Evergreen shrubs climbing by rootlets, with alternate entire or lobed lvs., small greenish fls. in umbels which are panicled or racemed, and fr. a berry; planted as a wall cover, for borders of shrubberies and for ground-cover in shady places, and sometimes as a house and conservatory subject.

Ivy thrives best in rich moist soil. Propagated by cuttings, layers, and seeds which usually do not germinate until the second year. Slow-growing species or forms are sometimes grafted on common stocks.

algeriénsis: *H. canariensis.*

ánglica: listed name.

arbòrea: *H. Helix* var. *arborescens.*

azórica: *H. canariensis.*

báltica: *H. Helix* var.

canariénsis (*H. algeriensis. H. azorica. H. maderensis*). Lvs. ovate, to 6 in. across, entire or shallowly 3–7-lobed, heart-shaped at base: fr. black. Canary Isls., N. Afr.; adapted to Calif. Var. **variegàta** has lvs. edged with yellowish-white.

cólchica (*H. coriacea* and *Roegneriana*). Lvs. broadly ovate, to 10 in. long, entire or slightly lobed, heart-shaped at base: fr. black. Caucasus, Persia; for southern states. Var. **dentàta** has lvs. remotely toothed.

conglomeràta: *H. Helix* var.

cordàta: hort. name, probably for *H. colchica.*

coriàcea: *H. colchica.*

dentàta: *H. colchica* var.

digitàta: *H. Helix* var.

doneraiiénsis: *H. Helix* var. *minima.*

Háhnii: listed name of no botanical standing.

Hèlix. ENGLISH I. Lvs. usually 3-5-lobed and margins entire, to 4 in. long, on fruiting branches ovate and unlobed, often with light colored veins: fr. black. Eu., Asia, N. Afr.; stands in protected places in N. Y. and New England but does not attain great size. Runs into many forms, a few of which are: **arboréscens** (*H. arborea*), erect, not climbing; **argénteo-variegàta**, lvs. variegated or edged with white; **aùreo-variegàta** (var. *chrysophylla*), lvs. yellow or variegated with yellow; **báltica**, small-lvd. hardy form; **Caenwoodiàna**, with small blackish-green lvs. and white veins; **canéscens chrysocárpa** is var. *poetica;* **conglomeràta**, with small crowded lvs.; **coriàcea** is *H. colchica;* **deltoídea** (var. *hastata*), lvs. with only 2 basal lobes; **digitàta**, lvs. digitately 5-lobed; **díscolor** has smaller variegated lvs.; **elegantíssima** is var. *tricolor;* **erécta**, probably a form of var. *arborescens;* **glomeràta** is var. *conglomerata;* **grácilis**, lvs. rather small, turning bronzy; **hastàta** is var. *deltoidea;* **hibérnica**, lvs. to 6 in. across, with short lobes; **Hòwardii**, lvs. to 2 in. across, 3-lobed, dark green dotted, marbled or blotched cream-white; **lobàta** is listed; **maculàta**, similar to var. *hibernica*, but has lvs. spotted and striped with yellowish-white; **marmoràta**, lvs. blotched with yellowish-white; **mínima** (var. *donerailensis*), lvs. small, purplish-brown in winter; **nìgra**, small very dark green lvs.; **palmàta**, with dull green digitately lobed lvs.; **pedàta**, lvs. pedately 5-lobed with long middle lobe; **peltàta** is listed as having small deeply cut lvs.; **poética** (var. *chrysocarpa*) fr. yellow; **Roegneriàna** is *H. colchica;* **rhomboídea** is listed in the trade and may be intended for *H. rhombea;* **strícta**, an erect form perhaps not distinct from var. *arborescens;*

tortuòsa, lvs. nearly entire, curled and twisted; **trícolor** (var. *elegantissima*) has edges of lvs. red in autumn; plants listed as **variegàta** may be vars. *argenteo-variegata* or *aureo-variegata*.

hibérnica: *H. Helix* var.

himalàica: *H. nepalensis.*

japónica: *H. rhombea.*

lùcida: listed name.

maderénsis: *H. canariensis.*

mínima: *H. Helix* var.

nepalénsis (*H. himalaica*). Climbing vine, with scaly young sts.: lvs. 2–5-lobed on a side in case of sterile sts. and unlobed on flowering branches: pedicels of umbels stout: fr. yellow. Himalayas; stands only far S.

palmàta: *H. Helix* var.

rhómbea (*H. japonica* of cult.). Climbing vine, distinguished from *H. nepalensis* in lvs. typically 3- rarely 5-lobed on non-flowering sts., umbels on slender peduncles and black fr. Korea, Japan.

Roegnerìana: *H. colchica.*

HEDGE. A hedge is a dense permanent row or line of living plants, ordinarily trimmed into more or less formal shape, answering the purpose of a fence, a screen or a windbreak. It is comprised of durable woody plants that make a thick intertangled or impenetrable growth and that withstand shearing. Hedges proper are to be distinguished from edgings, which are low and sometimes temporary lines about walks, flower-beds and borders.

For evergreen hedges the most serviceable plant in general in North America is probably the arbor-vitæ. For choice hedges about the grounds, particularly outside the northern states, some of the retinosporas are useful; also yews. One of the most satisfactory of coniferous plants for hedges is the common hemlock, which stands shearing well and makes a very soft and pleasing mass. Other plants that hold their leaves and are good for hedges are the common box and the privets. The dwarf variety of box can be kept down to a height of 6 inches to a foot for any number of years and is useful for edgings. The larger-growing varieties make excellent hedges 3, 4 and 5 feet high. The ordinary privet or prim holds its leaves well into the winter in the North. The so-called Californian privet holds its leaves rather longer and stands better along the sea-shore, but it is less hardy than the other. In the southern states, nothing is better than *Citrus* (or *Poncirus*) *trifoliata*. Some of the barberries are excellent hedge plants, particularly *Berberis Thunbergii* with its good autumn color (*B. vulgaris* is a host of wheat rust). Native plants of the region often make acceptable hedges.

For hedges of deciduous plants, the most common species are the buckthorn, the European thornapple or cratægus, osage-orange, and various kinds of roses, particularly *Rosa rugosa*. Near the sea in California, *Lavatera assurgentiflora* is employed as a wind-break.

To obtain a good hedge, it is necessary to have a thoroughly well-prepared deep soil, to set the plants close, and to shear them at least twice every year. Arbor-vitæ may be set 1–2½ or 3 feet apart, and hemlock spruce much the same; and these distances may be taken as a general guide for many other plants.

The hedge should be trimmed the year after it is set, although it should not be cut very closely until the plants reach the desired or permanent height. Thereafter it should be sheared into the desired form in spring or autumn. If the plants are allowed to grow a year or two without trimming, they lose the lower leaves and become open and straggly. Osage-orange and some other plants are plashed—that is, the plants are set at an angle rather than perpendicularly, and they are wired together in such a way that they make an impenetrable barrier just above the surface of the ground.

Hedges are much less employed in North America than in Europe, and for several reasons. The climate is relatively dry, and most hedges do not thrive as well here as there; labor is high-priced, and the trimming is likely to be neglected; farms are so large that much fencing is required; timber and wire are usually cheaper than live hedges. However, they are grown with good effect about home grounds.

HEDGE-THORN: *Carissa Arduina.*

HEDRÆANTHUS: *Edraianthus.*

HEDYCÁRYA. *Monimiaceæ.* Trees or shrubs sometimes planted in Calif.: lvs. opposite: fls. diœcious, in axillary cymes or racemes: fr. composed of several drupes borne on the receptacle: native in New Zeal., Australia and Pacific Isls.

arbòrea. To 40 ft.: lvs. oblong or obovate, to 5 in. long, coarsely toothed, leathery: fls. to ½ in. across: drupes bright red, ½ in. long. New Zeal.

HEDÝCHIUM. GINGER-LILY. *Zingiberaceæ.* Robust trop. per. herbs with strong rootstocks and leafy sts., the fls. borne in bracts on terminal spikes or panicles and having 1 broad petal-like staminode or lip and prominent but smaller lateral ones.

Grown in the greenhouse or frostless countries out-of-doors; prized for the showy flowers and fragrance. They require rich soil and plenty of water or may even be immersed up to the crown. Propagated by division of the roots. See *Zingiberaceæ.*

aurantìacum. To 10 ft.: lvs. to 1½ ft. long and 1 in. wide: fls. orange, the corolla-tube ¾ in. and segms. 1 in. long, filament bright red, in spikes to 6 in. long. India.

aùreum. Dwarf: lvs. lanceolate, to 8 in. long, acuminate, slightly pubescent beneath: fls. golden-yellow, to ¾ in. long, in dense spikes to 2 in. long, staminodes linear, about ½ in. long, filament as long as lip. India.

chrysoleùcum (*H. coronarium* var. *chrysoleucum*). Differs from *H. flavescens* in the base of lip and lateral staminodes deep orange-yellow. India.

coccíneum. To 6 ft.: lvs. to 20 in. long and 2 in. wide: fls. red, the corolla-tube 1 in. and segms. 1 in. long, filament pink, in dense spikes to 10 in. long. India. Var. **angustifòlium** has shorter lvs. and brick- or salmon-red fls.

coronàrium. GARLAND-FLOWER. To 6 ft.: lvs. to 2 ft. long and 5 in. wide: floral bracts large and firm and closely imbricated with 4–6 white very fragrant fls. under each one; perianth-tube 2–3 in. long; lip large and broad, nearly 2 in. long and 1½ in. broad, 2-lobed and sometimes with smaller lobes, sometimes tinged yellow on lower part; filament with anther shorter than lip: spike somewhat ovate, to 1 ft. long. Trop. Asia; nat. extensively in trop. Amer.

elàtum. To 12 ft. or more: lvs. to 2 ft. long and 2½ in. wide: fls. yellowish-white, the corolla-tube 1 in. and segms. ¾ in. long, filament pink, in loose spikes to 1 ft. long. India.

ellípticum. To 5 ft.: lvs. to 14 in. long and 5 in. wide: fls. yellowish-white, the corolla-tube to 3 in. and lobes 1 in. long, filament purple, in dense spikes 4 in. long. India.

flavéscens (*H. coronarium* var. *flavescens*). Fls. to 5½ in. long, yellowish, with color deeper in basal part; lip obovate-orbicular, 2-lobed, narrowed to claw, filament with anther slightly exceeding lip, yellow. India, Mascarene Isls.

flàvum. To 5 ft.: lvs. to 14 in. long, slender-pointed: spike oblong, the imbricate bracts oblong-ovate and nearly obtuse, 2½ in. long and 2 in. broad; lip obcordate, suddenly narrowed into a short claw, yellow with orange patch in center and below, filament and anther about as long as lip. India.—Other plants have been known as *H. flavum.*

Gardnerìanum. Lvs. to 1½ ft. long and 6 in. wide: fls. light yellow, the corolla-tube 2 in. and segms. 1½ in. long, with long-exserted red filament, in spikes to 1½ ft. long. India.

glaùcum (*H. gracile* var. *glaucum*). To 5 ft.: lvs. to 10 in. long and 3 in. wide, glaucous beneath: fls. white, the corolla-tube 1 in. and segms. 1¼ in. long, filament red, in loose spikes to 8 in. long. India.

grácile. To 2 ft.: lvs. to 5 in. long and 1½ in. wide, glaucous beneath: fls. greenish-white, the corolla-tube 1 in. and segms. ¾ in. long, filament red, in spikes to 4 in. long. India.

Greènei. To 6 ft.: lvs. to 10 in. long and 2 in. wide: fls. with corolla-tube 1½ in. long and dark red lip 1½ in. long, the linear lobes lighter red, filament red, in dense spikes to 5 in. long. India.

máximum (*H. coronarium* var. *maximum*). Differs from *H. coronarium* in the broader lvs., ciliate bracts, large fls. with lateral staminodes frequently bearing a lobe or tongue from the center, filament tinged pink, lip nearly 2¾ in. long and 1¾ in. broad. India.

spicàtum. To 3 ft.: lvs. to 16 in. long and 4 in. wide: fls. yellow, the corolla-tube 3 in. and segms. 1 in. long, filament reddish, in loose spikes to 8 in. long. India. Var. **acuminàtum** has lvs. tomentose beneath and purple corolla-lobes.

thyrsifórme. To 6 ft.: lvs. to 14 in. long and 5 in. wide: fls. white, the corolla-tube 1 in. and lobes 1 in. long, filament white, in dense spikes to 4½ in. long. India.

villòsum. To 8 ft.: lvs. to 14 in. long and 4 in. wide: fls. with white corolla-tube to 2½ in. long and yellow segms. 1¼ in. long, filament purple, in loose spikes to 10 in. long. India.

HEDÝSARUM. *Leguminosæ.* Per. herbs or subshrubs native in the north temp. zone, with pinnate lvs., showy papilionaceous fls. in axillary racemes, and flat pods which separate into joints.

Of easy cultivation in sunny well-drained soil. Propagated by seeds and division. Sometimes planted in borders for ornament.

alpìnum: *H. boreale.*

americànum: *H. boreale.*

boreàle (*H. alpinum. H. americanum*). To 2½ ft.: lfts. 5–10 pairs, oblong, to 1 in. long: fls. violet or rarely white, to ¾ in. long, in summer. Lab. to Wyo. Var. **ròseum,** with pink fls., is listed.

coronàrium. French-Honeysuckle. Per. or bien. to 4 ft.: lfts. elliptic, 3–7 pairs: fls. deep red, fragrant, in summer. Eu. Var. **álbum** has white fls.

gangéticum: *Desmodium gangeticum.*

grandiflòrum. Lfts. 3–4, elliptic, silky beneath: fls. pale yellow, wings shorter than keel: pods 5-jointed, white-villous. Rumania.

multíjugum. To 5 ft.: lfts. obovate, to ½ in. long, 10–20 pairs: fls. violet or purple, in summer. Mongolia.

negléctum: *H. obscurum.*

obscùrum (*H. neglectum*). To 1 ft.: lfts. oblong, 5–9 pairs: fls. purple, in summer. Eu.

occidentàle. To 2 ft.: lfts. 6–10 pairs, oblong or lanceolate: fls. purple. Wash.

pabulàre. To 2½ ft.: lfts. oblong, 4–7 pairs, to ¾ in. long: fls. purple, ½ in. long, in early summer. Mont. to New Mex.

sikkiménse. To 6 in.: lfts. 10–13 pairs, linear-oblong, to ½ in. long, somewhat leathery: fls. bright red, ½ in. long, in dense heads to 2 in. long. Himalayas.

utahénse. To 2 ft.: lfts. oval or oblong, 5–8 pairs, to 1 in. long: fls. rose-purple, to ¾ in. long. Utah, Ida.

HEDYSCÈPE. *Palmàceæ.* One unarmed attractive monœcious feather-palm of Lord Howe Isl. in the S. Pacific. From Howea the genus differs in having flexuosely branched spadices, the fls. hardly in pits; ovule attached on wall: fr. larger, about 2 in. long with oblique-lateral stigmatic point, and other technical differences. **H. Canterburyàna** (*Kentia Canterburyana*). Tall stout palm with a dense crown of arched recurving lvs.: pinnæ numerous, green both sides, narrow-lanceolate and acuminate, drooping at ends. Planted somewhat in Fla. and S. Calif.

HEERIA: *Schizocentron elegans, Heterocentron roseum.*

HEÌMIA. *Lythraceæ.* Two trop. American glabrous shrubs with small opposite or whorled lvs., yellow solitary fls. having horn-like appendages at base of calyx-lobes and capsular frs.; sometimes planted in S. Calif.

myrtifòlia. To 3 ft.: lvs. linear or lanceolate, to 2 in. long: fls. ⅜ in. long. Brazil.

salicifòlia. To 10 ft.: lvs. linear-lanceolate or lanceolate, to 3½ in. long: fls. to ¾ in. long. Mex. to Argentina.

HELÈNIUM. Sneezeweed. *Compositæ.* Coarse erect herbaceous annuals and perennials with alternate, toothed or entire lvs. and yellow or brownish heads, mostly radiate, either solitary or in flat-topped clusters in summer and fall; pappus of scales; native in N. and S. Amer.

Heleniums thrive well in fairly rich soil and a sunny situation; they may be propagated by seeds, cuttings and division. They are useful for rear borders and wild-gardens.

aromáticum (*Grahamia aromatica*). Glaucous, much branched: lvs. linear-lanceolate, upper entire, lower pinnately cut: heads of yellow disk-fls. Chile.

autumnàle (*H. grandiflorum*). Per. to 6 ft.: lvs. lanceolate or ovate-lanceolate, to 5 in. long, mostly toothed, decurrent on st.: heads to 2 in. across, numerous, rays lemon-yellow to bright yellow, disk yellow. Que. to Fla. and Ariz. Var. **grandiflòrum** has large fls. Var. **mìnor,** dwarf form to 2 ft. in mixed colors yellow and red. Var. **nànum præcox** is dwarf and early blooming. Var. **pùmilum** grows to 2 ft. high. Var. **rùbrum,** fls. deep red. Var. **striàtum** has rays striped with crimson. Var. **supérbum,** fls. large.

Bígelovii. Per. to 4 ft.: lvs. lanceolate, to 10 in. long, decurrent on st.: heads to 2½ in. across, rays yellow, disk brown or brownish-yellow. Calif. Var. **aurantìacum** is listed.

brùneum coccíneum is listed as a plant 1 ft. high with bronzy-brownish-red fls.

califórnicum: *H. puberulum.*

gaillardiæflòrum: form of *H. autumnale* with bronzy-red rays tipped with golden-yellow.

gigantèum: listed name, probably of a form of *H. autumnale.*

grandicéphalum striàtum: *H. nudiflorum* var.

grandiflòrum: *H. autumnale.*

Hoòpesii (*Dugaldia Hoopesii*). Per. to 3 ft.: lvs. oblong-lanceolate, to 10 in. or more long, entire, not decurrent: heads 1 to several, 3 in. across, yellow. Rocky Mts. to Ore. and Calif.

Mòerheimii: hort. name for a dwarf red-fld. form, probably of *H. autumnale.*

montànum. Per. to 3½ ft.: lvs. lanceolate, to 4 in. long, finely toothed to entire, decurrent: heads golden-yellow, to 1¾ in. across, ray-fls. about ⅜ in. long and puberulent beneath. Kans. to New Mex. north to Mont. and B. C.

nànum: *H. autumnale* var.

nudiflòrum. Per. to 3 ft.: lvs. lanceolate to linear-lanceolate, to 6 in. long, nearly entire, decurrent on st.: heads to 1½ in. across, in clusters, rays drooping, yellow, brown-purple or striped, disk brownish or purplish. N. C. to Fla. and Tex. Var. **grandicéphalum striàtum,** to 5 ft., heads 2 in. across.

peregrìnum: listed name of form said to have mahogany-red ray-fls. faintly edged yellow.

polyphýllum. Per. to 2½ ft., upper sts. conspicuously winged: lvs. linear-spatulate, to 4 in. long, entire: disk-fls. purplish, ray-fls. yellow, heads corymbose, to 1¼ in. across. Tenn., Ga.

præ̀cox: *H. autumnale* var. *nanum præcox.*

pubérulum (*H. californicum*). Per. to 5 ft.: lvs. lanceolate or linear, decurrent: heads solitary, globose, red-brown, ½ in. across, rays reflexed and inconspicuous. Calif.

pùmilum: *H. autumnale* var.

rùbrum: *H. autumnale* var.

striàtum: *H. autumnale* var.

tenuifòlium. Ann. to 2 ft., very leafy: lvs. thread-like, to 1½ in. long, entire, often whorled: heads to 1 in. across, clustered, yellow. Va. to Fla. and Tex.; northward as a weed.

HELEOCHARIS: see *Eleocharis.*

HELIÁMPHORA. *Sarraceniaceæ.* One insectivorous per. native in British Guiana, rarely seen in greenhouse collections. The plant requires much moisture and does best in pots plunged in moss under a bell-glass. Propagated by single crowns. **H. nùtans.** To 2 ft.: lvs. or pitchers basal, tubular, winged in front, with very small lid, veined with red: fls. white or pale rose, nodding, several together.

HELIANTHÉLLA. *Compositæ.* Per. herbs with alternate or opposite lvs. or sometimes the scape leafless, and long-stalked solitary heads of yellow ray-fls. and yellow or brownish disk-fls.; pappus of scales; native in W. N. Amer. Propagated by seeds or division.

Doúglasii. To 3½ ft.: lvs. oblanceolate or lanceolate, to 5 in. long: disk 1 in. across, rays 1 in. long. B. C. to Wyo.

Párryi. To 1 ft.: lvs. oblanceolate, to 4 in. long: disk to ¾ in. across, rays ½ in. long. Colo. to Ariz.

quinquenérvis. To 2 ft.: lvs. ovate-lanceolate, to 9 in. long: disk to 2 in. across, rays 1 in. long. S. D. to New Mex.

uniflòra. To 2 ft.: lvs. oblong-lanceolate, to 5 in. long: disk purple, rays 1 in. long. Mont. to New Mex.

HELIÁNTHEMUM. Sun-Rose. *Cistaceæ.* Evergreen or half-evergreen suffrutescent herbs or diffuse low subshrubs adapted to border planting and rock-gardens or for ground-cover, mostly native in the Medit. and adjacent regions, having small simple lvs. with the lower ones mostly opposite and upper alternate, and white, yellow, rose or purple fls. in many terminal few-fld. racemes in summer. Recent cytogenetic and taxonomic studies have recognized as valid 3 other genera usually treated here; they are the European Fumana and the New World genera Crocanthemum and Halimium; from all of these Helianthemum is distinguished by its elongated and curved styles.

In the North winter protection is advisable. They thrive in a sunny exposure on dry limestone soil. Propagated by division, greenwood cuttings and seeds. One of the sun-roses (*H. nummularium*) is hardy and common in the North.

alpéstre. To 6 in.: lvs. ovate-lanceolate, to ¾ in. long: fls. yellow, ½ in. across. Mts. of S. Eu.

alyssoìdes: *Halimium alyssoides.*

amábile: listed hort. form with orange fls. tinged pink.

apennìnum (*H. polifolium. H. pulverulentum*). To 15 in. or sts. procumbent: lvs. oblong, to 1¼ in. long, gray-tomentose: fls. white, 1 in. across. Eu., Asia Minor. Var. **ròseum** (*H. rhodanthum*) has reddish fls.

atrosanguíneum: listed name of hort. form.

aùreum: *H. hirtum* var. *erectum* or *H. nummularium* var.

bícolor: *H. glaucum.*

califórnicum: listed name of a plant properly belonging to the genus Crocanthemum.

canadénse: *Crocanthemum canadense.*

cárneum: hort. name.

Chamæcístus: *H. nummularium.*

citrìnum: *H. nummularium* var.

coccíneum: listed name.

cròceum: *H. glaucum* var.

Croftiànum: hort. name.

cùpreum: *H. grandiflorum* var.

formòsum: *Halimium lasianthum.*

glaùcum (*H. bicolor*). Little tufted subshrub: lvs. nearly orbicular to oblanceolate, ½ in. long, tomentose: fls. yellow or white, ¾ in. across. S. Eu., N. Afr. Var. **cròceum** (*H. croceum*), fls. bright yellow.

grandiflòrum. Similar to *H. nummularium*, differing in lvs. scattered, stellate-hairy and green beneath, and inner sepals puberulent to nearly glabrous between the pilose veins. Eu., W. Asia. Var. **cùpreum** has fls. copper-colored, often variegated with yellow, with a double-fld. form **múltiplex.**

guttàtum. To 6 in.: lvs. oblong-lanceolate, to 3 in. long: fls. yellow, often with red spot at base of petals. Medit. region.

halimifòlium: *Halimium halimifolium.*

hírtum. Tufted subshrub to 1 ft. tall, sts. procumbent: lvs. ovate to linear-lanceolate, to ½ in. long, margins somewhat revolute: fls. white or yellow. Medit. region. Var. **eréctum,** sts. erect and fastigiate, lf. margins strongly revolute, fls. usually yellow.

icelándicum: listed name, perhaps referable to *H. œlandicum.*

lasiánthum: *Halimium lasianthum.*

Libanòtis: *Halimium Libanotis.*

lunulàtum. Low dense subshrub to 1 ft.: lvs. elliptic-oblong, to ½ in. long: fls. yellow. Cent. Eu.

lùteum: probably not distinct from the typical form of *H. nummularium.*

macránthum: *H. nummularium* var.

multiflòrum: *Halimium halimifolium* var.

mutábile: *H. nummularium* var.

nummulàrium (*H. Chamæcistus. H. vulgare. H. variabile*). To 1 ft.: lvs. ovate to lanceolate, to 2 in. long, gray-tomentose beneath: fls. yellow, 1 in. across, inner sepals usually loosely tomentose between the pilose veins. Medit. region; hardy N. and the common species in cult. Var. **álbo-plènum,** fls. double white; **aùreum,** fls. deep yellow; **citrìnum,** fls. golden-yellow; **cùpreum,** a form of *H. grandiflorum;* **grandiflòrum** is *H. grandiflorum;* **macránthum,** fls. white blotched with yellow at base; **múltiplex,** a form of *H. grandiflorum;* **mutábile** (*H. mutabile*), fls. rose changing to lilac or nearly white; **ròseum,** fls. pale rose and **ròseo-plènum** with double fls.; **rùbro-plènum,** fls. red, double; **speciòsum,** fls. large; **stramíneum,** lvs. whitish beneath, fls. with dark yellow spot at base; **tomentòsum,** not distinct from the typical form.

ocymoìdes: *Halimium ocymoides.*

œlándicum. Low tufted subshrub: lvs. oblong-lanceolate to lanceolate, ⅓ in. long, fleshy: fls. yellow, ¼ in. across, petals about as long as sepals. Eu.

perfoliàtum: listed name of unknown botanical standing.

pilòsum. Low subshrub: lvs. linear to oblong, ¾ in. long: fls. white with yellow spot at base of petals, 1 in. across. S. W. Eu., N. Afr. Var. **purpùreum** is listed.

polifòlium: *H. apenninum.*

prǽcox. Lvs. ovate-lanceolate, to 1½ in. long: fls. yellow, spotted at base. Medit. region.

procúmbens: *Fumana nudifolia.*

pulveruléntum: *H. apenninum.*

rhodánthum: *H. apenninum* var. *roseum.*

ròseum: probably *H. nummularium* var.

rosmarinifòlium: *Crocanthemum rosmarinifolium.*

rotundifòlium: name of uncertain application.

scopàrium: *Crocanthemum scoparium.*

speciòsum: *H. nummularium* var.

sulphùreum. Hybrid between *H. nummularium* and *H. apenninum*: lvs. linear-lanceolate, to ¾ in. long, gray-tomentose beneath: fls. sulfur-yellow.

tigrìnum: listed name.

Tuberària. Per.: lvs. oval-lanceolate, to 3 in. long, gray-tomentose beneath: fls. yellow, 1½ in. across. S. Eu.

umbellàtum: *Halimium umbellatum.*

variábile: *H. nummularium.*

vulgàre: *H. nummularium.*

HELIÁNTHUS. Sunflower. *Compositæ.* Erect mostly tall coarse ann. and per. herbs with solitary or clustered heads of yellow ray-fls. and yellow, brown or purple disk-fls., blooming in late summer and autumn; pappus of deciduous scales or awns; native in the western hemisphere, mostly N. American. Several species are grown in borders and masses for the showy bloom and one for the edible underground tubers; seeds of the common annual sunflower are sometimes used for poultry-feed, oil and other purposes.

No special culture is required for sunflowers. Any ordinary ground and exposure suits them well. Seeds of annuals are sown where the plants are to stand as soon as the weather is settled, or they may be started under glass two to four weeks in advance if earlier results are desired. Perennials should bloom the year following seed-sowing; they may also be divided, and some species are propagated by root-stolons or offsets.

acutifòlius: listed name.

angustifòlius. Swamp S. Per. to 7 ft., sts. rough: lvs. linear, to 7 in. long, entire: heads solitary or few, to 3 in. across, disk purple. Swamps, N. Y. to Fla. and Tex.

ánnuus (*H. lenticularis*). Common Garden S. Ann. to 12 ft.: lvs. ovate, to 1 ft. long, toothed, rough on both sides: heads 1 ft. or more across, disk brownish-purple. Minn. to Wash. and Calif. Var. **citrìnus,** rays primrose-yellow. Var. **nànus,** dwarf, fls. mostly double. Var. **globòsus**

fistulòsus, heads globular and very large. Var. **purpùreus** is listed as a small-fld. form with wine-red ray-fls. Var. **variegàtus,** lvs. variegated.

argophýllus. Silverleaf S. Ann. to 6 ft., gray-silky-pubescent: lvs. ovate to lanceolate, to 6 in. long, slightly toothed: heads 3 in. or more across, disk brownish-purple. Tex.

atrórubens (*H. sparsifolius*). Darkeye S. Per. to 5 ft., rough-hairy: lvs. ovate or oblong-lanceolate, to 10 in. long, toothed, petioles margined: heads clustered, 2 in. across, disk purple. Va. to Fla. and La.

Bismarckiànus: hort. name of golden-yellow rayed plant to 10 ft., probably a form of *H. annuus.*

califórnicus. Per. to 11 ft.: lvs. oblong to lanceolate, to 9 in. long, pubescent, entire: heads clustered, to 3 in. across, disk yellowish. Calif.

chrysanthemiflòrus: hort. name, probably of form of *H. annuus;* double yellow fls. with laciniated rays; to 6 ft.

Coòlidgei: advertised as a per. to 6 ft., with numerous golden-yellow fls. 3 in. across.

cucumerifòlius: *H. debilis.*

débilis (*H. cucumerifolius*). Cucumber-leaf S. Ann. to 4 ft., rough-hairy, branches sometimes mottled purple and white: lvs. ovate or triangular, to 4 in. long, toothed: heads solitary, to 3 in. across, disk brown or purplish. Fla. to Tex. Var. **cupreàtus** has coppery-red heads. Var. **purpùreus** has pink to purple ray-fls. Var. **ròseus** has rose-pink ray-fls.

decapétalus (*H. multiflorus*). Thinleaf S. Per. to 5 ft.: lvs. ovate to ovate-lanceolate, to 8 in. long, toothed, pubescent beneath: heads numerous, to 3 in. across, disk yellowish. Que. to Ga. and Mo. Double forms are vars. **flòre-plèno** and **grandiflòrus.** Var. **máximus** has large fls. with pointed rays.

divaricàtus. Per. to 7 ft.: lvs. lanceolate or ovate-lanceolate, to 8 in. long, toothed, pubescent beneath, rough above: heads solitary or few, 2 in. across, disk yellow. Me. to Fla. and La.

doronicoìdes. Per. to 7 ft.: lvs. oblong to ovate, to 8 in. long, toothed, rough on both sides: heads numerous, to 4 in. across, disk yellow. Ohio to Ark.

Dowelliànus. Per. to 2 ft.: lvs. ovate or ovate-lanceolate, to 5 in. long, toothed, slightly pubescent: heads to 2½ in. across, disk yellow. D. C. to Ga.

eréctus: advertised as per. to 4 ft., with large yellow fls.; the name is not known botanically.

floridànus. Per. to 6 ft., showy: lvs. lanceolate, revolute, 2–3 in. long, nearly or quite entire, almost sessile: heads few in a panicle, disk yellow or brownish, rays yellow about 1 in. long. Fla.

gaillardiflòrus: hort. name of form of *H. annuus,* ray-fls. zoned chestnut-red.

gigantèus. Giant S. Per. to 12 ft., rough-hairy: lvs. lanceolate, to 6 in. long, toothed: heads several, to 3 in. across, disk yellowish. Me. to Fla. and La.

globòsus fistulòsus: *H. annuus* var.

graciléntus. Per. to 3 ft.: lvs. lanceolate or linear-lanceolate, to 4 in. long, entire, rough-hairy: heads to 2 in. across, long-stalked, rays and disk yellow. Calif.

grósse-serràtus. Per. to 10 ft., sts. glaucous: lvs. lanceolate, to 8 in. long, toothed, pubescent beneath, rough above: heads several, to 3 in. across, disk yellowish. Me. to Tex.

lætiflòrus. Showy S. Per. to 8 ft., rough-hairy: lvs. ovate-lanceolate, to 10 in. long, toothed: heads several, to 4 in. across, disk yellow. Pa. to Minn.

lenticulàris: *H. annuus.*

macrophýllus: *H. strumosus.*

Maximíliani. Per. to 12 ft.: lvs. lanceolate, to 7 in. long, toothed or entire, rough on both sides: heads to 3 in. across, disk yellowish. Minn. to Tex.

microcéphalus (*H. parviflorus*). Per. to 6 ft.: lvs. lanceolate or ovate-lanceolate, to 7 in. long, toothed, rough above, pubescent beneath: heads several, to 1¼ in. across, disk yellow. Pa. to Ga. and La.

móllis. Ashy S. Per. to 5 ft., white-pubescent: lvs. ovate to lanceolate, to 5 in. long, toothed: heads solitary or few, to 3 in. across, disk yellowish. Mass. to Ga. and Tex. Var. **grandiflòrus** is listed.

multiflòrus: *H. decapetalus.*

orgyàlis: *H. salicifolius.*

parviflòrus: see *H. microcephalus;* the true species not known to be cult.

perénnis: a hort. name.

persicæfòlia: plant listed as 6 ft. high, with semi-double fls.

petiolàris. Prairie S. Ann. to 3 ft., rough-hairy: lvs. ovate to ovate-lanceolate, to 3 in. long, entire or toothed: heads 3 in. across, disk brown. Minn. to Ore. and Calif.

pùmilus. Per. to 2 ft., crown woody: lvs. ovate-lanceolate, to 4 in. long, entire or nearly so, veins hispid: heads to 2 in. across, disk-fls. yellowish. Wyo. to Colo.

purpùreus: hort. name referable to either *H. annuus* var. or *H. debilis* var.

questifòlius: a hort. name.

rígidus (*H. scaberrimus. Harpalium rigidum*). Stiff S. Per. to 8 ft., rough-hairy: lvs. ovate to lanceolate, to 1 ft. long, toothed: heads solitary or few, to 3 in. across, disk purple or brown. Ill. to Ga. and Tex.—In garden forms somewhat double.

salicifòlius (*H. orgyalis*). Per. to 10 ft.: lvs. linear, to 16 in. long, nearly entire, rough, drooping: heads numerous, 2 in. across, disk brown or purplish. Mo. to Colo. and Tex.

sanguíneus: hort. name for red-fld. form of *H. annuus.*

scabérrimus: *H. rigidus.*

sparsifòlius: *H. atrorubens.*

stellàtus: hort. name, advertised as having small heads with white to light yellow ray-fls., to 3 ft.

strumòsus (*H. macrophyllus*). Per. to 7 ft.: lvs. ovate or ovate-lanceolate, to 8 in. long, toothed, rough above, pubescent beneath: heads several, to 4 in. across, disk yellow. Me. to Ga. and Ark.

tuberòsus. Girasole. Jerusalem Artichoke. Per. to 12 ft., producing edible subterranean potato-like tubers: lvs. ovate to ovate-oblong, to 8 in. long, toothed, rough above, pubescent beneath: heads several, to 3½ in. across, disk yellow. N. S. to Ga. and Ark.—See *Girasole.*

HELICHRỲSUM. Everlasting. *Compositæ.* Herbs or shrubs native in the eastern hemisphere, with usually alternate entire lvs. and solitary or clustered heads of yellow disk-fls., involucral bracts imbricated and often petal-like and bright colored; pappus of bristles.

A few species are grown in the flower-garden and for everlastings to use in the winter bouquet. Propagated by seeds sown out-of-doors or started under glass for earlier bloom, and the last species also by cuttings.

anatólicum: *H. plicatum.*

angustifòlium. Whiteleaf E. Per. to 1 ft., woody at base: lvs. linear, margins revolute, white-tomentose: heads yellow, ⅛ in. across, in corymbs. Medit. region.

apiculàtum. Per. to 2 ft., silvery-white-tomentose: lvs. oblong, to 2 in. long, lower ones petioled: heads to ½ in. across, in dense terminal corymbs, usually golden-yellow, occasionally white to pinkish. Australia.

bellidioìdes. Per. somewhat woody, trailing: lvs. ovate-spatulate, to ½ in. long, white-woolly beneath and green above, flat: heads solitary, to ½ in. across, silvery-white. New Zeal.—Probably not hardy north of Philadelphia.

bracteàtum. Strawflower. Ann. to 3 ft.: lvs. oblong-lanceolate, green: heads solitary, to 2½ in. across, yellow, orange, red or white, as indicated by varietal names **álbum, bícolor, lùteum, purpùreum, ròseum.** Australia. Var. **monstròsum** (*H. monstrosum*) has double fls. Var. **nànum** is dwarf.

diosmæfòlium (*Ozothamnus rosmarinifolius*). Shrub to 20 ft.: lvs. narrow-linear, to ½ in. long, margins revolute: heads white, in dense corymbs. Australia.

fœtidum (*Gnaphalium fœtidum*). Bien. 2–4 ft., sts. erect, hairy, simple or paniculately branched: lvs. cordate-clasping, scabrous above, woolly beneath, ill-scented: heads cream-white to bright yellow, to ¾ in. across or more, many in loose or contracted panicles. S. and Cent. Afr.

frígidum. Per., sts. to 10 in. long, prostrate or ascending, white-tomentose: lvs. linear-oblong, to ⅙ in. long, dense, woolly on both sides: heads solitary, to ½ in. across, silvery-white. Corsica, Sardinia.

glomeràtum. To 1½ ft., woody: lvs. lanceolate, ciliate: heads lemon-yellow, in crowded corymbs. Mts., S. Afr.

lanàtum. To 15 in., woody at base: lvs. obovate, white-woolly: heads bright yellow, in corymbs to 4 in. across. S. Afr.

monstròsum: *H. bracteatum* var.

petiolàtum (*Gnaphalium lanatum*). To 2 ft. or more, woody at base, the sts. flexuose and decorative in hanging-baskets: lvs. ovate, white-woolly: heads cream-white, in corymbs to 2 in. across. S. Afr.—Commonly propagated by cuttings and fls. may not be produced.

plicàtum (*H. anatolicum*). Prostrate per., sts. ascending to 15 in., woody at base: lvs. oblong to linear-spatulate, flat, gray-pubescent: heads in terminal corymbs, pale golden-yellow. Asia Minor, Persia.

scutellifòlium. Shrub to 10 ft. or more, tomentose: lvs.

scale-like, ovate, less than 1/16 in. long, thick with revolute margins: fls. in glomerules of 3–5 in small heads, bracts pale brown. Australia.

Selàgo. Much branched shrub to 15 in.: lvs. ovate-triangular, to ⅛ in. long, close-appressed and imbricated, woolly on inner side, glossy on outer: heads solitary, terminal, to ¼ in. across, pale yellow. New Zeal.

semipappòsum. Per. to 1½ ft.: lvs. narrowly oblong-lanceolate, to 1¾ in. long, woolly becoming glabrous: heads many, densely corymbose, golden-yellow, about ⅜ in. across. Australia.

thianschánicum. White-woolly per. to 2 ft., usually much branched: lvs. linear-lanceolate, acute, entire: heads yellow to orange, in corymbs, bracts oblong, obtuse, somewhat woolly. China.

HELICODÍCEROS (*Megotigea*). *Araceæ.* One species native in the Medit. region, sometimes grown under glass as a curiosity; the fls. have a very offensive odor. **H. muscívorus** (*Arum crinitum*). Twist-Arum. Tuberous herb to 1½ ft.: lvs. pedately parted: spathe contracted at throat and bent horizontally, the limb pale purple covered with long white hairs, the tube spotted.

HELICÒNIA (*Bihai*). *Musaceæ.* Stout trop. American herbs with large banana-like lvs., bisexual fls. clustered in the axils of large stiff boat-shaped or conduplicate often woody bracts, and fr. a caps. which breaks up into berry-like parts.

Heliconias are sometimes grown in the greenhouse, or out-of-doors in warm regions for the foliage effects, making large clumps if given room. The plants thrive well in rich loam with plenty of water. Propagated by division of the roots, and by seed when available.

aùreo-striàta. Sts. striped green and yellow: lvs. with transverse veins striped bright yellow. Native country unknown: probably a form of *H. Bihai.*

Bihái. Wild Plantain. Balisier. To 18 ft.: lvs. to 3 ft. and more long and 1 ft. wide, long-petioled: fls. greenish or greenish-yellow, inclosed in the scarlet ovate-lanceolate deeply boat-shaped bracts to 6 in. long. Trop. Amer.

caribæa. Differs from *H. Bihai* by the lvs. rounded at base and the larger and more numerous yellow bracts. Martinique.

Edwárdus-Réx. Hort. form to 4 ft. or less: lvs. lanceolate, rich crimson below and paler above.

illústris. Lvs. with midrib and transverse veins marked with pink. S. Sea Isls. Botanical position uncertain. Var. **rubricaùlis** has red sts.

psittacòrum. To 4 ft. or less: lvs. to 1½ ft. long and 2 in. wide, long-petioled: fls. greenish-yellow, inclosed in shining-red narrow-lanceolate deeply boat-shaped bracts to 3 in. long. Trop. Amer.

Sánderi. Resembling *H. illustris* but lvs. marbled with pink. New Guinea, but botanical identity doubtful.

HELIOCÈREUS. *Cactaceæ.* A small group of Mexican and Cent. American bushy cacti differing from Cereus, among other things, in having a scaly or spiny ovary: sts. usually procumbent or clambering but sometimes erect under cult., branches strongly angled or ribbed, spines all alike: fls. diurnal, funnelform, mostly scarlet. They hybridize with other cacti. See *Cacti.*

amecaménsis (*Cereus amecamensis*). Ribs 3–5; spines many: fls. white, greenish outside, the tube nearly 1½ in. long, segms. nearly 3 in. long. Mex.

elegantíssimus (*Cereus coccineus*). Sts. to 8 in. high and branches often decumbent and to 2 in. broad and commonly 3- or 4-angled; spines needle-like: fls. scarlet, to 6 in. broad, style red, stigma-lobes white. Mex.

Schránkii (*Cereus Schrankii*). Sts. to 1¼ in. wide, usually 3- or 4-angled, green with reddish tips; spines about 7–11, to ½ in. long: fls. scarlet to maroon, to 6 in. long. Mex.

speciòsus (*Cereus speciosus. C. speciosissimus*). Branching at base; ribs 3–5 and undulate; spines numerous and becoming yellow or brownish: fls. scarlet, 6–7 in. long, stigma-lobes red. Mex., probably Cent. Amer.

supérbus (*Cereus superbus*). Similar to *H. speciosus*, considered by some to be a sport of it; differing in its thicker and 7-ribbed st. whose apex is bright red and whose spines are shorter and more slender: fls. glossy cinnabar-red. Cent. Mex.

undàtus: *Hylocereus undatus.*

HELIÓPHILA. *Cruciferæ.* S. African herbs with yellow, white, pink or blue fls. in long leafless racemes; siliques flattened or cylindrical.

leptophýlla. To 1½ ft., blue-green: lvs. filiform, to 2 in. long: fls. blue with yellow base: pods drooping, moniliform.

linearifòlia. To 3 ft., shrubby: lvs. linear, 1 in. long, entire: fls. blue with yellow claws: pods linear, sharply 3-nerved, to 2 in. long.

HELIÓPSIS. *Compositæ.* Herbaceous sunflower-like perennials blooming in summer, with opposite coarsely toothed lvs. and showy heads of long yellow ray-fls. and disk-fls. partly inclosed in chaffy bracts; pappus none or a toothed border; native to N. Amer. Cult. as for *Helianthus.*

helianthoìdes (*H. lævis*). Per. to 5 ft., nearly glabrous: lvs. ovate, to 6 in. long, sometimes roughish above: heads to 2½ in. across, numerous. Ont. to Fla. and Tenn. Var. **Pitcheriàna** (*H. Pitcheriana*), fls. deeper yellow.

lævis: *H. helianthoides.*

Lemòinei: hort. name.

Mandiànum: trade name; similar to *H. helianthoides* var. *Pitcheriana* but with clear yellow fls.

Pitcheriàna: *H. helianthoides* var.

scàbra. Differs from *H. helianthoides* chiefly in being rough-hairy and the heads few or solitary. Me. to N. J. and New Mex. Vars. are **excélsa,** chrome-yellow, nearly double; **formòsa;** **gratíssima,** pale yellow; **imbricàta,** dwarf, fls. 3 in. across, golden-yellow; **incomparábilis,** golden-yellow, fls. 3 in. across, double; **màjor,** larger than type; **vitellìna,** golden-yellow, double-fld.; **zinniæflòra,** double-fld.

HELIOSPERMA: *Silene.*

HELIOTROPE. *Heliotropium.* **Garden-:** *Valeriana officinalis.* **Winter-:** *Petasites fragrans.*

HELIOTRÒPIUM. Heliotrope. *Boraginaceæ.* Herbs or shrubs with mostly alternate simple lvs. and small often very fragrant violet, purple or white fls. in coiled racemes and cymes, corolla naked in the throat; some of them are popular in greenhouses and borders and others are weedy plants.

The greenhouse heliotropes are treated as annuals and require abundant heat and light rich soil. Propagated by cuttings and seeds; the latter may be sown indoors and the seedlings transplanted. Strong plants may be set out and the new growths pegged to the ground where they will form roots.

amplexicaùle (*H. anchusæfolium*). Per., yellowish-hairy: lvs. lanceolate to linear-lanceolate, sessile: fls. violet, ¼ in. across. Argentina.

anchusæfòlium: *H. amplexicaule.*

arboréscens (*H. peruvianum*). Common H. Per. to 4 ft.: lvs. oval or oblong-lanceolate: fls. violet or purple varying to white, ⅛ in. long, vanilla-scented. Peru.—Common under glass and sometimes planted out.

convolvulàceum: *Euploca convolvulacea.*

corymbòsum. Perhaps a form of *H. arborescens* but by gardeners thought to be distinguished by its longer narrower lvs. distinctly narrowed at base: fls. violet or purple varying to white, ¼ in. long, narcissus-scented. Peru.

europæum. Ann. to 1 ft., pubescent: lvs. oval, long-stalked: fls. white, ⅙ in. across. Eu.; nat. in E. U. S.

peruviànum: *H. arborescens.*

regàle is listed as an early free-flowering form.

HELÍPTERUM. Everlasting (which see). *Compositæ.* Flower-garden annuals, often cut early and dried for winter bouquets, with mostly alternate entire lvs. and solitary or clustered heads of yellow disk-fls., the involucral bracts often petal-like and colored; pappus plumose; native in S. Afr. and Australia.

Culture is simple. Seeds usually are sown where plants are to grow but may be started indoors for earlier results. Plants may stand 6–12 inches apart.

álbum: hort. name, probably a white-fld. form of *H. roseum.*

anthemoìdes. To 1 ft., with per. rootstock, glabrous: lvs. linear: heads to 1 in. across, solitary, the bracts white, tinged brown. Australia.

corymbiflòrum. To 1 ft., white-woolly: lvs. linear or lanceolate: heads small, in corymbs, bracts white. Australia.

Humboldtiànum (*H. Sandfordii*). To 1½ ft.: lvs. linear, white-tomentose: heads small, in clusters, bracts yellowish-green. Australia.

Mánglesii (*Rhodanthe Manglesii*). Swan River E. Slender, to 1½ ft., glabrous: lvs. ovate: heads not clustered, to 1½ in. across, bracts white to bright pink. Australia. Var. **maculàtum,** bracts spotted red.

ròseum (*Acroclinium roseum*). Stout, to 2 ft., glabrous: lvs. linear to lanceolate: heads not clustered, to 2 in. across, bracts rose or white Australia.

Sándfordii: *H. Humboldtianum.*

HELLEBORE: *Helleborus.* **False:** *Veratrum.*

HELLÉBORUS. Hellebore. *Ranunculaceæ.* Per. herbs with thick fibrous roots, mostly basal palmately divided lvs., large fls. with 5 petal-like sepals, inconspicuous petals and many stamens, and fr. a follicle; native in Eu. and Asia.

Hellebores bloom in early spring or in winter in mild climates, although *H. niger* is very hardy and persistent. They thrive in partially shaded moist situations in good soil. Propagated by division of roots, preferably in late summer or fall; also by seeds. Hellebores may also be forced under glass.

abchásicus. To 1½ ft.: basal lvs. with 5–11 lfts.: fls. white, saucer-shaped, 1½ in. across. Caucasia.

atropurpùreus: *H. odorus.*

atrórubens: *H. orientalis* var.

caucásicus. Similar to and perhaps a form of *H. orientalis* differing in lvs. entirely glabrous and fls. somewhat darker colored. Caucasus.

córsicus: *H. lividus.*

cùpreus: *H. odorus.*

cyclophýllus. Similar to *H. viridis* but taller, lfts. broader and pubescent beneath, fls. larger with broader sepals. Greece.

fœ́tidus. To 1 ft.: lvs. leathery, borne on st.: fls. green or marked purple, to 1 in. long. W. Eu.

hýbridus. To 14 in.: a hort. hybrid between *H. niger* and *H. caucasicus*: fls. of all shades of red, pink, white, spotted and veined, to 2½ in. across. Dec.–Feb.

lívidus (*H. corsicus*). To 1½ ft.: lvs. 3-parted, toothed, borne near bottom of plant: fls. pale green, in a cluster. Corsica.

nìger. Christmas-Rose. To 1½ ft.: lvs. basal, pubescent beneath, divided into 7 or more oblong evergreen lfts., the st. with few small lvs.: fls. white or purplish with green petals, to 2½ in. across, solitary. Eu. Var. **altifòlius** (var. *major*), to 2 ft., petioles green mottled with purple, fls. to 3½ in. across. Var. **angustifòlius,** fls. smaller. Var. **prǽcox,** fls. smaller. Sept.–Feb. Var. **atrórubens,** fls. dark red.

odòrus (*H. cupreus. H. atropurpureus*). Per. to 15 in.: lvs. pedately 7–16-lobed, pilose and conspicuously veiny beneath: fls. green to purple. Cent. Eu.—Differs from *H. orientalis* in carpels coalesced at base.

orientàlis. Differs from *H. niger* in having branched fl.-sts. without lvs. and fls. green to dark purple, 2–6 together, carpels free at base. Asia Minor. Var. **atrórubens** (*H. atrorubens*), fls. dark purple outside, greenish-purple inside.

purpuráscens: form of *H. viridis.*

rùbra: hort. name, probably a form of *H. niger* or *H. orientalis.*

víridis. To 2 ft.: lvs. divided into 7–11 oblong lfts.: fls. yellowish-green, 1 in. long, drooping, subtended by lvs. Eu.; nat. in E. N. Amer.

HELÒNIAS. *Liliaceæ.* One per. spring-blooming herb with tuberous roots, native in bogs from N. J. to N. C. **H. bullàta.** Swamp-Pink. To 2 ft.: lvs. basal, to 15 in. long and 2 in. wide: fls. pink or purplish, ¼ in. long, in dense racemes to 3 in. long terminating the hollow scape.—Suitable for bog-gardens and also a good pot-plant for late winter and spring. Easily propagated by division.

HELONIÓPSIS. *Liliaceæ.* A small genus of E. Asiatic plants characterized by the presence of a basal rhizome, a short st. bearing a rosette of basal lvs. with large nodding campanulate fls. in lax infl.: fr. a woody 3-valved caps. and seeds small and oblong. Propagated by seeds or division and prefers a cool moist but well-drained soil.

breviscàpa. Lvs. oblanceolate to spatulate, abruptly acuminate: fls. carmine-red, to ⅝ in. long, segms. obovate, twice as long as pedicels. May. Korea.

japónica. Lvs. oblanceolate, acute, to 3½ in. long, flat, green, usually flushed reddish-purple beneath: fls. carmine-red, to ½ in. long, segms. oblanceolate, spreading, as long as pedicels, usually 3–10 in umbellate racemes. Japan.

HELWÍNGIA. *Cornaceæ.* Asian shrubs, one of which is sometimes grown as a curiosity and ornamental: lvs. alternate, toothed: fls. diœcious, small, borne in clusters on upper surface of lvs.: fr. a berry-like drupe. Propagated by cuttings of green wood under glass.

japónica. To 5 ft.: lvs. ovate, to 3 in. long: fls. greenish-white: fr. black, ¼ in. across. China, Japan; hardy in north-central parts.

HELXÌNE. Babys-Tears. *Urticaceæ.* One creeping moss-like little herb from Corsica and Sardinia, used as a ground- and pot-cover in greenhouses and in rock-gardens in mild climates, making dense mats. **H. Soleiròlii.** Lvs. nearly orbicular, ¼ in. or less across: fls. unisexual, minute, solitary in the axils.—Thrives best in partial shade. Propagated by cuttings of the rooting sts. Generic name is three syllables.

HEMEROCÁLLIS. Day-Lily. *Liliaceæ.* Per. herbs with cord-like or more or less tuberous roots, linear or sword-shaped basal lvs. and showy yellow, fulvous or orange fls. in clusters at the ends of leafless scapes, the perianth-segms. partially united below to form a tube of varying length; stamens and style prominent.

An important group of hardy spring- and summer-blooming herbs with lily-like flowers, of simple cultural requirements in any good garden soil. Propagated by division, and sometimes by seeds if available. Some of the species do not produce seeds in ordinary garden conditions. The foliage, forming mats, is useful as ground-cover. There are many good named horticultural varieties. The day-lilies fall into two groups as determined by the mode of flower-bearing: the forking kinds in which the flowers are borne in a more or less open or branched cluster terminating the scape, the involucrate kinds in which the flowers are close together and practically sessile in a head-like cluster subtended by broad short bracts resembling an involucre. To the latter group belong *H. Dumortieri* and *H. Middendorffii*, all the other species being of the dichotomous or forking group. Certain garden kinds are probably hybrids between the two groups. Recently the day-lilies have been made a special subject of study and improvement, with many new varieties.

álba: a synonym of *Hosta plantaginea.*

Amarýllis: hort. strain reported to have large yellow fls. tipped with deeper color, to 3 ft. July.

aurantìaca. Golden Summer D. To 3 ft., with spreading rhizomes, main roots enlarged: lvs. to 3 ft. long and 1 in. or more across, coarse, evergreen: fls. with orange throat and outer portions of sepals and petals tinged with copper-red, reticulations absent, not fragrant, scapes ascending and not strictly erect. July. Japan. Var. **màjor,** fls. larger, to 6 in. across, without fulvous coloring, less hardy.

Bàronii. A hybrid, one parent being *H. citrina* from which it differs in being night-blooming and having a fuller fl.

chrysolòra. Garden form to 2½ ft.: fls. sulfur-apricot, deeper in throat, reaching nearly 5 in. across when broadly open. July.

citrìna. Long Yellow D. To 4 ft., with fleshy main roots which are elongated and tapering: lvs. to 3½ ft. long, coarse, usually erect but sometimes bending abruptly, dying in autumn: fls. light lemon-yellow, to 6 in. long, very fragrant, not open broadly in full sunlight, usually nocturnal, on stiff erect scapes, midsummer. China.—*H. Thunbergii* is often called by this name.

dísticha: *H. fulva.*

Dumortiȇri (*H. graminea. H. rutilans. H. Sieboldii*).

Narrow Dwarf D. To 1½ ft., main roots very fleshy: lvs. to 1½ ft. long and ½ in. across, dying in autumn: fls. pale orange, to 2¾ in. long, tube very short, outer segms. lanceolate-acute, fragrant, 2–4 in close head or cluster on unbranched spreading scape which is shorter than lvs., spring. Japan.

Earliàna: catalogue name.

flàva. Tall Yellow D. To 3 ft., rhizomes spreading, roots enlarged: lvs. to 2 ft. long and ¾ in. across: fls. yellow, to 4 in. long, fragrant, on weak more or less lopping scapes which are longer than lvs. and branched above, spring. Siberia to Japan; Eu. Var. **minor,** plants reported to be shorter.—Common early yellow day-lily.

flavìna: a garden form, reported to grow to 1 ft.; fls. lemon-yellow. May–June.

Fórrestii. To 16 in., roots fleshy: lvs. to 1½ ft. long and ½ in. across, ascending and recurving: fls. clear cadmium-yellow, segms. ½ in. wide or less, bracts conspicuous and herbaceous, 4 or more fls. borne on slender ascending scape which does not exceed lvs., spring S. W. China.

fúlva (*H. disticha*). Tawny or Fulvous D. To 6 ft., crown with spreading rhizomes, main roots fleshy: lvs. to 2 ft. long and 1⅓ in. across: fls. fulvous or rusty orange-red, to 5 in. long, not fragrant, to 3½ in. across when fully expanded, usually with darker lines and stripes, on erect scapes, summer. Eu., Asia; nat. in E. U. S.—The commonest day-lily of midsummer. Var. **cypriàna** is listed. Var. **Kwánso** has double fls.: plant usually stouter and blooms somewhat later: lvs. white-striped. Var. **longitùba** has longer perianth-tube and narrower perianth-segms. Var. **ròsea** has rose-red fls.

Góldenii: garden race, to 3 ft.: fls. deep golden-orange.

grácilis: garden race to 2 ft.: lvs. ½ in. across or less: fls. lemon-yellow to golden-yellow, early summer.

gramínea: plants in the trade under this name are probably *H. minor,* although the name is also a synonym for *H. Dumortieri.*

graminifòlia: *H. minor.*

Kwánso: *H. fulva* var.

lùtea: probably *H. luteola.*

lutèola. A hybrid of questionable parentage, but probably *H. Thunbergii* and *H. aurantiaca* var. *major*: to 3 ft.: lvs. to 30 in. long: fls. golden-yellow, to 5 in. across when fully expanded, segms. broad. Var. **grandiflòra,** large fls. with margins of perianth-segms. wavy. Var. **màjor,** lvs. wider: fls. larger, scapes shorter and more widely branched. Var. **pállens,** listed as a hybrid of *H. luteola* and *H. citrina* with pale yellow fls. 5 in. across when fully expanded.—All of these so-called varieties are merely garden races and should be propagated only by vegetative methods.

Meèhanii: hort. name from garden race more properly known as "Meehan's hybrids."

Middendórffii. Broad Dwarf D. To 1 ft. or so, main roots cylindrical and slender: lvs. to 1½ ft. long and 1 in. across: fls. pale orange, in close cluster or head, to 2¾ in. long, the segms. broad and mostly obtuse and recurving at full bloom, scape slightly longer than lvs., unbranched with fls. sessile or nearly so. May–June. Siberia. Var. **màjor,** plant more robust with more erect and taller scapes.

mìnor (*H. graminea. H. graminifolia*). Dwarf Yellow D. To 18 in., roots slender and fibrous, compact crown: lvs. to 20 in. long and ¼ in. across: fls. yellow, mostly 2 or 3, 4 in. long, fragrant, on scape which is forked or branched at top and thereby differing from *H. Middendorffii* or its hybrids, spring. E. Siberia to Japan.

Múlleri (also spelled *Muelleri*). Garden hybrid of *H. Thunbergii* and *H. citrina:* to 4 ft., vigorous grower: lvs. erect, dark green: fls. yellow, to 4 in. across when fully expanded, petals narrow, produced in abundance.

multiflòra. Many-flowered D. To 3 ft., roots fleshy, crown compact: lvs. to 30 in. long and ¾ in. across, strongly recurving: fls. very numerous, golden-yellow within, sepals reddish tinged on outside, to 2½ in. long and 3 in. across when fully expanded, petals about ¾ in. wide, scape much branched and taller than foliage, late summer and autumn. China.

nàna. To 18 in., roots usually fleshy at some distance from crown: lvs. to 15 in. long and ½ in. across, expanded, sparse: fls. orange within often reddish-brown without, to 3 in. across when fully expanded, segms. narrow, bracts inconspicuous, scapes shorter than foliage or nearly so, branched unless fls. are solitary. China.

nocerénsis: a garden form to 4 ft.: lvs. reported to be large and coarse: fls. lemon-yellow, fragrant, about 5 in. long and 6 in. across, summer.

ochroleùca. Listed as a hybrid of *H. Thunbergii* and *H. citrina:* lvs. somewhat erect, dark green: fls. sulfur-yellow, fragrant, opening in evening.

plicàta. To 1½ ft., roots fleshy: lvs. to 20 in., somewhat folded lengthwise: fls. golden-yellow, rarely fulvous, solitary to few on scapes usually shorter than foliage or nearly so, China.—Although listed, the presence of this plant in the trade may be open to question as is also its specific distinction from *H. nana,* which it closely resembles.

rùtilans: *H. Dumortieri.*

semperflòrens. Garden hybrid of undetermined parentage, to 3½ ft.: lvs. erect, recurved, coarse, evergreen: fls. cadmium-yellow, to 4½ in. across when fully expanded, scapes coarse, ascending, June.

serótina: *H. Thunbergii.*

Sièboldii: *H. Dumortieri.*

Spréngeri: probably *H. citrina.*

Thúnbergii (*H. serotina*). Late Yellow D. To 3 ft.: lvs. to 2 ft. long and ¾ in. across: scapes stiff and erect, more or less 3-angled; fls. lemon-yellow, 3 in. long, slightly fragrant, summer. Japan.—Sometimes grown erroneously as *H. citrina;* the prevailing yellow summer day-lily.

Tódmordenii: listed name of unknown botanical standing, probably a garden form or hybrid.

HEMIÁNDRA. *Labiatæ.* Shrubs from W. Australia, with opposite narrow lvs. and white or pink 2-lipped fls. solitary in the axils; one species intro. in Calif.

púngens. To 2 ft., stiff: lvs. linear or linear-lanceolate, pungent-pointed: fls. with dark spots.

HEMICŸCLIA. *Euphorbiaceæ.* Trees and shrubs with alternate entire leathery lvs., small diœcious fls. solitary or clustered, and fr. a 1-seeded drupe; native E. Indies to Australia, one intro. in warm regions.

australásica. Tree to 40 ft.: lvs. ovate, to 3 in. long, obtuse: fr. ovoid, ½ in. long, red and succulent. Australia.

HEMIÈVA. *Saxifragaceæ.* One per. herb native in mts. from B. C. to Calif. **H. ranunculifòlia** (*Saxifraga, Boykinia* and *Suksdorfia ranunculifolia*). To 8 in., glandular-pubescent: lvs. ternate, the middle segm. 3-lobed, the lateral 4-lobed, on long petioles: fls. white or yellowish, ¼ in. long, in corymbs.

HEMÍGRAPHIS. *Acanthaceæ.* Asian herbs or shrubs with opposite lvs. and tubular 5-lobed fls. subtended by large bracts and borne mostly in terminal heads; one species grown in S. Fla. as a basket or cover plant, but must be protected or kept in the greenhouse in winter. Propagated by cuttings.

coloràta. Prostrate rooting per.: lvs. ovate-cordate, to 3 in. long, purplish, toothed, bullate: fls. white, ¾ in. long. Java.

HEMIONÌTIS. *Polypodiaceæ.* Small trop. ferns with palmately or pinnately lobed fronds, fertile stiff and long-stalked, sterile short-stalked; sori naked, borne along the veins. Sometimes grown in fern-cases, making attractive little subjects. Propagated by buds and spores. See *Ferns.*

palmàta. Strawberry-Fern. Fronds palmate, to 6 in. long and wide, with 5 triangular divisions, pubescent. W. Indies, Mex., S. Amer.

HEMIPTÈLEA. *Ulmaceæ.* One small much-branched deciduous spiny tree native in N. E. Asia. **H. Dàvidii** (*Zelkova Davidii*). Lvs. alternate, elliptic, to 2 in. long, coarsely toothed, very short-stalked: fls. in clusters on young branchlets: fr. a small winged nutlet.—Hardy N. and sometimes planted for hedges. Propagated by seeds, layers, and grafting on the elm.

HEMLOCK: *Tsuga.* **Ground-:** *Taxus canadensis.* **Poison-:** *Conium maculatum.* **Water-:** *Cicuta.*

HEMP: *Cannabis sativa.* **Bowstring-:** *Sansevieria.* **Indian:** *Apocynum cannabinum.* **Manila:** *Musa textilis.* **Sisal:** *Agave sisalana.* **Sunn:** *Crotalaria juncea.* **-Tree:** *Vitex Agnus-castus.*

HEMPWEED, CLIMBING: *Mikania scandens.*

HEN-AND-CHICKENS: *Sempervivum tectorum.*

HENBANE: *Hyoscyamus.*

HENEQUEN: *Agave fourcroydes.*

HENNA: *Lawsonia inermis.*

HEPÁTICA. Liverleaf. *Ranunculaceæ.* Little per. hardy woods herbs with long-stalked, basal, 3-lobed, evergreen old lvs. and white or purple fls. solitary on the end of a scape, the sepals petal-like, the apparent calyx being an involucre of 3 small lvs.; native in north temp. zone, blooming in early spring.

Hepaticas prosper in rich well-drained soil. They are woods plants, useful for colonizing. Propagated by seeds and division of roots.

acutíloba. To 9 in., differing from *H. americana* chiefly in the lobes of the lvs. and involucre being acute. Me. to Ga., and Mo. Var. **álba** is a white-fld. form.

americàna (*H. triloba* and *Anemone Hepatica* as to the American plant). To 6 in., with petioles and scapes shaggy-hairy: lvs. with 3 rounded or obtuse lobes: fls. ½–1 in. across, lavender-blue but passing into white and rose-colored forms. N. S. to Man. and Fla.

angulòsa (*Anemone angulosa*). To 6 in., hairy: lvs. 3–5-lobed, the lobes often toothed: fls. about 1¼ in. across. Hungary.

marmoràta: listed as having dark marbled lvs. and blue fls.

nóbilis (*H. triloba* and *Anemone Hepatica* as to the European plant). Much like *H. americana* but petioles and scapes less hairy and fls. 1 in. or more across, blue, rose, whitish, cult. also in double forms. Continental Eu.

tríloba: *H. americana* and *H. nobilis.*

HERACLÈUM. Cow-Parsnip. *Umbelliferæ.* Coarse per. herbs with large ternately compound lvs., white or pinkish fls. in compound umbels, and flattened frs.; planted in wild-gardens for bold effects and sometimes as specimen plants. They thrive on rich moist soil. Propagated by seeds and division.

gigantèum: *H. villosum.*

japónicum: listed name.

lanàtum. To 8 ft.: lfts. broad-ovate, lobed and toothed, tomentose beneath: umbels to 1 ft. across. N. Amer.

Mantegazziànum. To 9 ft.: lvs. to 3 ft. long, deeply cut: fls. white, the umbels to 4 ft. across. Caucasus.

pubéscens (*H. Wilhelmsii*). Sts. purplish, becoming villous above: lvs. ternate; lfts. palmately lobed, oblong, acute, toothed, pubescent beneath: fls. white, in large umbels of many villous rays: fr. elliptic, villous. Caucasus.

villòsum (*H. giganteum*). To 12 ft.: lfts. deeply cut and toothed, woolly-tomentose beneath: fls. white. Caucasus.

Wílhelmsii: *H. pubescens.*

HERALDS-TRUMPET: *Beaumontia grandiflora.*

HERB: plant naturally dying to the ground; without persistent living stem above ground; lacking definite woody firm structure. It may be annual, biennial or perennial. **-Christopher:** *Actæa spicata.* **-Mercury:** *Mercurialis annua.* **-Paris:** *Paris quadrifolia.* **-Patience:** *Rumex Patientia.* **-Robert:** *Geranium Robertianum.*

HERBARIUM: a permanent collection of pressed dried specimens, together with properly preserved fruits and other parts, representing the kinds of plants, for record and critical study.

HERBÉRTIA. *Iridaceæ.* Bulbous herbs with mostly basal lvs. and blue or lilac fugitive fls. borne in a terminal spathe; perianth of 6 spreading segms., the inner 3 much smaller; native Tex. to Chile and Brazil. Propagated by seeds and offsets.

cærùlea: *H. Drummondiana.*

Drummondiàna (*H. cærulea*). To 1 ft.: lvs. narrow-linear, equalling st.: fls. blue with white claw spotted violet, 2 in. across, spathes to 2 in. long. Tex.

HERCULES-CLUB: *Aralia spinosa, Zanthoxylum Clava-Herculis.*

HERERÒA. *Aizoaceæ.* Separated on technical characters from Mesembryanthemum: plant stemless or nearly so: lvs. entire, rather elongated and soft, with large dark dots, opposite in four rows: fls. yellow or rose, several in an infl. S. Afr.

dolabrifórmis: *Rhombophyllum dolabriforme.*

grácilis. Lvs. graceful, to 2 in. long and ⅙ in. wide: fls. in cymes, bright yellow, 1 in. across.

granulàta (*M. granulatum*). Lvs. crowded, united, to 2 in. long and ¼ in. wide and thick, rough: fls. 1–3, light yellow, 1 in. across.

Hérrei. Closely resembling *H. granulata* but with smaller frs.

hesperántha (*M. hesperanthum*). To 8 in.: lvs. to 1½ in. long and ⅙ in. thick: fls. in 4's, golden-yellow, about ⅓ in. long.

odoràta: listed name.

Puttkammeriàna (*M. Puttkammerianum*). Lvs. spreading, united at base, obtusely 3-angled, to 3 in. long and ¼ in. wide, glaucous: fls. in 3's, orange, ½ in. across. Var. **glàbrior** is listed.

Stánleyi: see *Mesembryanthemum Stanleyi.*

vàrians: listed name.

HERMESIAS: *Brownea.*

HERMODÁCTYLUS. Snakes-head Iris. *Iridaceæ.* One tuberous plant closely allied to Iris but differing in having a 1-celled ovary; cult. as for tuberous irises. **H. tuberòsus** (*Iris tuberosa*). To 1 ft. or more: lvs. 2–3, 4-angled, to 2 ft. long, glaucous: fls. black-purple, inner segms. green, 2 in. long. Apr.–May. S. France to Greece.

HERNÁNDIA. *Hernandiaceæ.* About 14 species of monœcious trees of wide distribution throughout the tropics, having entire alternate lvs. and unisexual fls. in large panicles. One species, **H. ovígera** (*H. peltata*), is grown in Fla. Tree to 40 ft., bark smooth: lvs. broadly ovate, peltate, to 8 in. long, entire, base usually cordate, apex acute to obtuse: fls. greenish-yellow, of the 3 in each involucre the central one is pistillate and sessile, the lateral ones staminate and pedicelled: fr. compressed-ovoid, black and dry, about 1¼ in. across, surrounded by a much inflated whitish involucel producing a pear-shaped structure to 2½ in. long having a large opening at the distal end leading into the so-called "seed" or true fr.

HERNANDIÀCEÆ. About 4 genera of tropical trees and shrubs allied to Lauraceæ but differing from that family in fls. having an inferior ovary without true petals and the female fl. surrounded at base by a fleshy cup-shaped involucel which ultimately envelops the fr. Only one genus, Hernandia, is grown in this country.

HERNIÀRIA. Herniary. Rupture-Wort. Burst-Wort. *Illecebraceæ.* Ann. or per. trailing mat-forming little herbs, with roots of short duration: lvs. small and sessile: fls. small, green and crowded in axillary clusters: native in sandy places, usually near the sea, in Eu., W. Asia, N. Afr. and the Canaries and 1 in S. Afr. Grown for carpet-bedding, rock-gardens and for covering graves.

cinèrea. Light gray hairy ann., sts. ascending: lvs. oblong-linear: fls. sessile, in 7–10-fld. clusters. Medit. region, Canary Isls.

glàbra. Per. 4–6 in., sts. with swollen joints, spreading along the ground several inches: lvs. oblong, usually bronzy-red in winter: fls. sessile, in axillary 7–8-fld. clusters on the lateral branches, making a leafy spike. Eu., Asia.

hirsùta. Hairy per. to 6 in., sts. prostrate: lvs. elliptic-oblong: fls. sessile, in 7–10-fld. clusters. Eu.

incàna. To 10 in., gray-velvety-canescent, sts. woody at base: lvs. obovate-oblong to spatulate, to nearly ⅛ in. long: fls. solitary or 3–6 in head-like cluster, pedicelled. E. Eu., Asia Minor.

latifòlia. Per. to 1½ ft., velvety: lvs. elliptic, ciliate: fls. short-pedicelled, in 3–6-fld. clusters. Spain, Portugal.

HERNIARY: *Herniaria.*

HERONSBILL: *Erodium.*

HERPESTIS AMPLEXICAULIS: *Hydrotrida caroliniana.*

HERPETICA: *Cassia alata.*

HERPOTHAMNUS: *Vaccinium crassifolium.*

HERREÁNTHUS. *Aizoaceæ.* Per. succulent growing in tufts, one species in S. Afr., allied to Mesembryanthemum. **H. Meỳeri.** Lvs. 3-angled, to 1¾ in. long, ¾ in. wide and ½ in. thick, united at base, bluish-green, slightly spotted: fls. solitary, terminal, sessile, white, fragrant, 1 in. across; stigmas 6, filiform.

HESPERÁLOE. *Liliaceæ.* Stemless herbs similar to Yucca but with greenish or reddish fls. opening by day; native Tex. to Mex.

Éngelmannii: *H. parviflora* var.

parviflòra (*H. yuccæfolia*). To 4 ft.: lvs. to 4 ft. long and 1 in. wide, the margins thread-bearing: fls. rose, 1¼ in. long, nodding. Tex. Var. **Éngelmannii** (*H. Engelmannii*) has more bell-shaped fls. about 1 in. long.

rubriflòra: hort. name for red-fld. form.

yuccæfòlia: *H. parviflora.*

HESPERÁNTHA. *Iridaceæ.* African herbs allied to Schizostylis and Ixia, having grass-like lvs. which arise from a basal corm and fls. in simple lax spikes. Propagated by seeds or cormlets.

Baùri. To 2 ft., corm about ½ in. diam.: lvs. 3, to 1 ft. long and ¼ in. wide, strongly ribbed: fls. bright rose-red, to 1¼ in. long, tube cylindrical, straight and not longer than surrounding green spathes, segms. slightly reflexed or ascending. Transvaal.

Stánfordiæ. To 15 in.: basal lvs. 3, falcate, to 3 in. long, subobtuse, st.-lf. 1, to 4 in. long: fls. bright yellow, in spikes of 2, erect, to 2 in. across, segms. broadly ovate. S. Afr.

HESPERETHÙSA. *Rutaceæ.* One spiny bush or small tree, **H. crenulàta,** Naibel, native India to Indo-China, grown somewhat in the citrus country for ornament and curiosity, allied to Feronia: evergreen: lvs. odd-pinnate, with small crenulate lfts. and very broadly winged rachis and petiole: fls. small, white, fragrant: fr. ½ in. or less diam., globose, with very bitter pulp. A good pot-plant; grows on Citrus stocks.

HÉSPERIS. Rocket. *Cruciferæ.* Bien. and per. erect branching herbs of Eu. and Asia: lvs. narrow, entire or toothed, mostly undivided fls. white to rose, mauve-purple, often showy, in long terminal mostly paniculate racemes, sometimes fragrant: fr. an elongated pod or silique.

alpìna. Lvs. lanceolate, dentate, long-acuminate, glabrous: fls. white to rose-purple, with pedicels equal in length to calyx: pods erect. Mts., Cent. Eu.—Perhaps an alpine race of *H. matronalis.*

dinárica. To 3½ ft., densely glandular-pilose: lvs. ovate-lanceolate to lanceolate, mostly sessile, dentate: fls. white, to 1½ in. across: fr. to 4 in. long. S.-Cent. Eu.

fràgrans. Bien. to 2 ft. or more: basal lvs. lanceolate, petiolate, villous-hispid, upper lvs. sessile, ovate, all dentate to entire: fls. dull purple with darker veins, to ¾ in. across, in elongated villous racemes, fragrant, petals oblong, undulate, calyx and pedicels villous: pods villous-hispid. Siberia.

lùtea. Per. to 4 ft., sts. hairy: basal lvs. oblong-runcinate, dentate; st.-lvs. ovate to lanceolate, base cuneate to truncate, dentate, acuminate: fls. yellow, petals spatulate-obovate, to ½ in. long: pods to 5 in. long, briefly stipitate. Japan.

matronàlis (*H. nivea*). Dames-R. or Dames-Violet. Rather coarse per. or sometimes bien. to 3 ft., hirsute to glabrous, much branched: lvs. lanceolate to lance-ovate, to 4 in. long, toothed: fls. large, ½ in. and more across, fragrant, lilac or light purple, varying to white and to double forms, late spring, early summer. Eu.; nat. in N. Amer. Vars. **lapsanifòlia** and **purpùrea** have large deep mauve fls. Var. **sibírica** has entire petals, not emarginate, and st.-hairs simple and retrorse, not forked and porrect. Siberia. White-fld. forms are **álba** and **nàna candidíssima.**—Propagated by seed sown a season in advance of blooming.

nivàlis. Per., 1 ft., green or minutely pubescent: lvs. lance-oblong, entire, to 2 in. long and ¾ in. broad: fls. pale lead-color, in a lax raceme. Near snow-line, mts. of Persia.—Plants grown under this name may be white forms of *H. matronalis.*

nívea: *H. matronalis.*

Stevenià̀na. Bien. or per. to 3 ft. or less, hairs on lower part of st. retrorsely bristly: lvs. oblong-lanceolate, incised-dentate: fls. pale purple: pods very slender. Asia Minor.

trístis. Bien. or per. to 20 in.: lvs. ovate-lanceolate, to 2 in. long, acuminate, entire, glabrous or sparsely hairy: fls. yellowish-green with rose-violet veins, petals lanceolate to oblong-spatulate, to 1 in. long or more: pods erect or ascending, to 5 in. long. Cent. Eu.

HESPEROCÁLLIS. *Liliaceæ.* Bulbous leafy-stemmed herb native in the deserts of S. Calif. and sometimes planted; of the Hemerocallis group. **H. undulàta.** Desert-Lily. To 2 ft.: basal lvs. to 2 ft. long and ¾ in. wide, wavy-margined: fls. white with broad green band on back, to 2¾ in. long, funnelform, segms. about twice as long as tube.

HESPEROCHÌRON. *Hydrophyllaceæ.* Low W. American perennials with lvs. in basal rosettes and fls. solitary on naked peduncle; ovary 1-celled; style 2-cleft. Propagated by seeds.

califórnicus. To 2 in.: lvs. ovate to oblong-spatulate, to 1½ in. long, many, gray-pubescent: fls. white, veins tinged pink, corolla oblong-campanulate, lobes shorter than tube. Wash. south to Utah and Calif.

pùmilus. To 1½ in.: lvs. few, to 1¾ in. long, mostly glabrous: fls. white veined pink, corolla saucer-shaped, lobes longer than tube. Calif.

HESPEROSCORDUM HYACINTHINUM: *Brodiæa lactea.*

HESPEROYÚCCA. *Liliaceæ.* One S. Californian plant with very short woody caudex and basal rosette of narrow lvs. **H. Whípplei** (*Yucca Whipplei*). Lvs. to 1¾ ft. long and ¾ in. across, rigid, finely toothed and terminating in sharp spine: fls. creamy-white, to 2 in. long, fragrant, nodding, in panicles on scapes to 12 ft. high, the perianth-segms. distinct. Hardy only in warm climates. Cult. as for *Agave.*

HETERISIA: *Saxifraga.*

HETEROCÉNTRON. *Melastomaceæ.* Herbs or subshrubs native in Mex. and Cent. Amer., having entire lvs., white, rose or purple fls. in panicles, and capsular fr.; grown out-of-doors in warm regions or under glass for the numerous small pleasing fls. Propagated by cuttings.

álbum: *H. roseum* var.

élegans: *Schizocentron elegans.*

mexicànum: the plant cult. under this name is *H. roseum.*

ròseum (*Heeria rosea*). To 2 ft., the branches 4-angled: lvs. oblong, to 2 in. long: fls. rose or white in var. **álbum,** ⅓ in. long. Mex.

HETEROMÈLES. *Rosaceæ.* One evergreen shrub native in Calif. and Lower Calif. and much planted there for ornament and employed in holiday decorations. **H. arbutifòlia** (*Photinia arbutifolia*). Toyon. Christmas-Berry. To 15 ft.: lvs. oblong, to 4 in. long, sharp-toothed, thick, dark green and shining above: fls. white,

¼ in. across, in panicles to 3 in. high: fr. bright red or yellow, ¼ in. long, persistent through winter. Var. **chrysocárpa** has yellow fr. and var. **macrocárpa** is listed.—Not hardy N. Propagated by seeds, cuttings, and by layers.

HETEROPÁPPUS. *Compositæ.* Hardy Asiatic perennials adapted to the hardy border, allied to Boltonia but differing in pappus made up only of short chaffy bristles and not supplemented by 2–4 long awns.

híspidus. To nearly 2 ft. or more, sts. rough and scabrous: basal lvs. broadly spatulate to lanceolate, often coarsely serrate; st.-lvs. linear, acute, ciliate: ray-fls. blue, disk-fls. yellow, in heads to 1¾ in. across. Japan, Mongolia.

HETEROSPÀTHE. *Palmaceæ.* Several species of monœcious unarmed feather-palms, native in Philippines and S. Sea Isls., one of which is sometimes planted in S. Fla. and S. Infl. among the lvs., much branched; fls. in 3's, 2 outer ones staminate or in 2's and both staminate on upper part of branches; stamens 6: fr. globular, size of a pea, stigmatic point near or toward the apex; seed 1. For cult. see *Palm.*

elàta. Graceful ringed palm to 30 ft. with deep green arching lvs. on long petiole and many drooping strongly nerved pinnæ 2–3 ft. long and 1½ in. or less broad with thickened margins and narrowed to a long point: fr. about ¼ in. across, slightly rugose, becoming white.

HETEROSPÉRMUM. *Compositæ.* Ann. herbs from Mex. to S. Amer., with opposite lvs. and small heads of yellow fls. with few rays; pappus none or of awns. Grown in flower-garden.

pinnàtum. To 1 ft.: lvs. 1–2 pinnate into linear segms.: heads ¼ in. long. W. Tex., Ariz., Mex.

HETEROTHÈCA. *Compositæ.* Ann. or bien. American herbs allied to Chrysopsis but differing in having achenes of ray-fls. thickened and not flat.

subaxillàris. To 3 ft.: lvs. ovate-oblong to oblong, to 3 in. long, somewhat coarsely serrate, basal ones petioled and upper ones sessile and often clasping, usually acute: ray- and disk-fls. yellow, heads to 1 in. across, involucre nearly hemispherical with linear bracts. Del. to Fla. west to Kans. and Mex.

HEUCHÈRA. Alum-Root. *Saxifragaceæ.* Herbaceous perennials with a tuft of rounded or broad 5–9-lobed toothed lvs. cordate at base, from which spring many slender scapes, overtopping foliage, with small cup-shaped, urn-shaped or saucer-shaped, greenish, white, red or purplish fls. in narrow panicles or racemes; native in N. Amer., largely in the western part.

One (*H. sanguinea*) is common in the perennial border and a few others are sometimes grown in rockeries and wild-gardens. They thrive in the average garden soil, preferably in an open situation. Propagated by division of the clumps in spring or in autumn, or by seed. These plants are native mostly on cliffs, hills and mountains.

álba: *H. pubescens;* much of the material in the trade, however, is *H. sanguinea* var. or garden hybrids of it.

americàna. To 3 ft.: fls. greenish-white, petals about length of calyx-lobes, stamens much exserted: foliage mottled when young, becoming plain green. Ont. to Ga., La., Mo., Ill. and Mich. Var. **hirsuticaùlis** has densely hirsute petioles, the fls. about ⅛ in. long with petals oblanceolate. Ind. to Mo.

bracteàta. Densely tufted, to 6 in.: petals very narrow, slightly longer than calyx-lobes, the infl. spike-like, stamens slightly exserted. Colo., S. Wyo.

brizoìdes. A garden hybrid whose probable parentage is *H. sanguinea* × *H. micrantha:* infl. a narrow diffuse long panicle of small pink fls. about ⅛ in. long. It has been confused with *H. tiarelloides* which differs in having 7–8 stamens instead of 5.

chlorántha. Tufted, to 3 ft.: under side of lvs. and petioles with whitish hairs: fls. greenish, infl. spike-like, the petals very small or wanting, stamens included, scapes coarsely villous. B. C. to Ore. and Ida.

convallària. A garden hybrid whose probable parentage is *H. pubescens* × *H. sanguinea:* infl. a narrow panicle of small greenish fls. tipped with pink, scape and fls. with scattered glandular hairs. The following hort. forms or segregates of it are listed: **álba,** fls. white often faintly tipped pink; **cárnea,** fls. pink; **hírta,** more densely glandular-pubescent; **nàna,** a dwarf form; **nívea,** fls. white.

cylíndrica. To 2½ ft.: petioles densely hirsute: infl. spike-like, fls. yellowish-green to cream-colored, petals minute or sometimes lacking, bracts of infl. ⅜ in. long or more. Ore., Ida. and Mont. Var. **glabélla** (*H. glabella*) differs from type in glabrous petioles and infl. bracts less than ⅜ in. long.

glabélla: *H. cylindrica* var.

glàbra. To 20 in., the fl.-sts. 1–3-lvd., glabrous: all lvs. cordate or round-cordate and deeply 5–7-lobed: fls. panicled, with white petals. Ore. north.

gracíllima: *H. sanguinea* var.

grandiflòra: *H. sanguinea* var.

Hállii. Tufted to 12 in.: infl. a narrow panicle to nearly 3 in. long, cymules 2–4-fld.: fls. greenish-white, sometimes suffused with red, petals to twice as long as sepals, stamens included. Colo.

hirsuticaùlis: *H. americana* var.

híspida. To 4 ft., sts. white-hairy: fls. in narrow panicles, the petals as long as or slightly shorter than sepals. Mts., Va., N. C.

hýbrida: *H. sanguinea* var.

lithóphila: *H. rubescens* var. *glandulosa.*

longiflòra. Stemless tufted plant to 2½ ft.: infl. a wide panicle, becoming very open at maturity; fls. yellow, large, petals slightly longer than sepals, both purple-tipped. N. C. to Ala. and Ky.

micrántha. To 2 ft.: fls. whitish, in loose panicles, petals about length of calyx. Calif. to B. C.

ovalifòlia (*H. cylindrica* var. *ovalifolia. H. ovalifolia* var. *alpina*). Acaulescent, the rounded-oval lvs. basal: fl.-sts. naked, glandular-pubescent; fls. in dense cluster 3 in. more or less long, yellowish. Rocky Mts., Nev., Ore.

parvifòlia. Acaulescent, cespitose: lvs. small, kidney-shaped, 7–9-shallowly lobed: fl.-sts. to 15 in., with elongating infl.; fls. with yellowish petals. Alta. to Ore. and New Mex.

pilosíssima. Very hairy, proper st. short or none: lvs. cordate, obtuse, blunt-lobed: fl.-sts. to 1½ ft., usually somewhat leafy, with narrow and dense cluster; fls. reddish. W. Calif.

Príngleі (*H. rubescens* var. *Pringlei*). A probable segregate from the hybridization of *H. rubescens* and *H. pilosissima:* differs from *H. rubescens* in its much narrower lvs. which are somewhat truncate at base rather than round-cordate, shorter petioles, and fls. hemispherical rather than open-campanulate. Mts., Calif.

pubéscens (*H. alba*). To 3 ft.: fls. purplish, in open panicles, petals slightly longer than calyx-lobes. Rich woods in mts., Pa. to N. C.

racemòsa: *Elmera racemosa.*

Ríchardsonii. Tufted, to 3 ft.: infl. a narrow panicle; fls. greenish, cylindrical-campanulate, petals spatulate, about as long as sepals. Ind., Mich., to Alta. and Colo.

Róbinsonii: a garden seedling.

Rósamondii: hort. form with coral-pink fls., to 1½ ft.

ròsea: hort. name, possibly for form of *H. sanguinea.*

rubéscens. To 15 in.: fls. in open secund panicles, with sepals pinkish, green-tipped, petals about twice as long as sepals. Mts., Utah to Ore. and Calif. Var. **glandulòsa** (*H. lithophila*), fls. smaller than type usually less than $\frac{3}{16}$ in. long, rarely secund.

sanguínea. Coral-Bells. To 2 ft.: infl. open, fls. bright red (in cult. sometimes whitish, pink or crimson), to ½ in. long, bell-shaped, petals shorter than calyx. New Mex., Ariz., and Mex. but hardy N. There are many hort. vars. as: **álba,** fls. white; **gracíllima** and **gracíllima ròsea,** slender form; **grandiflòra,** fls. larger and plant more robust; **hýbrida,** plant robust; **máxima,** fls. dark crimson; **Óxfordii,** fls. deep scarlet; **spléndens,** fls. dark crimson; **virginàle,** fls. white.

spléndens: *H. sanguinea* var.

tenuifòlia (*H. cylindrica* var. *tenuifolia*). Acaulescent: lvs. reniform to round-cordate, thin, ciliate, round-lobed: fl.-sts. to 2 ft.; fls. greenish. Ida., Ore., Wash.

tiarelloìdes (*H. sanguinea* var. *tiarelloides*). A bigeneric hybrid with Tiarella, sometimes named *Heucherella tiarelloides:* resembles *H. sanguinea* in habit, infl. and color of fls., but differs in having 7–8 stamens and unequal carpel beaks. Plants of this parentage are sometimes sold under *H. brizoides.* A var. **álba** is listed.

undulàta. Hort. hybrid of uncertain parentage: to 30 in.: fls. greenish-white, many in loose much branched racemes.

villòsa. To 3 ft.: panicles open, fls. nearly white, petals twice as long as calyx. Va. to Ga. and Tenn.

virginàle: *H. sanguinea* var.

Wálkeri: listed name.

HEUCHERELLA: *Heuchera tiarelloides.*

HÈVEA. *Euphorbiaceæ.* Brazilian trees with milky juice which is the most important single source of rubber, lvs. of 3 lfts., small monœcious fls. without petals, in panicles, and fr. a large caps.; sometimes grown for ornament.

It does best in hot damp climates. Propagated by seeds, and sometimes by cuttings as an ornamental subject or when grown under glass for interest.

brasiliénsis. Para Rubber or Caoutchouc Tree. To 60 ft.: lfts. elliptic, sometimes as much as 2 ft. long: fls. white: seeds about 1 in. long. Amazon.

HEXAGLÓTTIS. *Iridaceæ.* S. African cormous herbs allied to Nemastylis with usually 2 long narrow lvs. and fugacious yellow fls. in branched panicles; perianth rotate.

longifòlia. To 1½ ft.: lvs. flat, narrowly linear, slightly longer than st.: fls. 3–4 in spathe, segms. to ½ in. long.

virgàta. To 1⅓ ft.: lvs. cylindrical, longer than st.: fls. ½ in. long, 3–4 in a spathe.

HEXASTYLIS: *Asarum.*

HIBBÉRTIA. *Dilleniaceæ.* Mostly Australian shrubs with erect, procumbent or climbing sts.: lvs. small and often heath-like: fls. yellow or white, solitary and terminal. Grown out-of-doors in S. Calif.

cuneifórmis: *Candollea cuneiformis.*

dentàta. Sts. trailing or twining: lvs. oblong, to 2½ in. long, slightly toothed, petioled: fls. dark yellow, to 2 in. across, with numerous stamens.

perfoliàta. Sts. procumbent or ascending: lvs. ovate, to 2 in. long, slightly toothed, perfoliate: fls. pale yellow, with numerous stamens.

volùbilis. Sts. trailing or twining to 30 ft.: lvs. obovate to lanceolate, to 3 in. long, clasping at base, silky-pubescent beneath: fls. yellow, with numerous stamens.

HIBÍSCUS. Rose-Mallow. *Malvaceæ.* Herbs, shrubs or small trees with alternate palmately lobed lvs., mostly very large and showy fls. from white to yellow and scarlet, and dry capsular 5-valved fr.; popular ornamental subjects, a few also grown for the edible parts. Species of hibiscus are among the most showy fls. of the tropics; abundant and prized in Hawaii.

The annual flower-garden sorts may be grown from seed sown where the plants are to stand. The perennials are propagated by seed or division; many of these are native in swamps and should have plenty of moisture. The shrubby kinds may be grown from seed sown in pots and transplanted; also by cuttings and grafting.

Abelmóschus (*Abelmoschus moschatus*). Musk-Mallow. Ann. or bien. to 6 ft.: lvs. variously lobed: fls. yellow with crimson center, 4 in. across: fr. to 3 in. long, the seeds with musky odor sometimes used in perfumery. India.

abutiloìdes. Shrubby: lvs. ovate-cordate, to 6 in. long, acuminate, glabrescent, margins usually crenate, stipules ovate-cordate: fls. solitary, probably yellow. N. S. Amer., W. Indies.

africànus: *H. Trionum.*

Arnottiànus. Shrub or small tree: lvs. ovate, entire: fls. white, sometimes with pinkish veins, 4 in. or more across, handsome; calyx-teeth short; bracts of involucel ⅓ in. or less long. Hawaii.

aurantìacus: *H. Rosa-sinensis* var.

Báptistii: a form of *H. Rosa-sinensis* with double fls. variegated cream and red.

brilliantíssimus: hort. name for scarlet-red-fld. form, resembling *H. coccinea*, but said not to be hardy N.

calisùreus: hort. name, probably *H. Trionum.*

Cálleri: *H. Rosa-sinensis* var.

calýcinus (*H. chrysanthus*). Small shrub: lvs. round, angled: fls. lemon-yellow with dark center, to 3 in. across. S. Afr.; grown in Calif. and similar climates.

cannábinus. Ann. or per. with prickly st.: upper lvs. with deep narrow lobes: fls. yellow, with crimson center. Tropics of Old World.—Yields fiber.

chrysánthus: *H. calycinus.*

coccíneus (*H. speciosus*). Per. to 10 ft., glaucous: lvs. with deep slender lobes: fls. rose-red or crimson, to 6 in. across. Swamps, Ga. and Fla.

Coòperi: *H. Rosa-sinensis* var.

Dénisonii. Lvs. ovate, leathery, entire: fls. white. Much like *H. Arnottianus* but calyx deeply cleft and involucel bracts much longer. Origin doubtful.

diversifòlius. To 8 ft., shrubby and prickly: lower lvs. deeply 3–5-lobed, upper toothed: fls. yellow with dark center. Afr., Pacific Isls., Australia.

elàtus (*Paritium elatum*). Cuban Bast. Supposed to differ from *H. tiliaceus* in greater stature, larger fls. that change from yellow to red, involucre and calyces deciduous from ripe fr., and hairy seeds, but some of the plants so called not separable from that species.

esculéntus (*Abelmoschus esculentus*). Okra. Gumbo. Ann. to 6 ft.: lvs. variously lobed or divided: fls. yellow with reddish center, to 3 in. long: fr. to 1 ft. long, ribbed, becoming woody, when immature eaten as a vegetable. Tropics of Old World.—See *Okra.*

gossýpinus. Tall shrub: lvs. ovate, finely toothed: fls. yellow, small, with an involucre of thread-like lfts. shorter than calyx-lobes. S. Afr.; adapted to Calif. and similar climates.

grandiflòrus. Great R. Velvety per. to 6 ft. or more: lvs. commonly broader than long and 3-lobed: fls. pale pink with reddish in bottom, petals to 6 in. long. Marshes, Ga., Fla., Miss.—Allied to *H. Moscheutos;* perhaps sometimes transplanted.

Hamàbo. Shrub to 10 ft. or more: lvs. round, slightly toothed, white-tomentose beneath: fls. yellow, darker at base, 3 in. across. Japan; thrives in southernmost regions.

heterophýllus. Tall shrub: lvs. simple or divided into long narrow lobes: fls. white with crimson or purple center, to 4 in. long. Australia; adaptable to southern parts of the country.

Huègelii. Tall shrub, mostly tomentose: lvs. deeply 3–5-lobed: fls. violet-purple, petals to 3 in. long. Australia. Var. **glabréscens** is nearly glabrous.

incànus. Per. to 6 ft.: lvs. ovate-lanceolate, toothed, white-tomentose beneath: fls. white or pink with crimson center, to 4 in. long. Swamps, Md. to Fla. and La.

Lámbertii: hort. name.

Mánihot (*Abelmoschus Manihot*). Ann. or per. to 9 ft.: lvs. divided into long narrow lobes: fls. yellow or whitish with dark brown center, to 9 in. across. Probably E. Asia. Var. **grandiflòrus** is listed.—Showy in bloom; widely spread as a more or less weedy plant.

Meèhanii: a crimson-fld. form of *H. Moscheutos.*

militàris. Soldier R. Per. to 6 ft.: lvs. halberd-shaped: fls. white or pink with purple center, to 5 in. across. Pa. to Fla. and La.

Moscheùtos (*H. palustris*). Common R. Per. to 8 ft.: lvs. ovate, longer than broad, not lobed or sometimes with small lobes or angles on shoulders, toothed, white-tomentose underneath: fls. pink or rose, sometimes whitish, to 8 in. across. Swamps, Mass. to Fla. and Mo. Vars. **álbus** and **ròseus** are color forms.—Here belong the large-fld. garden mallows, some of them accounted hybrids with related species.

mutábilis. Cotton-Rose. Confederate-Rose. Shrub or small tree: lvs. broadly ovate, lobed to half or less their depth, tomentose beneath: fls. white or pink, becoming red, to 4 in. across. China; planted in southernmost states and in the tropics.

oculiròseus. Crimson-eye R. Closely resembling *H. Moscheutos* but the white fls. with a dark rose or crimson center. Salt marshes, N. Y. and N. J.

palústris: *H. Moscheutos.*

paramutábilis. Differs from *H. mutabilis* in lf.-bases more truncate and broader sepals. China.

pedunculàtus. Shrub to 4 ft.: lvs. 3–5-lobed, the lobes toothed: fls. on long peduncles, nodding, deep rose, 1½ in. long. S. Afr.

règius-máximus: listed name.

respléndens: listed name.

Ròsa-sinénsis. Rose-of-China. Chinese H. Shrub to 30 ft.: lvs. ovate, not lobed, toothed or nearly entire: fls. of many colors, rose-red to white, sometimes double, to 6 in. across. Asia; widely grown in all warm countries and also under glass. Var. **Cálleri** has buff-yellow fls. crimson at base. Var. **Coòperi** (*H. Cooperi*) has narrow lvs. variegated with white and small scarlet fls. Var. **Van Hoùttei** has deep crimson fls. Other forms in the trade are **aurantìacus, grandiflòrus** and **miniàtus.**

Sabdaríffa. ROSELLE. JAMAICA SORREL. Ann. or bien. to 7 ft.: st.-lvs. lobed or divided: fls. yellow, having thick red acid calyces and involucels from which sauces and jellies are made in warm countries; fiber is derived from the sts. Tropics of Old World.—See *Roselle.*

schizopétalus. Shrub: lvs. ovate, not lobed, toothed: fls. long-peduncled and hanging, red or orange-red, to 3 in. across, the petals much cut and recurved, the staminal column long-exserted. E. trop. Afr.; grown in the southernmost parts of the country.

sinénsis: *H. Rosa-sinensis.*

sinosyrìacus. Differs from *H. syriacus* in its broader sharp-toothed and larger lvs. China.

speciòsus: *H. coccineus.*

subviolàceus: hort. name.

syrìacus (*Althæa frutex*). SHRUB-ALTHEA. ROSE-OF-SHARON. Shrub to 12 ft., much planted: lvs. 3-lobed or toothed: fls. rose or purple to white and bluish, often double, to 3 in. across. E. Asia; hardy N. There are many hort. forms, such as **álbus plènus, amplíssimus** with double purple-pink fls., **anemonæflòrus, árdens, bícolor, cárneus cœléstis, elegantíssimus, fòlio-variegàtus, Lèopoldii, pæoniflòrus, pulchérrimus, purpùreus, ròseus, rùber, speciòsus, tòtus álbus, variegàtus, violàceus.**

tiliàceus (*Pariti* or *Paritium tiliaceum*). MAHOE. Shrub or tree: lvs. nearly orbicular, resembling those of the linden: fls. yellow, to 3 in. long; involucel and calyx persistent on fr. Probably Old World tropics, now widely spread.

Triònum (*H. africanus. H. vesicarius*) FLOWER-OF-AN-HOUR. Ann. to 2 ft.: lvs. deeply divided into coarsely toothed lobes: fls. sulfur-yellow or white with dark center, to 3 in. across. Afr.; nat. in N. Amer. Var. **grandiflòrus** is listed.

versícolor: a form with single light carmine fls. with deep red center and yellowish shadings.

vesicàrius: *H. Trionum.*

HICKENIA: *Parodia microsperma.*

HICKORY-NUT. The hard husk-inclosed fruit of various species of Carya (which see), characteristic of North America, and some of the species much prized. They are gathered in the wild and one of them is much planted in the South: see *Pecan.* All the hickories are readily raised from seeds (or nuts), stratified and planted in spring, or sown directly in the ground in autumn if they can be protected from rodents. Because of the tap-root, seedlings transplant with considerable loss if allowed to stand in the original nursery more than two years. A more branching root system can be produced by cutting the tap-root of the seedling about 6 inches below the ground at least a year before transplanting.

Named varieties of hickory may be propagated by budding and grafting. The principles involved are the same as with other fruit-trees, but greater skill and accuracy in workmanship are required. With seedlings ½ inch in diameter, ring or annular budding is successful, either in the early spring as growth starts using dormant cions, or preferably in July just as the current seasons growth hardens. Somewhat larger stocks may be cleft-grafted or side-grafted. With young trees 1½–4 inches in diameter the bark- or inlay-graft is well adapted. Cions of vigorous one- or two-year shoots should be dormant. Grafting is done in the spring from the time growth starts until trees are well leaved out. It is important that all cut surfaces of the stock and the entire surface of the cion including the buds be covered with wax.

Aside from the pecan, the most prized of the hickory-nuts are the shagbark, *Carya ovata,* and the shellbark, *C. laciniosa.* Other species also produce edible nuts.

HICKSBEÀCHIA. *Proteaceæ.* One Australian tree, **H. pinnatifòlia.** Lvs. of 18–23 stiff toothed lfts. to 9 in. long and 2 in. wide: fls. silky outside, ½ in. long, in spike-like racemes to 11 in. long: fr. globular, to 1½ in. across, orange-colored.

HICORIA: *Carya.*

HIDALGÒA. *Compositæ.* Cent. American climbing shrubs with ternately cut lvs. and rather large heads of ray- and disk-fls., resembling single dahlias; one species grown out-of-doors in S. Calif.

Wércklei (*Childsia Wercklei*). CLIMBING-DAHLIA. Lvs. opposite, to 2½ in. long, climbing by the coiled petioles: heads orange-scarlet, to 2½ in. across. Costa Rica.

HIERÀCIUM. HAWKWEED. *Compositæ.* Many per. herbs, often stoloniferous, of the north temp. zone, with alternate or basal lvs. and panicled or occasionally solitary heads of yellow, orange or red ray- and disk-fls.; pappus of stiff usually brownish bristles.

A few hawkweeds are sometimes grown in the garden, especially in rockeries. They prosper in poor soil. Care must be exercised to keep them from spreading too much, as they may become weedy. Propagated easily from seed, also by division of the stolons. See also *Tolpis.*

alpìnum. To 6 in., hairy: lvs. oblong or lanceolate, slightly toothed: heads solitary, bright yellow. Mts., Eu., Asia.

amplexicaùle. To 2 ft., glandular-sticky: lvs. ovate to lanceolate, toothed, the st.-lvs. clasping: heads 2-many, yellow, 1 in. or more across. S. Eu.

aurantìacum. ORANGE H. DEVILS-PAINTBRUSH. To 20 in., covered with long spreading hairs: lvs. mostly in basal tuft, oblong, nearly entire: heads clustered, 1 in. across, deep orange to flame color. Eu.; a bad and abundant weed in E. N. Amer.

bombycìnum. To 1½ ft.: lvs. obovate, densely silvery-pubescent: heads ½ in. across, yellow. Spain.

Gronòvii. To 3 ft., hairy: lvs. obovate or oval, toothed or entire: heads clustered, ½ in. across, yellow. Mass. to Fla. and Tex.

gymnocéphalum. To 2 ft., white-pubescent: lvs. oval or oblong, slightly toothed: heads clustered, ¾ in. across, yellow. S. Eu.

Heldreìchii. To 20 in., long-pilose: lvs. obovate to oblong, long-silky or setose-pilose, entire or minutely toothed: fls. yellow, involucre silky-villous. Balkan region.

lanàtum. To 20 in., densely gray-tomentose: lvs. oval or ovate, nearly entire: heads clustered, 1 in. across, pale yellow. S. Eu.

marmòreum. To 1 ft., hairy: lvs. ovate-oblong, toothed: heads clustered, ¾ in. across, yellow. S. E. Eu.

muròrum. To 2½ ft.: lvs. ovate to oblong, to 4 in. long, cordate, coarsely toothed: scapes glandular; heads about 1 in. across, yellow ray-fls. Eu., adventive in N. E. Amer.

paniculàtum. To 3 ft., nearly glabrous: lvs. lanceolate, toothed: heads panicled, ½ in. across, yellow. N. S. to Ga. and Ala.

Pilosélla. MOUSE-EAR H. Slender, to 1 ft., densely hairy: lvs. in a basal tuft, oblong, entire: heads solitary, 1 in. across, pale yellow, sometimes striped or tinged with red or purple. Eu.; nat. in E. N. Amer.

rùbrum. To 1½ ft., densely woolly, resembling *H. aurantiacum.* E. Cent. Eu.

stoloníferum: a confused name.

tridentàtum. To 3 ft., hairy: lvs. oblong to lanceolate, with few coarse teeth: heads clustered, to ¾ in. across, yellow. Eu.

umbellàtum. NARROW-LEAVED H. To 3 ft.: lvs. lanceolate to linear, toothed: heads clustered, to 1½ in. across, golden-yellow. Eu., Asia.

venòsum. To 3 ft., nearly glabrous: lvs. obovate to oval, toothed, often purple-veined: heads numerous, ½ in. across, yellow. Me. to Ga. and Neb.

villòsum. SHAGGY H. To 2 ft., soft silky-pubescent: lvs. oblanceolate to ovate, nearly entire: heads to 2 in. across, bright golden-yellow, often solitary at end of sts. Eu.

HILLS-OF-SNOW: *Hydrangea arborescens* var. ***grandiflora.***

HIMALAYA-BERRY. A kind of blackberry introduced into North America in recent years and grown somewhat for fruit. It is one of the many kinds of European brambles with very long scrambling more or less perennial canes, *Rubus procerus;* it is not Himalayan. The plant is rampant and viciously thorny. It is best handled on a trellis or arbor. In parts of California it is a useful fruit plant and may also be grown acceptably elsewhere when properly trained, but in general its pomological promise is not great. The plant has established itself in some places outside cultivation. Propagation and culture as for *Blackberry.*

HIPPEÁSTRUM. *Amaryllidaceæ.* Bulbous herbs with narrow strap-shaped basal lvs., spathes of 2 valves separated to the base, red or whitish lily-like declinate fls. usually 2–4 in number borne in an umbel at the top of a hollow scape, the perianth-segms. united to form an abbreviated tube and stamens in four different lengths.

Hippeastrums, commonly known as amaryllis, are grown north as house plants and out-of-doors, but the bulbs must be lifted before winter. South they are commonly grown as garden plants. The best soil is one composed of fibrous loam, leaf-mold and sand with a neutral or slightly alkaline reaction. They may be propagated by seeds which reach blooming size in about two years. Named hybrid varieties are propagated true to type from bulb cuttings. The common garden kinds are hybrids or variants.

ádvenum. Lvs. linear, glaucous: fls. yellow or red, 2 in. long. Chile. Var. **miniàtum** is *H. miniatum.*

Álbertii: a hort. form of *H. puniceum* with double salmon-pink fls.

aùlicum (*H. robustum*). Lily-of-the-Palace. To 2 ft.: lvs. to 2 in. wide, obtuse: scape 2-fld.; fls. red with green throat, to 6 in. long, segms. obovate, the 2 upper wider than others, stigma 3-parted, filaments red. Brazil.

brachyándrum: *Habranthus brachyandrus.*

equéstre: *H. puniceum.*

hýbridum: a name for hort. forms.

Jóhnsonii. An old hybrid between *H. Reginæ* and *H. vittatum* probably not now in cult., or represented by more recent crosses and variants.

miniàtum. Lvs. strap-shaped, to 2 ft. long and 1 in. across: fls. red, to 4½ in. long, segms. to 1¼ in. across, inner ones narrower than outer. Peru. Var. **nóbile** is a hort. form.

praténse (*Habranthus pratensis. Amaryllis pratensis*). Lvs. ½ in. wide, with fls.: fls. bright red, tube very short, segms. 2½ in. long. Chile.

puníceum (*H. equestre. Amaryllis equestris*). Lvs. to 2 in. wide, after fls.: fls. red or salmon-red, lighter toward base, to 5 in. long, the tube about 1 in. long. Trop. Amer.

Regìnæ (*Amaryllis Reginæ*). Lvs. to 2 in. wide, after fls.: fls. bright red with whitish star in throat, to 5 in. long, the tube to ½ in. long. Trop. Amer.

reticulàtum (*Amaryllis reticulata*). Lvs. to 2 in. wide, with fls.: fls. rose-pink cross-barred with darker rose, to 4 in. long, the tube 1 in. long. Brazil. Var. **striatifòlium** has lvs. with a prominent white rib.

robústum: *H. aulicum.*

rùtilum. Lvs. 1 in. wide: fls. red with green tube and keel, to 4 in. long, tube ¾ in. long. Brazil. Var. **fúlgidum** has wider lvs. with larger and more brilliantly scarlet fls.

solandriflòrum. Lvs. to 2 in. wide, with fls.: fls. greenish-white, to 10 in. long, the tube 4–5 in. long. S. Amer.

texànum: see *Habranthus texanus.*

vittàtum (*Amaryllis vittata*). Lvs. with or after fls.: fls. striped red and white, to 6 in. long, the tube about 1 in. long. Peruvian Andes.—The usual garden forms or colors are much like this species.

HIPPOCASTANÀCEÆ. Horse-Chestnut Family. Two widely distributed genera of trees and shrubs bearing opposite digitately compound lvs., irregular polygamous fls. having 5 sepals, 4–5 petals, 5–8 stamens, superior 3-celled ovary, and leathery capsular fr. Only Æsculus is cult.

HIPPOCRÈPIS. *Leguminosæ.* Herbs or small shrubs with pinnate lvs. and yellow papilionaceous fls. in nodding racemes or spikes; native in Medit. region and grown sometimes in rock-gardens and borders.

comòsa. Per. to 2 ft.: lfts. in 3–5 pairs, obovate: fls. in 4–8-fld. umbels. May–July.—Sun, on alkaline soil.

multisiliquòsa. Ann. to 1 ft.: lfts. in 2–7 pairs: fls. small: pods curved, breaking into 3–7 joints.

HIPPÓPHAË. Sea-Buckthorn. *Elæagnaceæ.* Spiny shrubs or small trees covered with silvery scales, having alternate willow-like lvs., inconspicuous yellow diœcious fls. appearing before the lvs., and drupe-like frs.

Any soil is satisfactory. To insure fruit care must be taken to have a few staminate plants. Propagated by seeds sown in fall or stratified, cuttings of ripened wood in spring, root-cuttings, layers and suckers.

rhamnoìdes. Very hardy, to 30 ft.: fr. bright orange-yellow, ¼ in. long, staying on through the winter. Eu., Asia. Var. **angustifòlia** has narrow lvs. and pendulous branches. Var. **procèra** grows to 50 ft.

salicifòlia. To 50 ft., the branches drooping: lvs. stellate-tomentose below, dull green above: fr. yellow. Himalayas; to be planted S.

HIPPOSELINUM LEVISTICUM: *Levisticum officinale.*

HIPPÙRIS. *Haloragidaceæ.* Per. aquatic herbs adapted to bog-garden or pool, having simple verticillate lvs. and small perfect fls. borne in axils. One species, **H. vulgàris,** is sometimes cult. in constantly wet ground or in water to 4 ft. deep. Sts. 6 in. long or more in deeper water: lvs. in whorls of 6–12, acute, the sts. unbranched and extending upward above level of water: fr. nut-like, 1-seeded. Of wide distribution, N. Amer., Eu., Asia, Patagonia.

HIRSUTE: with rather rough or coarse hairs.

HISPID: provided with stiff or bristly hairs.

HOARHOUND: *Marrubium.* **Black:** *Ballota nigra.* **Water:** *Lycopus.*

HOARY: covered with a close white or whitish pubescence or down.

HOBBLE-BUSH: *Viburnum alnifolium.*

HOFFMÁNNIA. *Rubiaceæ.* Shrubs or rarely herbs native from Mex. to S. Amer. with opposite or whorled usually colored lvs., small tubular 4-lobed fls. in axillary cymes, and fr. a small berry; a few of them are grown as foliage plants in the greenhouse. Propagated by cuttings.

díscolor. To 6 in., hairy: lvs. obovate, to 6 in. long, satiny above, purple beneath: fls. red, the cymes long-stalked. Mex.

Ghiesbréghtii (*Campylobotrys Ghiesbreghtii*). To 4 ft., nearly glabrous: lvs. oblong-lanceolate, to 1 ft. long, dark velvety-green above, purple-red beneath: fls. yellow with red spot, the cymes short-stalked. Mex. Var. **variegàta** has mottled lvs.

refúlgens. To 15 in., sts. weak and flexuous: lvs. narrowly obovate, to 6 in. long, fleshy, dull green and somewhat iridescent above, wine-red beneath: fls. pale red, to 1 in. across. Mex.

regàlis. Subshrub: lvs. round-ovate, dark green above, purple-red beneath: fls. yellow, the cymes nearly sessile. Mex.

HOHENBÉRGIA. *Bromeliaceæ.* Trop. stemless epiphytes with spiny strap-shaped lvs. in basal rosettes, differing from Æchmea in having floral bracts entire or only remotely denticulate, at least not serrate.

dístans (*Æchmea distans*). Lvs. to 2½ ft. long, narrowly ligulate, entire or minutely toothed: scape curving downward, to nearly 2 ft. long, bracts imbricate, lanceolate, and entire; fls. white or greenish-yellow, to ¾ in. long. Jamaica.

HOHÈRIA. *Malvaceæ.* New Zeal. trees with alternate toothed lvs., white small or medium fls. clustered or solitary in the axils, the pedicels jointed near middle, and 5 indehiscent winged carpels falling away from a central axis; grown in S. Calif.

angustifòlia (*H. populnea* var. *angustifolia*). To 25 ft.: lvs. linear-oblong, to 2 in. long, spiny-toothed: fls. ⅓ in. across.

popúlnea. To 30 ft.: lvs. ovate, to 5 in. long, doubly toothed: fls. to 1 in. across. Var. **Ósbornii** is listed.

sexstylòsa (*H. populnea* var. *lanceolata*). To 25 ft.: lvs. lanceolate, to 5 in. long, sharp-toothed: fls. ¾ in. across.

HOLBOELLIA: see *Lardizabalaceæ.*

HÓLCUS (*Ginannia. Notholcus*). *Gramineæ.* Old World ann. and per. grasses of medium size, with flat lvs. and spikelets in terminal panicles; one species is sometimes planted for ornament. See *Grasses.*

caffròrum: *Sorghum vulgare* var.

Dúrra: *Sorghum vulgare* var.

halepénsis: *Sorghum halepense.*

lanàtus. Velvet-Grass. Per. to 3 ft., prominently velvety-pubescent: lvs. to 6 in. long and ½ in. wide: panicles to 4 in. long, pale or purplish, glumes ciliate. Eu.; nat. in N. Amer.

sacharàtus: *Sorghum vulgare* var. *saccharatum.*

Sórghum: *Sorghum vulgare.*

sudanénsis: *Sorghum vulgare* var. *sudanense.*

virgàtus: *Sorghum virgatum.*

HOLLY: *Ilex.* **African-:** *Solanum giganteum.* **Mountain-:** *Nemopanthus.* **Sea-:** *Eryngium maritimum.*

HOLLYHOCK. Two species of Althæa, *A. rosea* and *A. ficifolia*, the latter differing in its deeply lobed and somewhat fig-like leaves and probably not specifically distinct. Hollyhocks are stately hardy plants, 5–9 feet tall, well known everywhere, summer-blooming, bearing large wide-open flowers along the main axis in white, rose, red, yellowish, single and double.

The culture is very simple. The seed is usually sown in July, and the plants set where wanted the following spring or they may stand where sown. They will boom the same year in which they are transplanted—the year following the seed-sowing. New plants should be set every two years, as they are essentially biennial. For the rust of hollyhocks, remove affected leaves promptly; do not allow diseased leaves to remain over winter, in particular remove all pustuled leaves of the low clump just before winter and again in spring; frequent thorough dusting on both surfaces of the leaf with sulfur on green-sulfur should then keep the disease in check. Clean up the garden thoroughly.

HOLMSKIÓLDIA. *Verbenaceæ.* Shrubs with opposite simple lvs., tubular fls. with conspicuous colored calyces borne in racemes or cymes, and drupaceous frs.; planted out-of-doors in warm climates and sometimes under glass, particularly for its large ornamental calyx.

sanguínea. Chinese-Hat Plant. To 30 ft., evergreen: lvs. ovate, to 4 in. long: fls. with red corolla 1 in. long and spreading brick-red or orange calyx to 1 in. across. Himalayan region.—Now a characteristic plant in parts of trop. Amer.

HOLODÍSCUS (*Sericotheca. Schizonotus*). *Rosaceæ.* W. American deciduous shrubs with alternate toothed or lobed lvs. and small whitish fls. in terminal panicles; planted for ornament.

They thrive in sunny positions in well-drained soil. Propagated by seeds, by layers, and sometimes by greenwood cuttings under glass.

ariæfòlius: *H. discolor* var.

díscolor (*Spiræa discolor*). Rock-Spirea. To 20 ft.: lvs. ovate, to 4 in. long, white-tomentose beneath: fls. creamy-white, in panicles to 9 in. long on drooping branches. B. C. to Calif. and Mont. Var. **ariæfòlius** (*Spiræa ariæfolia*) has lvs. gray-pubescent beneath.

dumòsus (*H. discolor* var. *dumosus*). To 8 ft.: lvs. obovate, to 2 in. long, white-hairy beneath, coarsely toothed, base cuneate: fls. in panicles to 7 in. long. Wyo. and Utah to Mex.

microphýllus. To 3 ft.: lvs. elliptic, to ½ in. long, white-silky beneath: fls. in panicles to 3 in. long. Colo., Utah, Wyo.

HOLOPTÈLEA. *Ulmaceæ.* One large deciduous tree in India, separated from the elms by the entire lvs. and technical characters of fl. and fr. **H. integrifòlia** has pubescent shoots and elliptic or obovate-oblong lvs. to 6 in. long and 5 or 7 pairs of nerves: fr. 1 in. long, elliptic or nearly orbicular, notched at end.—Adapted only to warm climates.

HOLY-GHOST-FLOWER: *Peristeria elata.*

HOMALÁNTHUS. *Euphorbiaceæ.* Trop. Asian and Australian trees or shrubs with alternate entire lvs., monœcious apetalous fls. in terminal racemes, and capsular frs.; sometimes grown in S. U. S. for ornament or curiosity.

populifòlius (*Carumbium populifolium*). Small tree: lvs. triangular-ovate, to 6 in. long, long-stalked: racemes to 4 in. long. Ceylon to Pacific Isls.

HOMALOBUS: *Astragalus.*

HOMALOCÉPHALA. *Cactaceæ.* Segregate from Echinocactus distinguished by the different fr., which is somewhat fleshy and bursts irregularly, the plant-body subglobose or depressed. One species. See *Cacti.* **H. texénsis** (*Echinocactus texensis*). Usually much depressed or flattened endwise, to 12 in. broad and half as high; ribs 13–27 and very prominent; radial spines 6 or 7; central 1 and longer: fls. 2 in. or more long, bell-shaped, scarlet and orange below, pink to nearly white above. Tex., New Mex., Mex.

HOMALOCLÀDIUM. Ribbon-Bush. Centipede-Plant. *Polygonaceæ.* One odd shrub with flat articulated striate sts. that are usually leafless in the flowering stage, bearing small greenish fls. in little sessile clusters at alternate joints; true lvs. appearing mostly in the vegetative stage, ½–2½ in. long, lanceolate, often lobed at base. **H. platyclàdum** (*Muehlenbeckia platyclados*), from the Solomon Isls., frequently grown as a pot-plant and in the open far S. for interest and curiosity: 2–4 ft. but in tropics making terete canes to 12 ft.: fr. small, red, berry-like, 5-sulcate at top.—Easily grown, sometimes standing light frost; propagated by cuttings.

HOMALOMÈNA. *Araceæ.* Trop. herbs with woody sts., lanceolate or oblong lvs. with sheathing petioles, and unisexual fls. borne on spadices slightly shorter than the erect spathes; occasionally grown under glass for the variegated foliage. Cult. as for *Dieffenbachia.*

picturàta. Lvs. elliptic, to 16 in. long and 8 in. wide, apex acute, dark green above, variegated yellowish-white only along each side of midrib, petiole and midrib pilose. Colombia.

Wállisii (*Curmeria Wallisii*). Lvs. to 8 in. long and 3 in. wide, deep green above irregularly spotted with yellow and margined with white, glaucescent beneath, the petioles 2 in. long and channelled: spathes pale red minutely spotted with white. Trop. Amer.

HOMÈRIA. *Iridaceæ.* Cormous S. African herbs with 1 linear lf. longer than the st. and orange or red fugacious fls. several in a spathe; perianth funnelform, cut nearly to base. Cult. as for *Ixia.*

collìna. Lvs. to 2 ft. long: fls. bright red, 1½ in. long. Var. **aurantìaca**, fls. with yellow claw. Var. **ochroleùca** (*H. ochroleuca*) has pale yellow fls. with segms. strongly recurved.

élegans. Lvs. 1 ft. or more long: fls. yellow, the outer segms. with green or brownish blotch in middle, 1½ in. long.

lilácina. Lvs. 3, narrowly linear, to 12 in. long, acuminate: scape slender, to 9 in. long; fls. lilac, veined purple and with yellow-speckled purple blotch.

ochroleùca: *H. collina* var.

pállida. Basal lf. to 2 ft. long, the 2 st.-lvs. to 4 in. long: fls. golden-yellow, usually 4–6 in cymes, spathe-valves cuspidate.—*H. Cookii*, not known to be in cult. in this country, but said to be confused with *H. pallida*, differs in having segms. black-speckled at base and acuminate spathe-valves.

HOMÓGYNE. *Compositæ.* Small per. herbs from mts. of Cent. Eu., allied to Tussilago but differing in having white or purple heads which usually are composed entirely of disk-fls., and lvs. more densely white-woolly and smaller. Propagated by division and seeds. Best suited to moist soil.

alpìna. To 6 in.: basal lvs. cordate-reniform and often withering before blossoming, st.-lvs. ovate-lanceolate: heads pale purple, to 1 in. across, solitary on hairy scapes to 1 ft. high.

HONESTY: *Lunaria.*

HONEY-BELL: *Mahernia verticillata.*

HONEY-BUSH: *Melianthus.*

HONEYSUCKLE: *Lonicera.* **Bush-:** *Diervilla.* **Cape-:** *Tecomaria capensis.* **French-:** *Hedysarum coronarium.* **Himalaya-:** *Leycesteria formosa.* **Jamaica-:** *Passiflora laurifolia.* **White Swamp:** *Rhododendron viscosum.*

HONEYWORT: *Cerinthe.*

HOÒDIA. *Asclepiadaceæ.* African per. succulent leafless herbs of the Ceropegia class with thick cylindrical angled sts. having tubercles armed with spines or bristles, and large fls. in small clusters near top of sts.; corolla flat or cup-shaped; crown double.

Bàinii. Bushy, sts. 12–15-angled, spines pale brown: fls. light yellow sometimes tinged pink, glabrous, to 3 in. across.

Drègei. Sts. 20–24-angled, with stiff bristles: fls. light brown covered with white hairs, 1½ in. across.

Górdonii. To 1½ ft., sts. many-angled, glaucous, spines pale brown: fls. yellowish-brown, glabrous except dark red papillæ in center, to 4 in. across.

Júttæ. To 10 in. tall, sts. to 2 in. thick, 14–16-angled, tubercles spine tipped: fls. 1–4 near tips of st.; corolla light yellowish-brown to dark reddish-brown, to 2¼ in. across, glabrous, quite flat.

Lugárdii. Sts. to 2½ ft. tall, spiny: fls. brick-red, to 2½ in. across, covered with colorless hairs, outer corona-lobes bifid.

macrántha. To 3 ft., sts. many-angled: fls. light purple with yellowish center, covered inside with purple hairs, to 8 in. across.

HOOKERA: *Brodiæa.*

HOP: *Humulus.* **-Bush:** *Dodonæa cuneata.* **-Tree:** *Ptelea.*

HOPLOPHYTUM: *Æchmea.*

HÓRDEUM. *Gramineæ.* Ann. and per. grasses in temp. regions of both hemispheres, with flat lvs. and spikelets in terminal cylindric dense spikes, awned; one species valuable for grain and forage. See *Grasses.*

jubàtum. SQUIRREL-TAIL-GRASS. Bien. or per. to 2½ ft.: lvs. to 5 in. long and ⅙ in. wide: spikes to 4 in. long, nodding, the slender awns to 3 in. long. N. Amer., Eu., Asia.—Sometimes grown for the abundant ornamental drooping spikes.

vulgàre. BARLEY. Ann. to 3 ft.: lvs. to 1 ft. long and ¾ in. wide: panicles to 4 in. long, mostly erect, the stout awns to 6 in. long. Cultigen, of Old World origin. Var. **trifurcàtum** is beardless.

HOREHOUND: *Marrubium.*

HORKÈLIA. *Rosaceæ.* Per. herbs related to Potentilla, with pinnate lvs. of many crowded lfts. and white or yellow fls. in cymes or panicles; differs from Potentilla in insertion of stamens and other technical characters.

Górdonii (*Potentilla Gordonii. Ivesia Gordonii*). To 8 in., woody and tufted: lvs. of 10–20 pairs of small lfts. which are again divided: fls. yellow, in head-like cymes to ¾ in. across. Wash. to Calif. and Colo.

truncàta (*Potentilla truncata*). Glandular-pubescent, sts. erect, sparingly leafy, to 2 ft.: lvs. of 1–3 pairs of oblong-cuneate toothed lfts., terminal lft. petiolate: fls. with hypanthium saucer-shaped. Calif.

HORMIGO: *Triplaris americana.*

HORMÌNUM. *Labiatæ.* One per. herb adapted to the rock-garden, native from the Pyrenees to the Tyrol. **H. pyrenàicum.** To 1 ft.: lvs. mostly basal, ovate and toothed: fls. bluish-purple, ¾ in. long, somewhat 2-lipped, in whorls in long leafless spikes, in summer.—The names *H. longifolium* and *H. purpureum* are listed but have no known botanical standing.

HORNBEAM: *Carpinus.* **Hop-:** *Ostrya.*

HORNWORT: *Ceratophyllum demersum.*

HORSE-BRIER: *Smilax rotundifolia.* **-Chestnut:** *Æsculus.* **-Radish-Tree:** *Moringa oleifera.* **-Weed:** *Collinsonia.*

HORSE-RADISH. The comestible part of *Armoracia rusticana*, a deep-rooted perennial native in southeastern Europe and also run wild in this country, is the fleshy root, which is grated and employed as a relish or appetizer with meats and other foods. The plant blooms freely but does not mature seeds; it is therefore propagated by root-cuttings, which are planted in spring and the roots harvested in late autumn of the same year or for home use left in the ground until spring. By growing horse-radish as an annual crop and thoroughly cleaning the land of roots at harvesting time, the plant does not become established as a persistent dock-like weed and a more shapely tender easily managed product is obtained. Grown as a regular tilled crop on good land, the yield may be 3–5 tons more or less to the acre, of commercial roots fit for grating in machine. The usual practice of keeping a few old stools about the house for home use produces tough shapeless stringy roots.

Side roots saved from the trimmings, of the size of a lead-pencil to ¾ inch diameter, are cut to 5–8 inches long; these cuttings are tied in bundles and stored in cellar till spring, when they are set in a slanting position where the plants are to grow, in rows far enough apart to allow of good tillage and 10–18 inches in the row; the top of the cutting should be 3–5 inches below the surface of the ground.

HORSETAIL: *Equisetum.* **-Tree:** *Casuarina equisetifolia.*

HORTICULTURE is a broad inclusive term covering the making and care of home gardens, market-gardens, orchards, nurseries, greenhouses, as well as the plant-raising phase of parks, estates and botanic gardens. It comprises whatever has to do with the growing of ornamentals, of vegetables, of fruits, and of plants prized for their general interest. It may constitute the way of earning a living and developing a business, at the same moment that in the fuller sense its subjects are embedded in the emotional assets of life.

It follows that horticulture cannot be measured or defined by its organized and commercial aspects alone or its importance be represented in statistics. The amateur and personal practice of it determine the extent of the trade development; and this fact will be increasingly apparent as home-making rises to higher satisfactions.

The main departments of horticulture, as defined by the plant subjects, are pomology or fruit-growing, floriculture or flower-growing, olericulture or vegetable-growing, landscape practice.

To grow the vast range of plants successfully and to defend them against insect and disease requires experience and definite knowledge. The plant resources of the earth are largely within the purview of the horticulturist, involving conceptions of plant geography, climate, adaptations. These resources afford endless opportunities in plant-breeding. It follows that the exact identification of species and varieties is an indispensable part of this field of knowledge. Horticultural subjects have been put into pedagogical form and are now effective means of elementary and higher education. Personal skill in cultivation and in technique is essential to success and real satisfactions; yet horticulture and gardening are much more than the growing of plants. See *Garden.*

HOSACKIA: *Lotus.*

HÒSTA (*Funkia. Niobe*). Plantain-Lily. *Liliaceæ.* Per. herbs with thick durable roots, large clumps of broad or at least not greatly elongated basal lvs. and blue, lilac or white fls. in racemes or spikes terminating the scape or peduncle, the perianth-segms. partially united.

Plantain-lilies are hardy and of easy cultivation, doing well in moist shady places, making neat attractive foliage clumps until cut down by cold weather. Propagated by division of the stools, and only seldom by seeds for some of the kinds do not produce capsules. *H. cærulea* and *H. plantaginea* make shallow clumpy rootstocks with large scars, and the other kinds have more fibrous but thick roots from the crown or from short rootstocks. The long white wax-like flowers of *H. plantaginea* are very fragrant, appearing in late summer and autumn; the others have short lavender-purple ("blue") or lilac flowers, sometimes almost white, drooping or soon becoming so, and little if at all odorous. *H. cærulea* differs from all others in the flower being suddenly enlarged or widened in its upper half; the other lilac or blue kinds have a gradually widened flower-tube.

álbo-marginàta: *H. lancifolia* var.

aùreo-maculàta and **-variegàta** may be referable to *H. undulata.*

cærùlea (*F. ovata*). Blue P. To 3 ft.: lvs. to 9 in. long and 5 in. wide, cordate at base, deep green: fls. lavender-purple (blue), striped with lighter color, to 2 in. long, in summer, the perianth-tube narrowly furrowed-cylindrical for about half its length and then suddenly bulging or shouldered into an urn-shaped bloom: seeds freely. Japan, China, Siberia.

cordàta: may be *H. cærulea* or *H. plantaginea.*

cordifòlia: may be *H. plantaginea.*

decoràta. Blunt P. To 2 ft.: lvs. oval, to 6 in. long, obtuse or only very short- and abruptly pointed, about 5-nerved either side midrib, white-margined, petioles winged: scape exceeding foliage, winged: fls. rather dark lilac, to 2 in. or more long, drooping, in summer: seeds freely. Origin undetermined.

erròmena. Midsummer P. To 3 ft., not glaucous: lvs. to 2 ft., with broadly ovate blades to 8 in. long and 4 in. broad: fls. in long racemes above the lvs., gradually trumpet-form, about 2 in. long, pale lilac, July–Aug. (in N. Y.).—Long an inhabitant of gardens without definite name, recognized as a distinct species in 1932.

Fórtunei. Tall-cluster P. To 2 ft. and more, the scapes much taller than foliage: lvs. to 5 in. long and 3½ in. broad, heart-shaped at base, glaucous or blue-green as if glaucous, with 10–12 nerves either side midrib, short-petioled: fls. pale lilac, 1½ in. long, in late spring and early summer. Probably Japan. Var. **gigantèa** is a form with larger longer-petioled lvs., rather larger fls. that stand less high above the foliage. Var. **robústa** is probably var. *gigantea.* Var. **variegàta** has variegated lvs.

glaùca: *H. Sieboldiana.*

grandiflòra: *H. plantaginea.*

japónica: *H. lancifolia.*

lanceolàta: *H. lancifolia.*

lancifòlia (*H. japonica. H. lanceolata*). Narrow-leaved P. To 2 ft., slender, the scapes exceeding the foliage: lvs. narrow, to 4 in. long and 2 in. wide, tapering to both ends, green, with 3 or 4 nerves either side midrib, the petioles slender and scarcely winged: fls. lilac or pale lavender, to 2 in. long, in summer and autumn; seldom if at all fruitful in cult. Japan. Var. **álbo-marginàta** has lvs. edged with white. Var. **fórtis** is a common form in cult. differing in greater size and vigor, larger and leaf-like bracts on scape, nerves 6 or 7, petioles winged, blooms in summer. Var. **tardiflòra** has prominently acuminate-pointed lvs., short margined petioles, autumnal fls. in a condensed often branched cluster; probably not in cult. in N. Amer., the plant so named being *H. lancifolia* itself. Var. **variegàta** is probably not distinct from var. *albo-marginata.*

mèdia and **mèdia pícta:** perhaps *H. undulata.*

mìnor: probably *H. cærulea,* although considered by some as a distinct var. of it.

ovàta: *H. cærulea.*

plantagínea (*F. grandiflora. F. subcordata*). Fragrant P. To 2½ ft., the scapes exceeding the foliage: lvs. to 10 in. long and 6 in. wide, cordate at base, green, nerves either side midrib 7–9: fls. tubular, ascending, white, fragrant, to 5 in. long, late summer and autumn. Japan, China.

robústa: a name of inexact application, sometimes meaning *H. undulata.*

Sieboldiàna (*F. glauca*). Short-cluster P. Scapes mostly shorter than foliage: lvs. 10–15 in. long and 6–10 in. broad, cordate, long-petioled, usually very glaucous, many-nerved either side midrib: fls. many, slender, faint lilac, conspicuously drooping, spring and early summer, in a close raceme. Japan.

sinénsis: catalogue name of unknown botanical standing.

subcordàta: *H. plantaginea.*

tardiflòra: *H. lancifolia* var.

undulàta. Wavy-leaved P. To 2½ ft., stout, the scapes much exceeding foliage and leafy: lvs. ovate, 6 in. long and 3 in. broad, narrowed toward base, sharp-pointed, curved, margins more or less undulate, striped and splashed lengthwise with cream-color or white: fls. about 2 in. long, pale lavender. Origin undetermined.—The supposed green-lvd. form is probably *H. Fortunei.* Listed foliage forms include **argéntea, aùrea, mèdia pícta,** and **variegàta,** none of which may be distinct from the typical form.

variegàta: probably *H. undulata.*

HOTBED is a frame or box that has artificial heat and a transparent covering and in which plants are grown. It differs from a coldframe in having artificial bottom heat. This bottom heat is supplied by fermenting organic matter, hot water or steam in pipes underneath the bed, and hot air conducted in horizontal flues. Formerly fermenting horse manure was the heating material, but with the lessened supply of it and the development of invented devices the mechanical agencies are now mostly employed. Information on such devices may be obtained from dealers in gardening equipment and from recent bulletins.

The hotbed is covered with sash of which the usual or standard size is 3 feet wide and 6 feet long. These sashes are laid crosswise the box or frame. The standard size of frame is 6 feet wide and 12 feet long. A "frame," therefore, accommodates four sashes. However, the frame may be of any length desired. This frame is ordinarily made of boards, and the back of it is 3 or 4 inches higher than the front, so that the sashes slope to the sun. It is customary to have a space of 6 to 10 inches between the ground and the sash on the lower or front side. The area or location in which the frames are set should be protected from cold and prevailing winds by a rising slope, a high board fence, a building, hedge, or other obstruction. If the frame yard is near the main buildings, it is much more accessible in rainy or snowy times, and the plants are likely to have better care. Water should also be at hand.

When to start a hotbed depends on the kinds of plants to be grown, the time one wishes to gain, and something, also, on the character of the heat. The hardier the plant the earlier it can be started. In the latitude of New York, from the first to the middle of March is the usual time for starting a hotbed. In this bed are sown seeds of early flowers and such vegetables as cabbage, cauliflower, tomato. In the raising of plants in the hotbed it is essential that they do not become "drawn" or "leggy." To prevent this, they must be given plenty of room, thorough ventilation on all pleasant days, and not too great heat. It is well to transplant them once or twice before they are finally set in the field, particularly if they are started, in New York, as early as the first or middle of March. When transplanted, they can be set in another hotbed or in a coldframe; but it is important that the succeeding frames in which they are set should not be very much colder than the one in which they grew, else they may become stunted. It is well, however, to transplant them into a gradually cooler and freer atmosphere to harden them off, that they may go into the open ground without danger.

On pleasant days, raise the sash at the upper end 1 or 2 inches, or if the sun shines brightly and the wind does not blow, give even more air; and eventually strip off the sashes entirely. It is important that the plants are not kept too close and grown too soft. It is usually advisable to sow cabbage, lettuce and hardy plants in different frames from tomatoes and other tender things, in order that the proper requirements may be given to each. At night the hotbeds (at least early in the season) need more protection than the glass sash. It was formerly the custom to use thick rye-straw mats to cover them, but it is now common practice to use straw matting or other fabric purchased of carpet dealers. This is rolled out on the sashes at night in one or two thicknesses; and if the weather is sharp, board shutters, the size of the sash, may be laid on top.

One must not expect to gain as much time in the crop as one gains in the starting of the seeds: that is, if seeds are started two months ahead of the normal season, one will not gain two months in the ripening of the crop. Ordinarily, one cannot expect to gain much more than one-half the time, if the plants are transplanted to the field from the hotbed.

Some plants may be grown to maturity in the hotbed, as lettuce and radishes. After hotbeds have been emptied of their plants, the sashes may be stored away, and the frames employed for the growing of a crop of melons or cucumbers.

HOTEIA: *Astilbe.*

HOTTENTOTS-BREAD: *Testudinaria elephantipes.*

HOULLÈTIA. *Orchidaceæ.* Epiphytes native in trop. Amer. with 1-lvd. pseudobulbs and basal racemes, the sepals and petals similar, the lip clawed. For cult. see *Orchids.*

odoratíssima. Lvs. elliptic-lanceolate, to 2 ft. long and 4 in. wide, long-petioled: infl. to 2 ft. high, loosely 5–10-fld.; fls. 2½–3½ in. across; sepals and petals reddish-brown; lip white with sickle-like side lobes. Aug. Colombia.

HOUNDS-TONGUE: *Cynoglossum.*

HOUSELEEK: *Sempervivum.*

HOUSE PLANTS are such as are capable of being readily and satisfactorily grown in a residence, for home adornment and decoration. The care of house plants is window-gardening, although porch- and window-boxes outside the building may not strictly be a part of it inasmuch as the purpose is exterior rather than domestic embellishment.

The growing of house plants becomes practically a question of proper window space. The essentials to be taken into consideration, before the attempt is made, is whether the place has sufficient sunlight, whether temperature can be depended on and controlled, whether the air will be too dry, and the room free from coal and illuminating gas and dust. The air of a living-room is likely to be that of a desert, as to moisture; whereas the plants one commonly desires to grow in it are those requiring a more or less humid climate. Gas leaks soon cause foliage to shed.

The house garden may occupy an entire window or set of windows, or it may consist simply of a jardinière, or a few choice pot-plants on a stand. Expensive arrangements are by no means necessary, nor is a large collection. The plants and flowers themselves are the main consideration, and a small collection well cared for is better than a large one that is not kept in good condition. The window-box in the room will be seen near at hand, however, so may be more or less ornamental in character. The sides may be covered with ornamental tile held in place by molding, or a light lattice-work of wood. But a neatly made and strong box of stout pine of a length corresponding to the width of the window, about 10 inches wide and 8 deep, answers quite as well as a costlier receptacle. A zinc tray of a size to fit into the wooden box may be ordered of the tinsmith. It tends to keep the soil from drying out so rapidly. This is provided with a false wooden bottom, with cracks for drainage, 2 inches above the real bottom of the tray. The plants will then have a vacant space below them into which drainage water may pass. Such a box may be thoroughly watered as the plants require, without danger of the water running on the floor. Of course, a faucet should be provided at some suitable point on a level with the bottom of the tray, to permit of its being drained every day or so if the water tends to accumulate. It would not do to allow the water to remain long; specially should it never rise to the false bottom, as then the soil might become too wet.

Some persons attach the plant box to the window, or support it on brackets below the window-sill; but a preferable arrangement is to support it on a low and light stand of suitable height provided with rollers. It may then be drawn back from the window, turned around from time to time to give the plants light on all sides, or turned with the attractive side inward as may be desired.

The plants are often set directly in the soil; but if they are kept in pots they may be rearranged to suit the pleasure. Larger plants to stand on shelves or brackets may be in porous earthenware pots; but the smaller ones which are to fill the window-box may be placed in heavy paper pots. The sides of these are flexible, and the plants in them, therefore, may be crowded close together with great economy in space. When pots are spaced, damp sphagnum or other moss among them will hold them in place, keep the soil from drying out too rapidly, and at the same time give off moisture.

The window for winter plants should have a southern, southeastern or eastern exposure. Plants need all the light they can get in the northern winter, especially those expected to bloom. The window should be tight-fitting. Shutters and a curtain are an advantage in cold weather.

The plants should have a certain regularity in conditions. It is trying on them, and often fatal to success, to be snug and warm one night and in a temperature only a few degrees above freezing the next. Some plants live in spite of it, but they cannot be expected to prosper to their best. Those persons whose rooms are heated with steam, hot water or hot air will have to guard against keeping rooms too warm fully as much as too cool. Rooms in brick dwellings that have been warm all day, if shut up and made snug in the evening, often keep warm over night without heat except in the coldest weather. Rooms in frame dwellings, and exposed on all sides, soon cool down. If the living-rooms are too dry for plants, the bow-window may be set off from the room by glass doors; one then has a miniature conservatory. A pan of water on the stove or on the register and damp moss among the pots may provide the necessary humidity.

From time to time the foliage will need cleansing to free it from dust. A bath-tub provided with a ready outlet for the water is an excellent place for this purpose. The plants may be turned on their sides and supported on a small box above the bottom of the tub. Then they may be freely syringed without danger of making the soil too wet. It is usually advisable not to wet the flowers, however, especially the white waxen kinds, like hyacinths. The foliage of Rex begonias should be cleansed with a piece of dry or only slightly moist cotton or soft cloth; but if the leaves can be quickly dried off by placing them in the open air on mild days, or moderately near the stove, the foliage may be syringed.

Plants suitable for the winter window-garden mostly belong to the groups that florists grow in their medium and cool houses. The former are given a night temperature of about 60°, the latter about 50°. In each case the temperature is 10° to 15° higher for the day time. Five degrees of variation below these temperatures is allowable without any injurious effects; even more may be borne, but not without more or less check to the plants. In bright sunny weather the day temperature may be higher than in cloudy and dark weather. The plant material suitable for winter window-gardens is really extensive if one desires to search for it.

The watering of house plants, as of other plants, requires caution and good judgment, and it is impossible to give rules. Conditions that hold with one grower are different from those of another. Give one good watering at the time of potting, after which water should be withheld until the plants really need it. If, on tapping the pot, it gives out a clear ring, it is indication that water is needed. In the case of a soft-wooded plant, just before the leaves begin to show signs of wilt is the time for watering. When the plants are taken up from the ground, or when they have their roots cut back in repotting, gardeners rely, after the first copious watering, on syringing the tops two or three times each day, until a new root growth has started, watering at the roots only when really necessary. Plants that have been transferred into larger pots grow without the extra attention of syringing, but those from the borders, that have had the roots mutilated or shortened, may be placed in a cool shady spot and be syringed often. One soon becomes familiar with the wants of individual plants, and can judge closely as to need of water. All soft-wooded plants with large leaf surface need more water than hard-wooded plants, and one in luxuriant growth more than one that has been cut back or become defoliated. When plants are grown in living-rooms, moisture must be supplied from some source, and if no arrangement has been made for having a moist air the plants should be syringed often. Be careful not to over-water when plants are dormant or in their resting period.

Syringing with plain water is often practiced by gardeners. It has two general offices: to clean the plants of pests or of dirt; to check evaporation or transpiration from the plant itself. Gardeners look on water as a good insecticide if it can be thrown on the plants somewhat forcibly by means of a syringe or pump, or by the hose, as it washes off the insects and drowns many of them. The water should be applied in a fine and somewhat forcible spray. Care should be taken that the plant is not torn or bruised. The red-spider is one of the most serious pests on house plants, and, in a dry season, on those about the lawn. It thrives in a dry atmopshere. It usually lives on the under sides of the leaves. Syringing the plants frequently keeps the pest in check. Thrips and slugs on rose bushes are usually kept in check if one can spray or syringe the plants frequently. Syringing to check transpiration from the foliage is useful with plants recently transplanted. The same is true with cuttings. In syringing plants, it is well to take care that the ground does not become too wet; otherwise the plant may suffer at the root. In the house, plants should rarely be syringed except when the weather is bright, so that they may soon dry off. The plant should not go into the night with soaking foliage. With plants in the house, it is necessary to keep the leaves dry most of the time that fungi may not breed; this is true of carnations when liable to attacks of the rust.

Common winter window-garden plants for an average night temperature of 60°.

Upright flowering plants.—Abutilon, browallia, calceolaria, begonia, bouvardia, euphorbia, scarlet sage, calla, heliotrope, fuchsia, Chinese hibiscus, jasmine, single petunia, swainsona, billbergia, freesia, geranium, cuphea.

Upright foliage plants.—Ribbon-bush, *Cycas revoluta*, *Dracæna fragrans* and others, palms, canna, *Farfugium grande*, achyranthes, ferns, araucaria, epiphyllum (zygocactus), pandanus or "screw-pine," pilea, *Ficus elastica*, grevillea, aspidistra.

Climbing plants.—*Asparagus plumosus*, *Cobæa scandens*, smilax, Japanese hop, Madeira vine (Boussingaultia), *Senecio mikaniodes* (parlor ivy), muehlenbeckia. See also list below.

Low-growing, trailing, or drooping plants.—These may be used for baskets and edgings. Flowering kinds are: Sweet alyssum, lobelia, *Fuchsia procumbens*, mesembryanthemum and allies, russelia, oxalis, *Mahernia verticillata* or honey-bell.

Foliage plants of drooping habit.—Vinca, *Saxifraga sarmentosa*, Kenilworth ivy, tradescantia or wandering jew, *Festuca glauca*, othonna, *Isolepis gracilis*, English ivy, selaginella, and others. Some of these plants flower freely, but the flowers are small and of secondary consideration.

Plants for an average night temperature of 50°.

Upright flowering plants.—Azalea, cyclamen, carnation, chrysanthemum, geranium, Chinese primrose, stevia, marguerite or Paris daisy, single petunia, camellia, ardisia (berries), cineraria, violet, hyacinth, narcissus, tulip, the Easter lily when in bloom, and others.

Upright foliage plants.—Pittosporum, palms, aucuba, euonymus (golden and silvery variegated), araucaria, pandanus, dusty miller.

Climbing plants.—English ivy, maurandia, senecio or parlor ivy, lygodium (climbing-fern).

Drooping or trailing plants.—Flowering kinds are sweet alyssum, *Mahernia verticillata*, russelia and ivy geranium.

The practiced window-gardener will find many more plants than these as observation and experience multiply. Many kinds of cacti and other condensed or succulent plants are interesting and adaptable subjects for window-gardening; see *Cacti*, *Succulents*.

Up to this point the instructions have applied to the winter window-garden. Summer window-gardening may now be considered; this kind of home-gardening is particularly suited to those who live in the crowded city, where the want of other space makes the window-garden the only one possible.

The summer plants are grown in a window-box like that described for the winter garden except, of course, it must fit the outside rather than the inside of the window opening. Since there is more or less cramping of roots, it is necessary to make the soil richer than would be required were the plants to grow in the garden. The most desirable soil is one that does not pack hard like clay, nor contract much when dry, but remains porous and springy. Such material is found in the potting soil used by florists, and it may be obtained from them. Often it is desirable to have at hand a box of sharp sand for mixing with the soil, to make it more porous and to prevent baking. Some persons pot the plants and then set them in the window-box, filling the spaces between the pots with moist moss. Others plant directly in the soil. The former method, as a general rule, is to be preferred in the winter window-garden, the latter in summer.

Useful plants for the summer window-garden are those of drooping habit, such as lobelias, tropæolums, *Othonna crassifolia*, Kenilworth ivy, ice-plant, sweet alyssum. Such plants may occupy the front row, while back of them may be the erect-growing plants, as geraniums, heliotropes, begonias. The suitability of the plants depends much on conditions. In the following lists certain kinds are of climbing or trailing habit and may be trained about the sides of the window. Others will be found among the climbing plants. For shady situations the main dependence is on plants of graceful form or handsome foliage; while for the sunny window the selection may be of blooming plants. For the shady side of the street, the more delicate kinds of plants may be used. (1) For full exposure to the sun, it is well to choose the more vigorous-growing kinds. In such position, suitable plants for drooping are: tropæolums, passifloras, the single petunias, sweet alyssum, lobelias, verbenas, mesembryanthemums. For erect-growing plants: geraniums, heliotropes. (2) If the position is shaded, the drooping plants might be of the following: tradescantia, Kenilworth ivy, senecio or parlor ivy, sedums, moneywort, vinca, smilax, lygodium or climbing-fern. Erect-growing plants are dracænas, palms, ferns, coleus, centaurea, spotted calla, aspidistra, sansevieria, aucuba, and others.

When the plants have filled the earth with roots, it is desirable to give the surface of the soil among the plants a very light sprinkling of bone-dust or a thicker coating of rotted manure from time to time in the summer; or instead of this, a watering with weak liquid manure about once a week. This is not necessary, however, until the growth shows that the roots have about exhausted the soil.

In autumn the box may be placed on the inside of the window. In this case it is desirable to thin out the foliage somewhat, shorten some of the vines, and perhaps remove some of the plants. It is also well to give a fresh coating of rich soil. Increased care will be necessary in watering, since the plants have less light than previously, and, moreover, there may be no provision for drainage.

A very different kind of summer window-gardening is the florists window-box. Leading city plantsmen prepare such boxes with plants grown or chosen for the purpose, many of them of stiff habit and durable character to withstand difficult conditions and requiring the minimum of care. These boxes are usually very attractive.

HOUSTÒNIA. *Rubiaceæ.* North American small herbs, usually tufted, with opposite entire lvs. and small, white, blue or purple fls. in spring and summer, the corolla funnelform or salverform and 4-lobed.

A few species are transferred to the wild- or rock-garden where they thrive in moist and often partly shaded positions, and *H. cærulea* in sun. Propagated by division.

angustifòlia: *H. nigricans.*

cærùlea. Bluets. Per. to 7 in., tufted: lvs. oblanceolate, ½ in. long: fls. violet, blue or white with yellow eye, to ½ in. across, solitary. N. S. to Ga. and Mo. Var. **álba** is listed.

filifòlia: *H. floridana.*

floridàna (*H. filifolia*). Per. to 1½ ft., much branched: lvs. linear or thread-like, to ¾ in. long: fls. purple, ⅕ in. long, in loose leafy cymes. S. Fla.

longifòlia. Per. to 1 ft.: lvs. linear or linear-oblong, to 1 in. long: fls. purple or nearly white, ¼ in. long, in cymes. Me. to Ga. and Mo.

mínima. Ann. to 4 in.: lvs. oval or oblong, ⅓ in. long: fls. purplish, ⅓ in. across, solitary. Ill. to Tex.

montàna. To 6 in.: lvs. ovate, to ⅝ in. long: fls. purple, to nearly ½ in. long, sepals ovate. Tenn. and N. C. Var. **álba** is listed.—Similar to *H. purpurea*, but smaller.

nígricans (*H. angustifolia*). Per. to 2 ft.: lvs. linear, to 1½ in. long, often clustered: fls. white or purplish, ⅙ in. long, in terminal cymes. Ill. to Fla. and Tex.

purpùrea. Per. to 1½ ft.: lvs. ovate or ovate-lanceolate to 2 in. long: fls. purple or lilac, ⅓ in. long, in terminal cymes, in spring. Md. to Ga. and Miss.

serpyllifòlia. Creeping Bluets. Per. with prostrate sts. to 10 in. long: lvs. orbicular, to ⅓ in. long: fls. deep blue, ½ in. across, solitary. Pa. to Ga. and Tenn.

tenuifòlia. Per. to 1 ft.: basal lvs. ovate, upper narrow-linear or filiform, to 1 in. long: fls. purple, to ¼ in. long, on long pedicels in loose corymbose cymes. Pa. to N. C. and Tenn.

HOUTTUỲNIA. *Saururaceæ.* One per. herb to 3 ft., native from the Himalayas to Japan. **H. cordàta.** Rootstock creeping: lvs. alternate, ovate, 2–3 in. long, heart-shaped at base, buckwheat-like: fls. in dense spike about ½ in. long, subtended by white corolla-like 4-parted spathe.—Grown in moist situations. Propagated by division or seeds.

HÒVEA. *Leguminosæ.* Australian shrubs with alternate simple lvs., blue or purple papilionaceous fls. mostly in axillary clusters or racemes, and inflated pods; may be grown out-of-doors in mild climates. Propagated by seeds in spring under glass.

Célsii (*H. elliptica*). To 10 ft.: lvs. elliptic to lanceolate, to 3 in. long, pale and pubescent beneath: fls. blue, to ½ in. long.

ellíptica: *H. Celsii.*

púngens. To 2 ft.: lvs. linear or lanceolate, to 1 in. long, pungent-pointed, margins revolute: fls. ½ in. across.

trispérma. To 2 ft.: lvs. ovate to linear, to 3 in. long, pubescent beneath: fls. large.

HOVÈNIA. *Rhamnaceæ.* One or two deciduous shrubs or trees from China, Japan and the Himalayas. **H. dúlcis.** JAPANESE RAISIN-TREE. To 30 ft.: lvs. alternate, ovate, to 7 in. long, toothed: fls. greenish, in many-fld. racemes: fr. about ¼ in. across, the stalks becoming fleshy and reddish and club-shaped and sometimes eaten.—It thrives in sandy loam. Propagated by seeds, root-cuttings and cuttings of mature wood under glass. It has been recommended as a fruit plant; hardy well N.

HÒWEA. *Palmaceæ.* Two handsome and much planted unarmed monœcious ringed feather-palms of Lord Howe Isl. east of New S. Wales, commonly known as Kentias: lvs. long and gracefully curving, with many slender long-pointed pinnæ: spadices from the lower axils or nodes where lvs. have recently fallen, with a long peduncle-like part, long and slender and unbranched except perhaps at very base, soon becoming pendent; fls. in 3's in prominent pits, the central one pistillate and developing later; stamens 30–100; ovule basal: fr. ellipsoid-oblong, nearly or quite 1½ in. long, dry and somewhat fibrous outside, stigmatic point terminal, the enlarged perianth small and cup-like; seed 1. For cult. see *Palm.*

Belmoreàna (*Kentia Belmoreana*). Medium-sized tree: lvs. 6 or 7 ft. long, strongly arching; pinnæ crowded, about 1 in. broad at middle, very sharp-pointed, standing in an upward or erect position on the rachis for part their length, not punctate or scaly underneath: spadix solitary, flowering part 2–3 ft. or more long; stamens 30–40.

Forsteriàna (*Kentia Forsteriana. Denea Forsteriana*). Larger and stouter tree, to 60 ft. and more: lvs. mostly larger, standing upright or horizontal, not over-arching; pinnæ not crowded, mostly somewhat broader, hanging, on mature plants punctate-scaly on lower surface under a lens: spadices 3–6 side by side at the node on a short base included in the spathe, the flowering part usually less than 2 ft. long; stamens 80–100.—The more common in cult. being much seen in pots and tubs under glass and for room decoration.

HOỲA. *Asclepiadaceæ.* Many climbing shrubs with thick opposite lvs., wheel-shaped fls. in axillary clusters with a star-shaped crown, and milkweed-like frs.: native from E. Asia to Australia, one grown under glass and in window-gardens.

Hoyas should be grown in a moist warm house and should not be forced in winter. Propagated by cuttings in spring and layering.

carnòsa. WAX-PLANT. Root-climbing to 8 ft. or more: lvs. ovate-oblong, to 4 in. long: fls. white with pink center, ½ in. across, fragrant, in summer. China, Australia. Var. **variegàta** has variegated lvs.

HUAMUCHIL: *Pithecellobium dulce.*

HUCKLEBERRY: *Gaylussacia.* **Garden:** *Solanum nigrum.* **Hairy:** *Vaccinium hirsutum.* **He-:** *Lyonia ligustrina.*

HUDSÒNIA. BEACH-HEATHER. *Cistaceæ.* Small evergreen shrubs of E. N. Amer. with alternate scale-like or awl-like lvs. and solitary yellow fls.

Hudsionias may be colonized in dry places in sandy soil or along the seashore. They are difficult to grow and short-lived. Propagated by seeds and probably by cuttings.

ericoìdes. To 7 in., soft-pubescent: lvs. awl-like, to ⅓ in. long: fls. ⅓ in. across, on slender pedicels. N. S. to N. C.

montàna. To 6 in., tufted, slightly hairy: lvs. awl-like, to ⅓ in. long: fls. ⅓ in. across, on short pedicels. Mts., N. C.

tomentòsa. To 8 in., tufted, hoary-pubescent: lvs. scale-like, densely imbricated, 1/12 in. long: fls. ⅓ in. across, sessile. N. B. to Va., along Great Lakes to Minn.

HUÉRNIA. *Asclepiadaceæ.* Several species of small succulent leafless per. herbs in S. and trop. Afr. and 1 in Arabia: sts. angled and toothed: fls. in cymes or solitary at or near the base of young shoots, mostly campanulate and 5-lobed limb, with crown inside.

áspera. Sts. procumbent or ascending, to 9 in. long, ½ in. thick, obscurely 5–6-angled, somewhat toothed: fls. 3–7 from base of young shoots, corolla dark purple, bell-shaped, about ½ in. deep, roughly papillate, inner corona yellow. Trop. Afr.

barbàta. Sts. erect, to 2½ in. long and ¾ in. thick, acutely 4–5-angled, angles with sharp triangular teeth: fls. light yellow spotted red, corolla-tube to 1 in. long. S. Afr.

brevirόstris (*H. scabra*). Habit and size of *H. barbata:* fls. yellowish-pink dotted purple, corolla to 1¼ in. across, tube to ¼ in. long and crimson at base. S. Afr. Var. **immaculàta,** corolla primrose-yellow without spots but tinged purple at base of tube around corona.

carnòsa: listed name.

clavígera. Sts. to 4 in. tall and 1 in. thick, 4–5-angled, stoutly toothed: fls. broadly bell-shaped, to 1½ in. across, corolla yellowish dotted purple-brown and blood-red becoming solid blood-red in tube, tube to 1 in. long. S. Afr.

decípiens: *Huerniopsis decipiens.*

gibbòsa: *Huerniopsis gibbosa.*

Hýstrix. Sts. 3 in. high and ½ in. thick, 5-angled, with spreading acute teeth: fls. 2–5, yellow marked with crimson, to 1½ in. across, tips of spreading corolla-lobes recurved. Natal.

keniénsis. Sts. ascending, to 6 in. long and ⅝ in. thick, green or reddish, obscurely 5-angled, with subulate lvs. to ⅛ in. long: fls. from st. bases, bell-shaped, to 1¼ in. across, dark purple, minutely warty. S. Afr.

Kírkii. Sts. decumbent, to 1½ in. long and ⅔ in. thick, acutely 5-angled, triangularly toothed: fls. campanulate, pinkish outside, yellowish spotted reddish-brown within, to 2 in. across, tube to ¾ in. long. Transvaal.

Loeseneriàna. Sts. 2½ in. long and ¾ in. square, acutely 4-angled, with triangular acute teeth: fls. 1–2, brownish and brownish-purple, 1 in. across, campanulate, tube ⅓ in. long. Transvaal.

longitùba. Sts. 2 in. long and ¾ in. thick, sharply 4–5-angled: fls. 1–3, creamy-yellow spotted with purple, campanulate, tube to ⅞ in. long. Kalahari.

Nouhùyzii. Similar to *H. Loeseneriana* but with spirally twisted sts. and fls. borne in conspicuous clusters. Transvaal.

oculàta. Sts. suberect, to 2½ in. tall and ¾ in. thick, sharply 5-angled, angles with sharp teeth to ⅜ in. long: fls. green tinged purple outside, lobes blackish-purple within, tube about ¼ in. long, white at base. S. W. Afr.

Pénzigii. Sts. 3 in. or so high and ¾ in. or less thick and spreading teeth nearly ½ in. long: fls. 1–5, blackish-purple, about ¾ in. across and somewhat less in length, roughish with pimples. Nile Land.

Píllansii. Tufted, sts. erect to 1½ in. tall and ⅔ in. thick, densely covered with recurved soft-spiny tubercles to ¼ in. long: fls. pale yellow spotted crimson, to 1¼ in. across, lobes ½ in. long, long-tapered, covered with crimson papillæ, tube to ⅓ in. long, pinkish-cream. S. Afr.

primúlina. Sts. to 1½ in. tall and 1 in. thick, acutely 4–5-angled, teeth with dark colored acute retrorse tips: fls. in groups of 3–8, corolla pale to golden-yellow, outer corona crimson to purple-black. S. Afr.

reticulàta. Sts. erect or ascending, to 4 in. tall and 1 in. thick, acutely 5-angled, teeth acute, spreading: fls. whitish, speckled purple, to nearly 2 in. across, tube blood-red, to ⅜ in. deep, covered with purple hairs. S. Afr.

scàbra: *H. brevirostris.*

Schínzii: listed name, perhaps *Stapelia Schinzii.*

Schneideriàna. Sts. 2 in. but longer in cult., 6–7-angled, teeth inconspicuous: fls. with deep purple center, 1 in. across Nyassaland.

Thurètii. Sts. ascending, to 2 in tall and ⅜ in. thick, acutely 4–5-angled, glaucous, angles acutely toothed: fls. yellowish with blood-red spots, to 1 in. across, tube ⅓ in. deep, blood-red. S. Afr.

transvaalénsis. Sts. 2½ in. long and ½ in. thick, 4–5-angled, with triangular acute teeth: fls. 1–3, 2 in. across, purple with deep purple spreading limb and raised deep purple shining ring around mouth, inside of campanulate tube having long purple hairs. Transvaal.

zebrìna. Sts. to 3 in. long and ⅓ in. thick, 5-angled, with spreading acute teeth: fls. 2, yellow with transverse purple-brown bands, 1¾ in. across, corolla-limb abruptly spreading from tube with thick raised ring around mouth. E. Afr.

HUERNIÓPSIS. *Asclepiadaceæ.* Four S. African succulents allied to Stapelia, distinguished from the closely related Huernia by the corolla having intermediate points or lobes at the sinuses between the primary lobes.

decípiens (*Huernia decipiens* of hort.) Sts. decumbent, to 3 in. long, obtusely 4-angled, with spreading teeth: fls. 1–4 at middle or top of st., brownish-red mottled yellow, 1 in. across, glabrous, crown simple.

gibbòsa (*Huernia gibbosa* of hort.). Sts. decumbent or suberect, 2 in. long, prominently 4-angled, toothed: fls. to 2 in. across, dark purple with yellowish-white corona.

HUFELÁNDIA. *Lauraceæ.* A few trees in Mex., Cent. Amer. and W. Indies, allied to Persea but differing in technical characters, as anthers 2-celled rather than 4-celled; one, the anay, has been intro. experimentally in S. Fla. as a possible fruit plant.

Ánay. Tree to 60 ft. and more: lvs. alternate, oval, to 8 in. long: fls. small, in somewhat pubescent axillary panicles: fr. somewhat like an avocado in looks and flavor, to 6 in. long, narrow-pyriform, glossy purplish-black. Guatemala.

HUGELIA: *Gilia.*

HUISACHE: *Acacia Farnesiana.*

HÚLSEA. *Compositæ.* Ann. or per. herbs native in the mts. of W. N. Amer., something like Actinella, having mostly basal lvs. and large yellow or purple heads of ray- and disk-fls.; pappus of scales. Adapted to alpine-gardens.

álgida. Differs from *H. nana* in the larger heads with narrow linear-attenuate loosely woolly involucral bracts. Ore., Calif.

nàna. Per. to 7 in., sticky-pubescent, white-woolly when young: lvs. linear, to 3 in. long, toothed or pinnately cut: heads with yellow rays ½ in. long and oblong acute involucral bracts. Wash. to N. Calif.

HUMÀTA. *Polypodiaceæ.* Small trop. Asian rhizomatous ferns similar to Davallia and grown like the members of that genus, with leathery triangular or oblong entire or pinnatifid fronds, the sterile less cut than fertile, and sori borne near the margins of segms.

Tỳermannii. Bears-foot-Fern. Rootstock creeping, white-scaly: fronds to 6 in. long, 3–4-pinnatifid. Cent. China.—Sometimes grown in the coolhouse.

HUMBLE-PLANT: *Mimosa pudica.*

HÙMEA. *Compositæ.* Australian herbs or shrubs with small heads of disk-fls. borne in dense corymbs or panicles; pappus none.

Humeas are heavy feeders and need plenty of moisture. The seed may be sown from the first of July till September. In the North the young plants should be kept nearly dry and in a coolhouse in winter in preference to frames, as the foliage is likely to drop in the moisture of the latter. They may be planted in the garden in June. When in 10-inch pots they are very ornamental for the conservatory or piazza.

élegans. Bien. to 6 ft.: lvs. ovate-lanceolate or oblong, to 10 in long, wrinkled, sweet-scented: fls. in loose graceful drooping panicles, ruby-red, rose, pink or brownish-red.

HÙMULUS. Hop. *Moraceæ.* Rough-stemmed tall-twining herbs with opposite broad lobed lvs. and small not showy fls.: staminate and pistillate fls. on different plants, the former small and in loose panicles; pistillate fls. aggregated in heads which in two species become cones or "hops" from the growth of the bracts. Hardy plants grown for ornament and also for the hops employed in brewing, native in N. Amer., Eu. and Asia. Species probably 3.

americànus. Per.: lvs. mostly 5–11-lobed, the lobes attenuate and closely serrate, the terminal lobe about twice as long as broad. N. Amer., probably native in central or western part, its separateness from *H. Lupulus* not yet determined; supposed parent of the Oregon Cluster hop.

japónicus. Ann., or grown as such: lvs. deeply 5–7-lobed, strongly serrate: fr. a loose aggregation of nutlets not much enlarging in maturity and not making true hops, the scales narrow and attenuate. China and Japan. Var. **variegàtus,** foliage streaked and splashed with white.—Grown from seeds for porches and screens.

Lùpulus. Common or European H. Per.: lvs. mostly 3–5-lobed, the lobes about as broad as long and short-pointed, coarsely toothed. Eurasia, and escaped or nat. in N. Amer. Var. **aùreus,** foliage yellow.—Source of most of the hopyard vars.; propagated by cuttings of underground sts.

HUNNEMÁNNIA. *Papaveraceæ.* A Mexican per. herb, much like Eschscholzia, grown as an ann. in the flower-garden. **H. fumariæfòlia.** Mexican Tulip-Poppy. Golden-Cup. To 2 ft.: lvs. ternately dissected, glaucous: fls. yellow, to 3 in. across: fr. linear, to 4 in. long.—Requires a warm sunny exposure. Propagated by seeds.

HÚNTLEYA. *Orchidaceæ.* Trop. American epiphytes with solitary fls. borne on long stalks in axils of clustered two-ranked lvs., the sepals and petals similar, the lip narrowed into a claw having a fringed callus. For cult. see *Orchids.*

Búrtii (*Batemannia* and *Zygopetalum Burtii*). Lvs. to 15 in. long and 2 in. wide: fls. 3–4 in. across; sepals and petals red-brown spotted with yellow, and yellow at base (or light green with petals striped with reddish-lavender); lip brown in front, white at base, with the fringes of callus light purple. July–Aug., Nov. Costa Rica, Panama. Var. **Wállisii** has larger fls.

HÙRA. *Euphorbiaceæ.* Trop. American trees with milky juice which is a powerful irritant, alternate simple lvs., monœcious fls. without petals, and capsular frs.

Sometimes planted for ornament in tropical regions. It does best on a light loamy soil; propagated by cuttings as well as by seeds. Sometimes grown under glass as juvenile specimens.

crépitans. Sandbox-Tree. Great tree to 100 ft., the branches often spiny: lvs. broadly ovate, toothed, to 2 ft. long: fls. red: fr. about 3 in. across, many-ribbed, splitting forcibly into parts when ripe. W. Indies, Costa Rica, S. Amer.

HUTCHÍNSIA. *Cruciferæ.* Little ann. and per. draba-like herbs of Eu. and S. W. Asia, employed in alpine- and rock-gardening: lvs. pinnate or entire: fls. small, white, in close racemes: fr. or silicle short-oblong or oval.

alpìna (*H. Auerswaldii*). Per., tufted, 1–4 in. high: lvs. basal, 1 in. or less long, petioled, pinnatisect into oval or oblong lobes: fls. pure white, spring and summer. Mts., Eu.

Auerswáldii: *H. alpina.*

brevicaùlis. Similar to *H. alpina* and perhaps a form of it, but lower, the st. scarcely exceeding the lvs.: lvs. pinnate into 1–3 pairs of lfts. Pyrenees.

stylòsa (*Iberis stylosa*). Bien.: lvs. obovate-oblong or oblong, nearly entire, petioled: fls. white, in corymbs. Italy.

HYACINTH: *Hyacinthus.* Giant Summer-: *Galtonia candicans.* Grape-: *Muscari.* Pine-: *Clematis Baldwinii.* Star-: *Scilla amœna.* Water-: *Eichhornia crassipes.* Wild-: *Brodiæa lactea.*

HYACÍNTHUS. Hyacinth. *Liliaceæ.* Bulbous herbs with narrow basal lvs. and red, blue, white or yellow fls. in racemes terminating the scape, the perianth-segms. partially united into a tube. Only one species is in general cult., and this is popular both for the open garden and for forcing under glass for late winter bloom.

amethýstinus. To 6 in.: fls. light blue, nodding. Spain. Var. **álbus,** fls. white.

azùreus: *H. ciliatus.*

cándicans: *Galtonia candicans.*

ciliàtus (*H. azureus. Muscari azureum*). To 1 ft.: lvs. somewhat strap-shaped and acute with strongly ciliate margins: fls. to ½ in. long, campanulate, in erect racemes but hanging from lax peduncles to 2 in. long. S. Eu.

orientàlis. Common H. To 1½ ft.: lvs. to 1 ft. and more long and 1 in. across: fls. of many colors, about 1 in. long, often double, in early spring. Greece to Asia Minor. Var. **álbulus,** Roman H., is smaller and earlier, with white to light blue fls.

plumòsus: *Muscari comosum* var. *monstrosum.*

prínceps: *Galtonia princeps.*

romànus (*Bellevalia romana*). To 1½ ft.: lvs. weak and prostrate, linear-lanceolate: fls. greenish-white shaded blue at base, about ⅓ in. long, in 20–30-fld. conical racemes, in spring. Medit. region.

The hyacinth is hardy in the United States and Canada, giving its bloom in early spring with the midseason tulips. Strong carefully grown and selected bulbs must be employed if best results are to be obtained. The bulbs may be planted, in the North, September and October, the bottom of the bulb being 5 or 6 inches below the surface in properly prepared well-drained ground; they may be planted about 5 to 6 inches apart. Mulch thoroughly for the winter if the place does not become naturally covered with autumn leaves. The bulbs may remain permanently if the leaves are allowed to grow after bloom and they are not crowded out by grass and weeds; or if the bed becomes too thick and weak, the bulbs may be lifted and the better ones replanted, preferably in another place.

For winter bloom, bulbs are set in pots or boxes in October, in a porous soil of loam and leaf-mold, lightened with sand if necessary to keep it friable and open; usually the bottom of the pot or box is covered with clinkers, charcoal or other material for drainage; and if boxes are employed they must have holes or cracks in the bottom. The tip of the bulb is allowed to show at the surface of the soil or to be barely covered. A large bulb is sufficient for a 5-inch pot: specially made hyacinth pots are deeper than the ordinary kind and preferable. The pots are placed in a coldframe or similar place to allow the bulbs to root, being covered a few inches deep with soil or sifted coal ashes. In six to eight weeks the roots will have formed and the pots or boxes may be brought into a room with a temperature of about 50°. Here they are allowed to remain till the shoots are vigorous, stocky and dark green, when they may be brought to the living-room, some of them perhaps being left in the intermediate temperature to provide succession. If the bulbs are not well rooted when brought in from the frame, so that the roots fill the pot, the results will not be satisfactory. After the bloom is past the bulbs are discarded.

Hyacinths are sometimes bloomed in glasses, that are made for the purpose and may be had of dealers in garden supplies. There is a flange at the top to hold the bulb; the glass is kept filled with water up to the bottom of the bulb. It is well to place a few pieces of charcoal in the bottom of the glass as it is supposed to keep the water sweet. The glasses are set aside in a dark cool place for the bulbs to form roots the same as in soil, although quicker results are usually obtained with water culture. Roots having reached the bottom of the glass, receptacles are brought to an intermediate temperature and handled as for potted plants.

Propagation of the hyacinth is by means of bulblets or offsets from the old bulb, which should give blooming bulbs in two or three years. The production of bulblets is stimulated by variously cutting the bulb, but the home gardener would better depend on the commercial supply.

HYALIS: *Ixia.*

HYBRID, in its historic application, is a product of a sex-cross between two or more species. In a broader but less desirable usage, it is the product of any cross independently of whether the parents are species or marked varieties. In a looser way the word is sometimes employed for plants that appear to be intermediate between given or assumed parents, even without record that the cross has been made or that it is possible, as if it were merely another word for variation. For exact description and record it is desirable that the word be employed as definitely as are the words species, variety, forma, in systematic horticulture and botany. A half-hybrid is a sex-product between a species and a variety of another species; a cross-breed between plants of one species. A sex-product of plants of two genera is a bigener or bigeneric hybrid.

HYDASTYLUS: *Sisyrinchium.*

HYDATICA: *Saxifragra leucanthemifolia.*

HYDRÁNGEA. *Saxifragaceæ.* Ornamental woody plants, mostly deciduous shrubs, sometimes vines climbing by means of rootlets, or even tree-like, with showy white, pink or blue fls. in terminal panicles or cymes in summer, some of the marginal fls. usually enlarged and sterile and in some cult. races all the blossoms are of this form: lvs. medium-sized or large, opposite and simple, variously toothed or lobed: native in N. and S. Amer. and Asia.

Hydrangeas require a rich porous and somewhat moist soil; they bloom most freely in full sun but thrive well also in partial shade. They should be pruned rather severely in the fall or early spring. The hardy species are propagated by green cuttings in summer under glass; the tender ones by cuttings taken at any time from vigorous young wood, usually in late winter. Suckers can be separated from some species, while layering is occasionally employed in others. *H. quercifolia* is increased by little suckers or "root pips;" *H. paniculata* easily from young wood taken in June and planted under glass. Seeds may be employed when available.

arboréscens. Erect, to 10 ft.: lvs. ovate, to 8 in. long, glabrous or slightly pubescent beneath: fls. white, in rounded or globular clusters to 6 in. across, the sterile ones few. June–July. N. Y. to Fla. and La. Frequently planted, especially var. **grandiflòra,** Hills-of-Snow, with large clusters of clear white sterile fls. Var. **cordàta** (*H. cordata*) has broad lvs. cordate at base, but may not be distinct from the typical form. Var. **stérilis** has all fls. sterile.

Bélzonii: *H. macrophylla* var. *cærulea.*

Bretschneìderi (*H. vestita* var. *pubescens.* *H. pekinensis*). To 10 ft.: lvs. ovate to oblong-ovate, to 5 in. long, pubescent beneath: fls. white, the sterile becoming purplish, in corymbs to 6 in. across. July. N. China.

cinèrea. To 6 ft.: lvs. elliptic to ovate-oblong, to 6 in. long, gray-tomentose beneath: fls. white, in corymbs to 8 in. across, the sterile fls. few. N. C. to Ga. and Ala. Var. **stérilis,** fls. sterile.

cordàta: *H. arborescens* var.

cuspidàta: *H. serrata.*

Horténsia, horténsis: *H. macrophylla.*

involucràta. To 7 ft.: lvs. elliptic to oblong, to 10 in. long, acuminate, base cuneate, sharply serrate, densely appressed-pubescent: fls. whitish to pink, sterile ones to 1¼ in. across. Japan.

japónica: *H. macrophylla* var. *rosea.*

macrophýlla (*H. opuloides.* *H. hortensis.* *H. Hortensia*). To 12 ft.: lvs. elliptic to broad-ovate, to 8 in. long, often nearly as broad, glabrous or slightly pubescent beneath, more or less thick and shining: fls. blue, pink or white, in flat or roundish cymes to 8 in. across. June–July. China, Japan.—Grown in the open in mild regions and often forced in the greenhouse. There are many cult. vars. as: **cærùlea** (*H. Belzonii*), fls. deep blue with blue or white ray-fls.; **Horténsia,** fls. all sterile, pink to blue; **mandshùrica** (*H. opuloides* var. *cyanoclada*), fls. rose, mostly sterile; **Marièsii,** ray-fls., rose-pink, to 3 in. across, entire or slightly toothed; **otáksa** (*H. otaksa*) is dwarfer with mostly sterile fls.; **ròsea** (*H. japonica*), sterile fls. pink, in flat clusters; **Veìtchii** (*H. Hortensia* var. *japonica rosea*), sterile fls. deep rose.

nívea: *H. radiata.*

opuloìdes: *H. macrophylla.*

otáksa: *H. macrophylla* var.

paniculàta. Shrub or tree-like, to 30 ft.: lvs. elliptic to ovate, to 5 in. long, pubescent beneath: fls. whitish, in a panicle to 15 in. long, the sterile ones few, long-pedicelled, changing to purplish. Aug.–Sept. China, Japan. Var. **grandiflòra,** Peegee H., is the common outdoor hydrangea with large long panicles in which many or most of the fls. are sterile, large, persistent and showy. Var. **prǽcox,** fls. about six weeks earlier than type. Var. **tardìva,** late-flowering.

pekinénsis: *H. Bretschneideri.*

petiolàris (*H. scandens.* *H. volubilis*). Tall root-climber reaching to 50 ft. or more but making a straggling partly decumbent bush when support is not provided: lvs. broad-ovate, to 4 in. long, nearly glabrous: fls. in nearly circular open clusters to 10 in. across, the few white sterile fls. on very long pedicels. June–July. Japan.

quercifòlia. To 6 ft., young parts brown-tomentose: lvs. to 8 in. long and nearly as broad, strongly 3–5-lobed, whitish-tomentose beneath: fls. in a panicle to 1 ft. long, with many white sterile fls. turning purple. June. Ga. to Fla. and Miss. but hardy well N.

radiàta (*H. nivea*). Erect, to 8 ft.: lvs. ovate to ovate-lanceolate, to 5 in. long, white-tomentose beneath: corymbs rounded, to 5 in. across, with white sterile fls. about the margin. N. C., S. C.

Sargentiàna. To 6 ft.: lvs. ovate or ovate-oblong, to 10 in. long, hairy: fls. pale violet, in flat corymbs to 6 in. across, with white sterile fls. July–Aug. China.

scándens: *H. petiolaris.*

serràta (*H. Thunbergii. H. cuspidata*). To 6 ft.: lvs. elliptic to lanceolate, to 4 in. long, more or less pubescent, dull: fls. blue or white, in flat corymbs to 3 in. across, with few small sterile fls. July–Aug. Japan, Korea. Var. **acuminàta** (*H. opuloides* var. *acuminata*), lvs. to 7 in. long, caudate-acuminate, fls. usually blue. Var. **prolífera** (var. *stellata*, *H. stellata*, *H. opuloides* var. *stellata*), sepals narrow and pointed. Var. **rosálba,** sterile fls. white and pink.

stellàta: *H. serrata* var. *prolifera.*

strigòsa. To 8 ft.: lvs. oblong-ovate to lanceolate, to 7 in. long, stiff-hairy beneath: corymbs to 6 in. across, the sterile fls. white or purplish. Aug. China. Var. **macrophýlla** has lvs. to 1 ft. long and cymes to 8 in. across.

Thúnbergii: *H. serrata.*

vestìta var. **pubéscens:** *H. Bretschneideri.*

volùbilis: *H. petiolaris.*

xanthonèura. To 15 ft.: lvs. elliptic, to 7 in. long, slightly pubescent beneath: fls. white, in convex corymbs to 6 in. across, with sterile fls. W. China. Var. **setchuenénsis** has lvs. more hairy below. Var. **Wilsonii** has oblong lvs. shining above.

HYDRANGEA-VINE: *Schizophragma hydrangeoides.*

HYDRÁSTIS. *Ranunculaceæ.* Low per. herbs with palmately lobed lvs., small solitary fls. with 3 petal-like sepals, no petals and numerous stamens, and fr. a head of crimson berries; 1 species in Japan, 1 in E. N. Amer., the latter grown or gathered for the roots which have medicinal properties.

Hydrastis requires rich moist soil with plenty of leaf-mold. For commercial plantations lath coverings are often used or trees to simulate the native woods conditions. Propagated by seeds or by division of roots.

canadénsis. Goldenseal. Orange-Root. To 1 ft., the rootstock thick and yellow: basal lvs. to 8 in. across, 5–9-lobed; st.-lvs. 2, the upper one sessile under the fl.: fls. greenish-white, ⅓ in. across. Conn. to Ga. and Kans.

HYDRIASTÈLE. *Palmaceæ.* Three or 4 tall unarmed pinnate-lvd. palms of Australia and New Guinea. Known to planters in the western hemisphere by the name *H. Wendlandiana* but the palm so planted is really *Ptychosperma elegans.* The true Hydriasteles are apparently not planted in our territory.

HYDRÓCHARIS. *Hydrocharitaceæ.* Aquatic floating herbs with long-stalked round lvs. and white unisexual fls.; grown in the aquarium. Propagated by cuttings or long runners and naturally by the winter-buds which form in the fall.

Mórsus-ránæ. Frogs-Bit. Roots fine and silky: lvs. 2 in. across, heart-shaped at base: fls. nearly or quite 1 in. across. Eu., E. Asia.

HYDROCHARITÀCEÆ. Frogs-Bit Family. Aquatic herbs of 14 genera over the world, with mostly unisexual fls. from a bracted spathe, having perianth of 3 calyx-like and 3 petal-like parts, 3–12 stamens, and inferior 1-celled ovary. Some of them are submerged plants, the fls. often coming to the surface on long very slender stalks; others are floating. Elodea, Hydrocharis, Stratiotes and Vallisneria are sometimes grown in ponds and aquaria.

HYDRÒCLEYS. *Butomaceæ.* Three Brazilian aquatic herbs with basal lvs. and large fls. with 3 leathery sepals and 3 fugacious petals.

Of easy cultivation in ponds and aquaria. When grown in tubs, soil should be put in to two-thirds the depth and then filled with water. Propagated by division of rooting stems.

nymphoìdes (*Limnocharis Humboldtii*). Water-Poppy. Lvs. floating or sometimes erect, broadly ovate, glossy above: fls. yellow, 2 in. across, in clusters.—Tender N.

HYDROCÓTYLE. *Umbelliferæ.* Creeping per. herbs with nearly or quite orbicular sometimes peltate palmately lobed or veined lvs. usually crenate, small white fls. in little umbels, and strongly compressed frs.; sometimes grown for carpet-bedding and ground-cover in moist locations. Propagated by seeds, cuttings or layers.

pedunculàris. Creeping, densely matted, sts. covered with imbricated stipules: lvs. orbicular-cordate or kidney-shaped, ⅛ in. long, 5-lobed: heads with slender peduncles. Tasmania.

rotundifòlia. Rooting at nodes: lvs. nearly circular, 1 in. across, toothed or lobed, shining. Trop. Asia, Afr.

HYDRÒLEA. *Hydrophyllaceæ.* Ann. or per. herbs widely distributed in warm regions, having alternate entire lvs. and wheel-shaped fls. mostly in corymbs; one sometimes planted in warm countries.

spinòsa. Per. to 4 ft., sticky-pubescent: lvs. oval or oblong, to 5 in. long: fls. blue, ½ in. across, fragrant. Trop. and subtrop. Amer.

HYDROPHYLLÀCEÆ. Water-Leaf Family. About 18 herbaceous genera of wide distribution, especially in N. Amer., and a few of the plants woody, some of them grown for ornament. Family characterized by the mostly alternate lvs., regular fls. with corolla united, 1- or 2-celled superior ovary with 2 separate or united styles, and fr. a dehiscent caps.; the related Polemoniaceæ has a single 3-lobed style and 3-celled ovary. Genera in cult. are Emmenanthe, Eriodictyon, Hesperochiron, Hydrolea, Hydrophyllum, Nemophila, Phacelia, Pholistoma, Romanzoffia, Wigandia.

HYDROPHÝLLUM. Water-Leaf. *Hydrophyllaceæ.* N. American bien. and per. woods herbs with large, thin, pinnately or palmately divided lvs. and rather small bell-shaped white, blue or purple fls. in cymes, the stamens exserted; sometimes transplanted to the wild-garden.

appendiculàtum. Bien. to 2 ft.: basal lvs. pinnately 5–7-divided, st.-lvs. palmately lobed, hairy: fls. purple or violet, calyx with reflexed lobe at each sinus. N. E. U. S.

canadénse. Per. to 2½ ft.: lvs. to 1 ft. across, palmately 5–9-lobed, toothed: fls. greenish-white or purplish. Vt. to N. C. and Ky.

capitàtum. To 8 in. or more, grayish-puberulent: lfts. 5–7, to 2 in. long, often 2–3-cleft and again lobed, ultimate segms. ovate: fls. to ⅓ in. high, in a capitate-cymose infl., calyx hispid, the lobes linear-lanceolate. Mont. to B. C. south to Colo. and Calif.

virginiànum. Per. to 3 ft.: lvs. to 10 in. long, pinnately divided into 5–7 toothed segms.: fls. white or violet-purple. Que. to S. C. and Kans.

HYDROPONICS: see *Soilless Gardening.*

HYDRÓSME. *Àraceæ.* Herbs native in trop. Afr., E. Indies and Cochin-China, differing only in seed characters from Amorphophallus.

Rivièri (*Amorphophallus Rivieri*). Devils-Tongue. To 4 ft.: lvs. to 4 ft. across, the petioles spotted with brown and white; lf.-blade pedately decompound into broad pointed segms.: spathes ovate, 1 ft. long, green spotted white and purplish toward the wavy margins. Cochin-China.

HYDRÓTRIDA. *Scrophulariaceæ.* A small American genus of aquatic and semi-aquatic plants of lax habit, orbicular palmately-veined lvs. and blue campanulate and irregular fls. It has been confused with the monotypic genus Herpestis from which it differs in bracted pedicels, acute caps. and styles united entire length. Propagated by seeds or by division of stolons.

caroliniàna (*Herpestis amplexicaulis*). Per., stoloniferous, sts. creeping or ascending to 2 ft., little branched: lvs. ovate, sessile, somewhat parallel-veined, punctate, margins ciliate or glabrous, entire: fls. blue, to ⅜ in. long, solitary on peduncles to ¾ in. long in axils. June–Oct. Wet pine-barrens, N. J. to Fla. and west to La.

HYLÌNE. *Amaryllidaceæ.* A small genus from Brazil resembling Pancratium. One species, **H. Wórsleyi,** may be cult. To 15 in. high, bulbs producing offsets: lvs. 8–14, usually 10–20 in. long and 2½ in. wide, acute: fls. usually 2, white with greenish base, to 6 in. across, opening at night and closing the next morning, segms. to 7 in. long and ½ in. wide, becoming recurved and twisted, the lowest one supporting the filaments: seeds not known. Cult. as for *Eucharis.* Generic name is pronounced in three syllables.

HYLOCÈREUS. *Cactaceæ.* Climbing and often epiphytic, the long sts. commonly 3-angled or 3-winged and bearing aerial roots, mostly with short spines: fls. nocturnal, very large, with large leaf-like scales but no spines or wool, white or red. Mex., Cent. Amer., W. Indies, N. S. Amer. *H. undatus* is much cult., and has run wild in trop. countries; greenhouse plant in the N.

calcaràtus (*Cereus calcaratus*). Climber, joints 2 in. wide more or less, green, strongly 3-winged, margins lobed, areoles with 2–4 white bristles and no spines: fls. not described. Costa Rica.

costaricénsis (*Cereus trigonus* var. *costaricensis*). Vine, joints to 4 in. wide, usually 3-angled; spines 2–4 and short and at first usually with 2 white bristles: fls. about 1 in. long, very fragrant, pure white, reddish outside. Costa Rica.

exténsus. Sts. obtusely triangular, to 1½ in. diam.; spines 2–3, short and thick: fls. white or pale pink within and yellowish-green to purplish outside, to 3 in. long. Lesser Antilles.

Lemàirei (*Cereus Lemairei*). Tall vine, 3-angled and rooting on one side, about 1 in. diam.; spines usually 2 and very short: fls. about 10 in. long, white, reddish outside, odorous, stigma-lobes divided. Trinidad, Tobago.

monacánthus (*Cereus monacanthus*). Sts. 3-angled, margins undulate; spine commonly 1 (sometimes 2) at an areole: fls. funnelform, about 11 in. long and 7 in. broad, white, greenish outside and rose-colored at base. Panama, Colombia.

ocampònis (*Cereus ocamponis*). Strongly 3-angled, glaucous; spines 5–8 and needle-like: fls. to 12 in. long and broad, white, greenish outside. Probably Mex.

polyrhìzus (*Cereus polyrhizus*). Sts. triangular at joints, to 1½ in. thick, green becoming grayish-white, margins obtuse; spines 2–4, to 3/16 in. long: fls. to 1 ft. long, inner segms. white, outer ones reddish. Panama, Colombia.

stenópterus (*Cereus stenopterus*). Weak vine, joints 1½ in. broad, not glaucous; ribs 3 and thin; spines 1–3 and yellow: fls. 4 in. or more long, reddish-purple. Costa Rica.

triangulàris (*Cereus triangularis*: see *H. undatus*). Vine, sharply 3-angled, to 1½ in. broad, with many aerial roots; spines mostly 6–8 and needle-like: fls. 8 in. or more long, white. Jamaica.

tricostàtus: *H. undatus.*

trigònus. Climbing, joints 1 in. diam., 3-angled, the margins very wavy; spines usually 8 and to ¼ in. long: fls. similar to *H. undatus.* W. Indies.

undàtus (*Cereus undatus. C. tricostatus. C.* and *Selenicereus triangularis* of hort. *Heliocereus undatus*). Long-clambering; ribs usually 3 and thin, margins undulate; spines 1–3 and small: fls. to nearly 1 ft. long, white, yellowish-green outside. Tropics and subtropics.—Much cult., and one of the plants best known as night-blooming cereus.

HYMENÆA. *Leguminosæ.* Trop. American trees, one species yielding a resin which is used for medicinal purposes and as a varnish and also furnishing valuable timber. **H. Courbarìl.** West Indian Locust. To 60 ft.: lvs. of 2 oblong to ovate lfts.: fls. white, in terminal panicles: pods thick and woody, rough, to 5 in. long.—Propagated by seeds or by cuttings over heat.

HYMENÁNTHERA. *Violaceæ.* Stiff shrubs with alternate or clustered simple lvs., small bisexual or unisexual fls. and fr. a small berry; grown out-of-doors in S. Calif. Propagated by seeds, cuttings and layers.

chathámica. Tall shrub: lvs. leathery, lanceolate, to 5 in. long, sharp-toothed: fls. diœcious, in clusters along the branches: berry white. New Zeal.

crassifòlia. To 5 ft., sometimes prostrate, much branched: lvs. leathery, linear-obovate, to 1½ in. long, entire or margins wavy: fls. few in the axils: berry purplish. New Zeal.

dentàta. Tall much branched shrub: lvs. leathery, oblong to linear, to 1½ in. long, remotely toothed: fls. solitary or in 2's: berry purplish. Australia.

nòvæ-zelándiæ. To 10 ft.: lvs. leathery, ovate or obovate, to 4 in. long, usually wavy-toothed: fls. diœcious, clustered: berry purplish. New Zeal.

obovàta. To 12 ft.: lvs. obovate, to 2 in. long, entire or slightly toothed: fls. diœcious, solitary or few: berry purplish. New Zeal.

Tràversii. Small tree: lvs. leathery, obovate, to 1 in. long, margins reflexed, covered below with silvery-white tubercles: fls. solitary, very small. New Zeal.

HYMENATHERUM: *Thymophylla tenuiloba.*

HYMENOCÁLLIS. Spider-Lily. *Amaryllidaceæ.* American summer-flowering bulbous herbs with linear or strap-shaped basal lvs. and mostly white fls. borne in umbels terminating the solid scapes, the perianth with narrow segms. and long tube, the stamens united into a cup-like crown below.

Of easy cultivation in warm climates where the bulbs will bloom year after year if given good care. Propagated by offsets.

americàna. To 2½ ft.: lvs. to 2½ ft. long and 2½ in. broad: fls. with tube 4 in. or more long and linear segms. about same length; crown toothed, 1 in. long, the filaments of the stamens to 2 in. long. Trop. Amer.

calathìna (*Pancratium calathinum. Ismene calathina*). Basket-Flower. To 2 ft.: lvs. to 2 ft. long and 2 in. broad: fls. with tube to 4 in. long and lanceolate segms. about same length; crown funnel-shaped, the lobes fringed, 2 in. long, the filaments of stamens ½ in. long. Andes of Peru and Bolivia. Var. **sulphùrea,** fls. said to be pale yellow.—Probably the most frequent kind in cult.

caribæ̀a. Lvs. 1 ft. and more long and 3 in. wide, shining: fls. fragrant, the tube to 3 in. long and linear segms. about same length; crown toothed, about 1 in. long, the filaments of stamens to 2 in. long. Lesser Antilles.—Much of the material in trade referred to this species belongs to *H. keyensis.*

crassifòlia. Lvs. sessile, strap-shaped, to 2 ft. long and 2 in. across at middle: fls. to 6 in. long with tube somewhat shorter than segms. S. U. S. and Bahamas.

festàlis. White-fld. hybrid between *H. calathina* and *Elisena longipetala.*

galvestonénsis. To 2 ft.: lvs. linear, 2 ft. or more long: fls. with tube to 3 in. long and linear segms. slightly longer; crown funnel-shaped, 1¼ in. long, the filaments of stamens ½ in. long. Tex.

Harrisiàna. Lvs. sessile, oblanceolate, to 1 ft. long, somewhat erect: fls. with greenish slender tube to 4 in. long, segms. shorter and whitish. Mex.

keyénsis. Similar to *H. caribæa,* differing in perianth-segms. shorter than tube and lvs. distinctly arching and not flat or nearly so. Fla.—Perhaps not distinct from *H. caymanensis* of the Bahamas and Cuba.

macrostéphana. Lvs. to 3 ft. long and 3 in. wide: fls. with tube 3 in. long and linear-lanceolate segms. somewhat longer; crown large, 2 in. long, the filaments of stamens 1 in. long. Probably a hybrid.

occidentàlis. Lvs. to 1½ ft. long and 1¼ in. wide, glaucous: fls. with tube to 4 in. long and linear segms. about same length; crown to 1¼ in. long. S. C. to Mo. and Miss.

rotàta. Stoloniferous: lvs. 1½ ft. long and 1 in. or less wide: fls. with tube to 4 in. long and linear segms. of about same length; crown rotate, 1 in. long, the filaments of stamens 1½ in. long. N. C. to Fla.

speciòsa. Lvs. petioled, oblanceolate, to 2 ft. long, acute: fls. greenish, tube to 3 in. and segms. to 2 in. long. W. Indies.

tenuiflòra. Lvs. sessile, ensiform, to 2½ ft. long, somewhat erect: fls. with slender tube to 6 in. long and very narrow segms. to 4 in. long. Colombia.

HYMENOCÝCLUS. *Aizoaceæ.* Branched woody perennials of the Mesembryanthemum group, and often put in the genus Malephora: lvs. half-cylindrical, united at base: fls. golden-yellow, stalked: S. Afr.

cròceus (*M. croceum*). To 2 ft., much branched: lvs. to 2 in. long and ⅓ in. wide, pale green: fls. reddish outside, 1 in. across, solitary and terminal.

Hérrei. Branches prostrate: lvs. to 2 in. long and ¼ in. wide: fls. axillary, orange outside, 2 in. across.

latipétalus. Branches spreading or decumbent, to 5 in. or more long: lvs. to 1 in. long and ⅕ in. wide and thick, purplish: fls. 1¼ in. across.

lutèolus (*M. luteolum*). To 1 ft., much branched: lvs. to 1½ in. long, slightly recurved: fls. numerous, less than 1 in. across.

purpùreo-cròceus (*M. purpureo-croceum*). Similar to *H. croceus:* fls. in shades of orange and crimson, blooming continuously.

Thúnbergii (*M. Thunbergii* and *læve*). Prostrate, with short erect branches 1 ft. or more: lvs. somewhat curved, punctate, to 2½ in. long: fls. solitary, reddish outside, petals twice longer than calyx.

HYMENODIUM: *Elaphoglossum crinitum.*

HYMENOPÁPPUS. *Compositæ.* Bien. or per. American herbs, having angled sts., dissected lvs. and heads of white or yellow discoid fls. with colored petal-like involucral bracts. Adapted to the wild garden or hardy border, doing best in a loose well-drained soil. Propagated by seeds or division.

carolinénsis (*H. scabiosæus*). Bien. to 3 ft., sts. woolly becoming glabrate: lvs. 1–2-pinnatifid, to 6 in. long, lobes linear-oblong, obtusish, green above and white-tomentose beneath: disk-fls. and involucral bracts white, in many corymbose heads to ¾ in. across: pappus of very small scales. S. C. to Fla. west to Ill. and Tex.

scabiosæ̀us: *H. carolinensis.*

HYMENÓSPORUM. *Pittosporaceæ.* One Australian evergreen shrub or tree to 50 ft., planted out-of-doors in S. U. S. **H. flàvum.** Lvs. obovate, entire, to 6 in. long: fls. yellow and prominent, 1½ in. long, the petals united into a tomentose tube about 1 in. long, borne in loose terminal umbel-like panicles: caps. 1 in. long, the seeds winged. Cult as for *Pittosporum.*

HYMENOSTEMMA: *Chrysanthemum Fontanesii.*

HYMENOXYS CALIFORNICA: *Baeria aristata.*

HYOPHÓRBE. Pignut Palm. *Palmaceæ.* Unarmed monœcious feather-palms of the Mascarene Isls., the 2 species cult. having conspicuous swollen or bulging trunks: stocky trees as usually seen in cult., with the pinnæ close together on the rachis, the lf.-sheaths surrounding the trunk at the top: infl. below the lf.-crown, the branches many and making a bushy mass; spathes ascending club-shaped before anthesis: fls. very small, 3–7 together on the strands of which the lowermost 1 or 2 are pistillate; stamens 6: fr. a small purplish oblong drupe 1 in. or less long; albumen homogeneous. Sometimes planted in the open in S. Fla.; *H. Verschaffeltii* is the commoner species in the U. S. See *Palm.*

amaricaùlis (*Areca speciosa*). Bottle Palm. To 60 ft. in native isls., the trunk stout and tapering to a bottle-like neck at top: petiole mostly 1 ft. or more long on mature tree; pinnæ short, about 18 in. or less long, with prominent side nerves.

Verschafféltii (*Areca Verschaffeltii*). Spindle Palm. To 30 ft., trunk bulging above the base or near the middle and tapering to top: petiole about 3–4 in. long; pinnæ mostly 2 ft. or more long, only the midvein prominent.

HYOSCỲAMUS. Henbane. *Solanaceæ.* Coarse erect or prostrate herbs with alternate coarsely toothed or deeply cut lvs., axillary funnel-shaped fls., the upper ones forming a leafy cluster or spike, and capsular frs.; native in the Medit. region, a few grown for ornament and medicinal purposes.

álbus. Sticky-hairy ann. or per.: lvs. nearly orbicular, coarsely triangular-lobed, all petioled: fls. pale yellow, green or purple at base, nearly sessile.

aùreus. Sticky-hairy per. with decumbent branches: lvs. cordate-ovate, sharply triangular-lobed, all petioled: fls. yellow, violet at base, peduncled.

nìger (*H. pictus*). Bien. or ann. to 2½ ft., with spindle-shaped roots: lvs. oblong, to 8 in. long, irregularly cut and toothed, clasping or lower petioled: fls. greenish-yellow veined with purple, sessile: caps. inclosed in the large calyx.

píctus: *H. niger.*

HYPERANTHERA: *Moringa.*

HYPERICÀCEÆ. St. JohnsWort Family. The species planted in our territory are herbs or subshrubs native in many countries, characterized by opposite or whorled pellucid-dotted or black-dotted simple mostly entire lvs.: fls. polypetalous, mainly yellow, cymose or solitary, regular and bisexual, with many stamens commonly united into clusters, styles separate: fr. a caps. By some authors the family is united with Guttiferæ. Only the genera Ascyrum, Cratoxylon and Hypericum require attention here.

HYPÉRICUM. St. JohnsWort. *Hypericaceæ.* A large genus of yellow-fld. herbs and small shrubs furnishing much ornamental material for planting in borders, shrubberies or the rock-garden, with the characteristics of the family, differing from Ascyrum in fls. 5-merous and from Cratoxylon in caps. dehiscing septicidally and seeds not winged. Pronounced also *Hyperì-cum.*

The hypericums are of easy cultivation, some of them preferably in shady situations. Propagated by seeds, greenwood cuttings under glass in summer and the low kinds by division and suckers. Most of the species are hardy to New York and New England, unless otherwise noted.

adpréssum. Per. or subshrub to 2 ft.: lvs. oblong or lanceolate, to 2 in. long: fls. ½ in. across, in terminal cymes; styles 3. Mass. to Ga. and La.

anagalloìdes. Ann. or per. with procumbent or ascending branches to 1 ft. long: lvs. elliptic or oval, to ½ in. long: fls. very small, in few-fld. cymes. B. C. to Mex.

Androsæ̀mum. Tutsan. Shrub to 3 ft., semi-evergreen: lvs. ovate to ovate-oblong, to 4 in. long, whitish beneath: fls. 1 in. across, solitary or in cymes; styles 3. Eu., W. Asia; for central or southern states.

Arnoldiànum. Hybrid between *H. lobocarpum* and *H. galioides.*

Ascyron. Per. to 6 ft.: lvs. ovate-oblong, to 5 in. long: fls. to 2 in. across, in few-fld. cymes. Que. to Pa. and Kans., N. Eu., N. Asia.

aspalathoìdes. Evergreen shrub to nearly 3 ft.: lvs. subulate, to ⅓ in. long, with much shorter ones clustered in axils: fls. very bright orange-yellow, about ½ in. across, sepals less than ½ petal length. N. C. to Fla. and La., coastal plain.—Material in cult. may be *H. fasciculatum;* the two species are separated by some authors.

aùreum: *H. frondosum.*

austràle. Per. to 1 ft.: lvs. elliptic or linear-oblong: fls. in few-fld. corymbs, yellow veined red; styles 3. Medit.

baleáricum. Low shrub to 1 ft. or more, twigs warty: lvs. oval, to ⅓ in. long: fls. yellow, solitary, to 1½ in. across, terminal. Medit. region.

barbàtum. Per. to 3 ft.: lvs. lanceolate to ovate, to 1½ in. long, acute, glabrous, punctate, margins slightly revolute: fls. yellow-orange, to 1 in. across, usually 3–8 in loose panicles. E. Eu.

Búckleii. Subshrub to 1 ft.: lvs. obovate, to ¾ in. long: fls. 2 in. across, 1–3 together; styles 3. N. C. to Ga.; to be planted far S.

calýcinum (*H. grandiflorum*). Shrub to 1 ft., evergreen: lvs. ovate-oblong to oblong, to 4 in. long, glaucous beneath: fls. to 2 in. across, solitary or in cymes; styles 5. S. E. Eu., Asia Minor.

canariénse. Shrub to 15 ft.: lvs. oblong-lanceolate, to 3 in. long: fls. to 1¼ in. across, in panicles. Canary Isls.; far S. or Calif.

chinénse. Shrub to 2 ft., semi-evergreen: lvs. oblong, to 3 in. long: fls. 2 in. across; styles 5-parted at apex. China; to be planted far S.

cistifòlium. Subshrub to 3 ft., stoloniferous: lvs. oblong to linear-lanceolate, to 3 in. long, revolute: fls. ½ in. across, in loose cymes; styles 3. Ohio to Ill. and Ark.

cólchicum: catalogue name of plant listed as having evergreen foliage and large yellow fls.

Còris. Subshrub to 1 ft.: lvs. narrow-linear, to 1 in. long:

fls. ¾ in. across, in cymes; styles 3. Eu.; adapted only to southern states.

córsicum. Herb to 8 in., sts. glabrous, 4-sided: lvs. broadly ovate, obtuse, with minute pellucid dots: fls. yellow veined purple, minute, usually 1–3 borne terminally. Corsica, Cent. Spain, Crete.

densiflòrum. Shrub to 6 ft., evergreen: lvs. linear-oblong to linear, to 2 in. long: fls. to ½ in. across, in dense cymes; styles 3. N. J. to Fla. and Tex.

Dỳeri (*H. lysimachioides*). Shrub to 4 ft.: lvs. ovate, to 1½ in. long: fls. to 1½ in. across, in loose cymes; styles 5. Himalayas; for southern states.

elàtum (*H. grandifolium*). Shrub to 4 ft.: lvs. ovate-oblong, to 3 in. long: fls. to 1½ in. across, in panicles; styles 3. Canary Isls., Madeira; for southernmost states.

élegans. Per. to 1 ft.: lvs. ovate-lanceolate, to 1 in. long: fls. to 1 in. across, in terminal panicles. Cent. Eu. to Altai Mts.

empetrifòlium. Shrub to 1 ft., evergreen: lvs. linear, to ¾ in. long: fls. to ¾ in. across, in panicles. S. E. Eu., Asia Minor; to be planted far S. Var. **prostràtum** is a lower prostrate form.

fasciculàtum. SANDWEED. Evergreen shrub to 1½ or more ft.: lvs. linear-subulate, to ¾ in. long: fls. brilliant orange-yellow, sepals as long as petals or nearly so. N. C. to Miss.—See *H. aspalathoides.*

floribúndum. Shrub to 6 ft.: lvs. lanceolate-elliptic, 1½ in. long: fls. to 2 in. across, in many-fld. panicles; styles 3. Canary and Madeira Isls.; far S. or Calif.

formòsum. Per. to 1½ ft.: lvs. ovate-oblong, 1 in. long: fls. in many-fld. corymbs, petals dotted at tip with dark violet glands; styles 3. Mex.

Fórrestii: *H. patulum* var.

frágile. Dwarf subshrub: lvs. ovate, ⅙ in. long: fls. in cymes. Greece; not hardy N.

frondòsum (*H. aureum*). Shrub to 4 ft.: lvs. ovate-oblong to oblong, bluish-green, to 3 in. long: fls. to 2 in. across, solitary or few together; styles 3. S. C. to Tenn. and Tex.

fruticòsum: listed name of a shrubby form.

galioìdes. Shrub to 3 ft.: lvs. linear, to ¾ in. long: fls. ½ in. across, solitary or in cymes; styles 3. Del. to Fla. and Tex.

gentianoìdes (*H. Sarothra. H. nudicaule. Sarothra gentianoides*). ORANGE-GRASS. PINEWEED. Ann. to 1½ ft.: lvs. reduced to awl-shaped scales appressed to wiry sts.: fls. yellow, minute, scattered along the fastigiately branched sts. Me. to Fla., west to Ont., Ill. and Tex.

glomeràtum. Shrub to 3 ft.: lvs. narrow-oblong, to 1¾ in. long: fls. 1 in. across, in dense cymes; styles 3. N. C.

grácile: listed name.

grandiflòrum: *H. calycinum.*

grandifòlium: *H. elatum.*

gravèolens. Per. to 3 ft.: lvs. oval to elliptic-oblong, to 3 in. long: fls. yellow, in terminal cymes, to 1 in. across, with slender filiform styles. Mts. of Va., Tenn. and N. C.

Gríffithii. Shrub: lvs. ovate, to 4½ in. long, younger lvs. more lanceolate and acute: fls. yellow. India.

Héctori: listed name.

Hènryi: *H. patulum* var.

hircìnum. Shrub to 3 ft.: lvs. ovate-lanceolate, to 2½ in. long: fls. 1½ in. across, solitary or clustered; styles 3. Medit. region; to be planted in central regions or S.

hirsùtum. Hairy per. to 2 ft.: lvs. oval or oblong, 1 in. or more long: fls. in panicles. Eu., N. Asia.

Hookeriànum. Shrub to 6 ft., evergreen: lvs. ovate to oblong, to 4 in. long: fls. 2½ in. across, in terminal cymes; styles 5. Himalayas; to be grown far S.

humifùsum. Bien. or per. to 8 in., glabrous, sts. slender, ascending and with 2 longitudinal ridges: lvs. oblong to oblong-ovate, obtuse, glandular-punctate, black-dotted along margins: fls. yellow, solitary or few in corymbs. W. and Cent. Eu.

hyssopifòlium. To 1 ft.: lvs. linear, about 1 in. long: fls. ½ in. across, in panicles. S. Eu.; to be planted far S. or in Calif.

inodòrum. Arching shrub, the branchlets 2-edged: lvs. ovate or ovate-oblong, to 2 in. long: fls. 1 in. across, in dense few-fld. cymes. Caucasus.

japónicum. Decumbent per.: lvs. ovate or oval, to ½ in.: fls. ¼ in. across, in cymes. Japan to Australia and India; to be tried far S.

Kalmiànum. Shrub to 3 ft., evergreen: lvs. oblong-linear or oblanceolate, to 2½ in. long: fls. 1 in. across, in few-fld. cymes; styles 5. Que. to Ill.

Kotschyànum. Herb to about 8 in.: lvs. oblong: fls. in cymes or panicles. Asia Minor; not hardy N.

lanceolàtum. Shrub: lvs. lanceolate to oblong-lanceolate, acute, entire, punctate, pale beneath: fls. yellow, solitary, terminal, calyx longer than corolla. Mascarene Isls.

lanuginòsum. Per. to 2 ft., usually unbranched: lvs. ovate to oblong, woolly beneath, sessile, nearly perfoliate: fls. yellow, in terminal panicles, calyx black-glandular-ciliate. Levant.

linarifòlium. Per. to 10 in.: lvs. linear, to ⅔ in. long: fls. in loose corymbs, sepals with black dots; styles 3. W. Eu.

lobocárpum. Shrub to 6 ft.: lvs. narrow-oblong, to 2¾ in. long, revolute: fls. ½ in. across, in terminal panicles; styles 5. N. C., Tenn.

lysimachioìdes: *H. Dyeri.*

maculàtum: *H. punctatum.*

mediflòrum: listed name.

Mitchelliànum. BLUE-RIDGE S. Similar to *H. graveolens*, differing in fls. only to ¾ in. across, more conspicuously brown-spotted and with awl-shaped styles. Blue Ridge Mts., Va. to Tenn. and N. C.

montànum. Per. to 2 ft.: lvs. oblong to ovate, to 2 in. long: fls. ½ in. across, in cymes. Eu.; probably not hardy N.

Moseriànum. GOLD-FLOWER. Hybrid between *H. patulum* and *H. calycinum:* shrub to 2 ft.: lvs. ovate, to 2 in. long: fls. to 2½ in. long, solitary or in cymes; styles 5. Var. **trícolor** has lvs. edged with red and white.

nudicaùle: *H. gentianoides.*

nudiflòrum. Shrub to 3 ft.: lvs. oblong to oblong-lanceolate, to 2¼ in. long: fls. pale yellow, to ¾ in. across, in loose cymes on leafless peduncles; styles 3. N. C. to Fla. and Ala.

nummulàrium. Subshrub: lvs. round, ½ in. long: fls. ¾ in. across, in terminal cymes. Pyrenees; probably not hardy N.

oblongifòlium: *H. patulum* var.

olýmpicum. Subshrub to 1 ft.: lvs. oblong-lanceolate to elliptic-oblong, to 1⅓ in. long: fls. to 2½ in. across, in terminal cymes; styles 3; sepals acuminate and not glandular. S. E. Eu., Asia Minor; hardy N. only to Philadelphia. Var. **citrìnum** is listed.

orientàle. Per. to 1 ft.: lvs. obovate to linear-oblong, to 1 in. long: fls. 1 in. across, in terminal cymes. Asia Minor; for the S.

pátulum. Shrub to 3 ft., evergreen: lvs. ovate-lanceolate to oblong, to 2½ in. long: fls. to 2 in. across, solitary or in cymes; styles 5. Japan. Var. **Fórrestii** (*H. Forrestii*) has fls. larger than var. *Henryi*. Var. **grandiflòrum** has fls. to 3 in. across. Var. **Hénryi** is a vigorous form with larger lvs. and fls. Var. **oblongifòlium** (*H. oblongifolium*), lvs. to 4 in. long, bluish beneath. Var. **uràlum** (*H. uralum*), lvs. 1 in. long, fls. 1 in. across.

perforàtum. Per. to 2 ft.: lvs. oblong to linear, to 1 in. long: fls. to 1 in. across, in terminal cymes; styles 3. Eu.; nat. in N. Amer.

polyphýllum. Per., the sts. ascending: lvs. elliptic-linear, ⅓ in. long, densely glaucous on both sides: fls. to 2 in. across, in terminal cymes. Cilicia; not hardy N.—Much of the material in cult. seems to be *H. olympicum*, from which this differs in its sepals acute and margined with black sessile glands.

prolíficum. Shrub to 5 ft.: lvs. narrowly oblong, to 3 in. long: fls. to ¾ in. across, in cymes; styles 3. Ont. to Ga. and west.—Lvs. may be persistent in warm regions.

pulchéllum: *Cratoxylon polyanthum.*

púlchrum. Shrubby per. to 2 ft.: lvs. ovate, ⅓ in. long: fls. to ¾ in. long, in panicles. Eu.

punctàtum (*H. maculatum*). Per. to 3 ft.: lvs. ovate-lanceolate, to 3 in. long, black-dotted: fls. yellow with black dots. E. U. S.

rèpens. Prostrate per.: lvs. oblong to linear-oblong, ⅓ in. long: fls. 1 in. across, in terminal cymes; styles 3. S. E. Eu., Asia Minor; not hardy N.

réptans. Prostrate shrub, the sts. rooting: lvs. elliptic-oblong, ½ in. long: fls. to 1¾ in. across, solitary; styles 5. Himalayas; stands only far S.

rhodopèum. Tufted per. with prostrate sts. to 5 in. high, pubescent: lvs. oblong, punctate: fls. in 1–3-fld. terminal clusters; styles 3. Asia Minor.

Rícheri. Per. to 2 ft.: lvs. oval-lanceolate, only slightly punctate, bluish-green beneath: fls. to 1½ in. across, in few-fld. cymes; styles 3. Eu.

rumélicum. Per. to 1 ft., glabrous: lvs. narrowly oblong-linear, to ¾ in. long, not punctate, margins strongly revolute: fls. few in corymbose cymes, sepals and petals with black dotted glands. Greece.

Saróthra: *H. gentianoides.*

Scoùleri. Per. to 1½ ft.: lvs. oblong to ovate, to ¾ in. long: fls. 1 in. across, in cymes; styles 3. B. C. to Mont.

tomentòsum. Per., the sts. ascending: lvs. ovate, to ¾ in. long, woolly: fls. to ¾ in. across, in corymbs. Eu.

uràlum: *H. patulum* var.

Van Fleètii. Hybrid of compact habit with bright yellow fls.

venústum. Per. to 1 ft. and more: lvs. ovate, the upper cordate, punctate: fls. in cymes borne in panicles. Asia Minor.

virgàtum. Herb to 2½ ft., sts. 4-angled: lvs. oblong-lanceolate, to 1½ in. long: fls. copper-yellow, in terminal compound cymes. N. J. to Fla. west to Ill. and Tenn.

virgínicum (*Triadenum virginicum*). Marsh S. Per. to 1½ ft.: lvs. ovate-cordate, to 2½ in. long: fls. salmon-pink, to ½ in. across, in small close cymes. Swamps of Lab. to Fla. west to Man. and La.

HYPHÆNE. *Palmaceæ.* African fan-palms and 1 in W. India, often with widely branched trunks, unarmed except perhaps on petiole, diœcious, spadices among the lvs., fls. in pits on thick stiff branches of the infl., stamens 6: fr. oblong, ovoid or obovoid, sometimes obscurely lobed, 2–3 in. long, woody outside but more or less fleshy inside: species 28 as now understood; the distinctions between them lie largely in the frs., and it is not always possible to distinguish the plants accurately in the juvenile state, and it is not known whether the plants in this country are correctly named. The species so far intro. thrive in protected places in S. Fla. For cult. see *Palm.*

crinìta. Trunk forked: lvs. bright green or at first with a whitish bloom that soon disappears, divided into several or many segms., roughish on margins and nerves above: fr. obovoid or pear-shaped, narrowed to base, short-pedicelled, upwards of 2 in. long; seed 1 in. or more long, globose. S. Afr.

nataléensis. Trunk forked: fr. broadly top-shaped, flat on top, very little contracted at base, obtusely 3-angled, shining chestnut-colored or somewhat purplish, about 2 in. long and thick. Natal.

Schàtan. More or less soboliferous, trunk simple or becoming branched: lf.-blade about 2 ft. across lengthwise; segms. acuminate-pointed, rigid, minutely scaly; petiole spiny or armed on margin: fr. variable, mostly obovoid and with a truncate or slightly convex top, short-pedicelled, about 2 in. long. Madagascar.

thebàica. Egyptian Doum Palm. To 20 or 30 ft., commonly forked but sometimes simple: lvs. nearly orbicular, stiff, the blade 2–2½ ft. long, cut to middle or deeper into 20 or more strong midribbed acuminate segms.; petiole strongly armed: fr. variable, mostly obliquely ovoid or oblong, 3 in. more or less long, the fibrous part giving the plant the name "gingerbread palm." Nile region; the species usually seen in cult., but little known within the U. S.

HYPOCALÝMMA. *Myrtaceæ.* Shrubs native in W. Australia, with opposite lvs. and fls. in axillary pairs or few-fld. clusters; petals 5; stamens numerous, shorter than petals.

robústum. To 3 ft., glabrous: lvs. linear or linear-lanceolate, to 1 in. long, stiff: fls. pink. Planted in Calif.

HYPOCHŒRIS. Cats-Ear. *Compositæ.* Herbaceous annuals and perennials with mostly basal, toothed or cut lvs. and solitary or clustered yellow heads of ligulate fls.; pappus plumose. Sometimes grown in the wild-garden. Propagated by seeds or division.

bíjuga: hort. name, probably *H. uniflora.*

glàbra. Ann. to 16 in., glabrous: lvs. spatulate, oblong, to 5 in. long: heads about ½ in. long, yellow, fls. scarcely longer than involucre. Eu.; nat. in W. N. Amer.

radicàta. Per. to 2 ft.: lvs. sharp-toothed or lobed, white-hairy: heads solitary, deep yellow, fls. longer than involucre. Medit. region.

uniflòra. Per. to 1½ ft., hairy: lvs. oblong-lanceolate: heads mostly solitary, about 1 in. long, yellow, fls. longer than involucre. Mts. of Eu.

HYPOGYNOUS: borne on the torus or under the ovary; said of the stamens or perianth-parts when the ovary is superior to their point of attachment.

HYPÓLEPIS. *Polypodiaceæ.* Mostly trop. ferns of both hemispheres, with creeping rhizomes, 2–4-pinnate fronds, and sori in the sinuses of frond and covered by its reflexed margin. Allied to Cheilanthes; sometimes grown under glass.

tenuifòlia. Fronds to 3 ft. long and 2 ft. wide, 4-pinnate into wavy-toothed segms., on brown stipes to 2 ft. long. New Zeal., Australia, Pacific Isls.

HYPÓXIS. Star-Grass. *Amaryllidaceæ.* Small herbs with rootstocks or corms, grass-like basal lvs. and rather small fls. on few-fld. scapes, the perianth-segms. distinct. Of simple cult. in the wild-garden or border in dry soil. Propagated by division.

erécta: *H. hirsuta.*

hirsùta (*H. erecta*). To 12 in.: lvs. to 1 ft. and more long and ⅛ in. broad: fls. bright yellow, star-like, ½ in. long, in spring. Me. to Fla. and Tex.

hygrométrica (*Rhodohypoxis hygrometrica*). Golden Weather-Glass. To 6 in.: lvs. grass-like, to 10 in. long, somewhat pilose: fls. yellow, in clusters of 1–4, anthers with long linear auricles at base. Australia.—Common name derived from fls. closing in cloudy weather.

leptocárpa: listed name of unknown botanical standing.

stellàta. Lvs. to 12 in. long: fls. white on inside, striped green without. S. Afr. Var. **élegans** has fls. white banded with blue.

HYPSÈLA. *Lobeliaceæ.* A few very low creeping herbs, probably per., of the Andean region, suitable for rock-gardens: lvs. small, ovate to reniform, entire or emarginate or retuse, petioled, thickish or succulent: fls. solitary, pink- and yellow-marked, corolla irregular, deeply lobed and shortly split on one side: fr. a caps. Allied to Pratia, in which the corolla is more deeply split and fr. baccate.

longiflòra. Plant 1 or 2 in. high: petiole longer than the broadly ovate practically entire blade which is less than ½ in. across: fls. erect, about ½ in. long, pink with yellow in throat, pedicels equalling or exceeding petiole.

renifórmis. Lvs. orbicular-reniform, emarginate or retuse at apex, petiole about equalling the limb and longer than pedicels.

rèpens, réptans are listed; probably *H. reniformis* or a Pratia.

HYSSÒPUS. *Labiatæ.* One hardy per. subshrub from S. Eu. to Cent. Asia, grown for ornament in borders, somewhat for medicinal purposes and also as a sweet-herb. Hyssop is easily grown; propagated by seeds, cuttings and division. **H. officinàlis.** Hyssop. To 1½ ft., sts. 4-angled: lvs. linear to oblong, to 2 in. long: fls. blue, ½ in. long, in terminal one-sided spikes to 5 in. long, stamens exserted. Var. **álbus,** fls. white, **ròseus,** fls. rose, **rùber,** fls. red. Var. **grandiflòrus** has large fls.

HYSTERIÓNICA. *Compositæ.* Per. herbs, mostly of S. Amer., having entire linear to lanceolate lvs., solitary yellow to orange heads of both disk- and ray-fls., the former being perfect and the latter mostly pistillate: fr. an achene with truncate apex crowned by 2 rows of pappi, the outer row minute and much shorter than the inner one. Propagated by seed and sometimes treated as annuals.

montevidénsis (*Erigeron dubius*). To 1 ft., pilose, very leafy: lvs. linear, to 1½ in. long, flat, ascending, acute, rarely remotely dentate, often glandular-puberulous: involucre about ¼ in. diam., ray-fls. narrowly linear, usually 30–40.

HÝSTRIX. *Gramineæ.* Tall per. grasses with flat lvs. and awned spikelets borne in terminal spikes; native in N. Amer., Eu. and Asia and one sometimes planted for ornament and useful for dry bouquets. See *Grasses.*

pátula (*Asprella Hystrix*). Bottle-Brush-Grass. To 4 ft.: lvs. to 9 in. long and ½ in. wide, rough above: spikes to 7 in. long, awns 1 in. or more long. N. B. to Ga. and Neb.

I

IBERIDELLA: *Æthionema trinervium.*

IBÈRIS. Candytuft. *Cruciferæ.* Small usually glabrous herbs, ann. and per., sometimes woody and durable at base and evergreen, native in Medit. region, some of them well known as garden ornamentals: lvs. narrow, entire or dentate, in some species pinnatifid: fls. white, red, purple, in umbel-form clusters or in racemes that lengthen with age: fr. a broad more or less orbicular pod or silicle usually winged.

Usual candytufts of flower-gardens and borders are of two classes,—the half-hardy annuals (grown every year from seeds), and the evergreen perennials. All of the garden candytufts thrive in any usual garden soil and require no special treatment. Usually the seeds of the annuals are sown where the plants are to grow, the plants thinned eventually to 6–12 inches apart. Bloom may be expected in two months or less. In mild countries, seeds are sometimes sown in autumn for winter and spring bloom. The colors are largely white, but run into flesh-colored, hyacinth and crimson. They are used for flower-beds, edgings, and for cutting. Keep the pods cut off, and do not allow the ground to become very dry as the plants tend to run rapidly to seed. Some of the kinds are fragrant.

Perennial candytufts are low compact plants, somewhat woody at base, with white flowers sometimes becoming lilac with age. Propagated by division, or by seeds sown a year before bloom is wanted.

affìnis. Ann., erect, closely branching, to 16 in. high, setose-hairy to nearly glabrous: lvs. lobed along sides half way more or less to midrib, particularly toward apex: fls. white, frequently with lilac tinge, sometimes slightly fragrant, in umbel-like head that briefly elongates in fr. S. Eu. —Stock in cult. as *I. odorata*, *I. panduræformis*, *I. pectinata*, *I. pinnata* probably belong here rather than to botanical species of those names.

amàra (*I. coronaria*). Rocket C. Ann., erect, to 1 ft., sparsely pubescent: lvs. thickish, oblanceolate to spatulate, to 3 or 4 in. long, coarsely few-toothed: fls. large, white, fragrant, the raceme soon elongating. Fields, Eu.—A favorite flower-garden and florists candytuft, known in the Empress races, White Spiral, Hesperidiflora, Hyacinth-fld.; also very dwarf forms.

corifòlia. Per., evergreen, to 1 ft., glabrous: lvs. oblong to spatulate, 1½ in. or less long, entire: fls. white, in close clusters that elongate somewhat. Said to be a garden hybrid; sometimes mislabelled *cordifolia* and *cornifolia.*

coronària: *I. amara.*

Dunnéttii: *I. umbellata* var.

Garrexiàna: *I. sempervirens* var.

gibraltárica. Gibraltar C. Per., evergreen, glabrous or nearly so, to 1 ft.: lvs. oblong-spatulate, 1–2 in. long, mostly entire: fls. lilac or light purple, the inner ones often white, in flattish clusters. Spain.—Useful for edgings.

Jórdanii. Bien. to 6 in.: lvs. oblong-spatulate, entire, white-hairy below: fls. rose, in umbels. Asia Minor.

jucúnda: *Æthionema coridifolium.*

Lagascàna. Ann. to 1 ft., pubescent: lvs. oblong or nearly spatulate, toothed or notched at apex: fls. pure white, in close clusters. Spain.—Plants grown under this name are likely to be *I. amara.*

odoràta: see *I. affinis.*

panduræfórmis: see *I. affinis.*

pectinàta: see *I. affinis.*

pinnàta: see *I. affinis.*

Prùitii. Per., evergreen, glabrous, to 6 or 8 in.: lvs. narrow-obovate to spatulate, sometimes obscurely toothed: fls. white. Sicily.

pygmæa: hort. name for form listed as dwarf, compact and to 4 in. high.

saxátilis. Per., evergreen, to 6 in.: lvs. linear, entire, ciliate, rather fleshy, acute: fls. white, in corymbs. S. Eu.

semperflòrens. Per., evergreen, to 2 ft., glabrous: lvs. wedge-shaped, entire, rather fleshy: fls. white, large, fragrant. Sicily.

sempérvirens. Edging C. Per., evergreen, to 12 in., glabrous or nearly so: lvs. linear or narrow-oblong, to 1½ in. long, entire, blunt: fls. white, in elongating heads or racemes. S. Eu. to W. Asia. Var. **Garrexiàna** (*I. Garrexiana*) has lvs. acute with fls. in umbels. S. Eu. Listed vars. include **compácta, nàna** and **supérba.**—Useful for edgings.

stylòsa: *Hutchinsia stylosa.*

taùrica. Bien. to 9 in.: lvs. linear-spatulate, entire or slightly toothed: fls. rose, in corymbs. Asia Minor.

Tenoreàna (*I. Pruitii* var. *hirtula*). Per., evergreen, to 6 or 8 in., simple, thinly pubescent: lvs. oblong to linear-spatulate, entire or toothed at summit: fls. whitish or rose, in a short umbel-like raceme. Spain to Italy.

umbellàta. Globe C. Ann., glabrous or nearly so, to 16 in., branching: lvs. thin, lanceolate, acuminate, to 3½ in. long, entire or with 1 or 2 angles on margin: fls. pink, violet, purple, red, blush, not fragrant. S. Eu.—The common colored candytuft of flower-gardens, in such varietal names as Atropurpurea, Cardinal, Dunnettii with dark purple fls., Lavender, Lilacea, Rosea.

ventosícola: catalogue name.

IBICÉLLA. *Martyniaceæ.* Viscid-pubescent herbs of S. Amer.: lvs. broadly ovate to suborbicular, entire: fls. in dense compact terminal racemes, calyx of 5 free sepals, fertile anthers 4. The fr. may be used for pickles as in Proboscidea.

lùtea (*Proboscidea lutea*). Clammy spreading ann. to 1½ ft.: lvs. suborbicular, to 1 ft. across, dentate: fls. greenish-yellow without and deeper yellow to orange within, sometimes red-blotched, in erect dense racemes: fr. long-horned, echinate. Argentina.

IBIDIUM: *Spiranthes.*

IBÒZA. *Labiatæ.* Shrubs or herbs with very small diœcious fls., one grown under glass or out-of-doors in the S.; African.

After blooming the plants should be cut back, and this will give good cuttings for the next winters stock. Iboza is treated much like salvia and coleus.

ripària (*Moschosma riparium*). Per. to 5 ft., st. 4-angled: lvs. broad-ovate, to 2 in. long, coarsely toothed: fls. numerous, creamy-white with dark anthers, in erect panicles to 1 ft. long.

ICACINÀCEÆ. Icacina Family. Trees and shrubs, sometimes climbers, of about 40 genera of trop. distribution, allied to Sapindaceæ, of which Pennantia and Villaresia may be cult.: lvs. alternate, simple: fls. bisexual or polygamous, with 4–5 sepals, petals and stamens and 1-celled ovary: fr. a drupe.

ICACOREA: *Ardisia paniculata.*

ICE-PLANT: *Cryophytum crystallinum.*

IDÈSIA. *Flacourtiaceæ.* Monotypic genus, comprising a deciduous tree to 50 ft., native of Japan and China and hardy in the southern states. Propagated by seeds, root-cuttings and cuttings of green wood. **I. polycárpa.** Lvs. alternate, cordate-ovate, to 10 in. long, toothed, glaucous beneath: fls. mostly unisexual, greenish-yellow, fragrant, in drooping panicles to 10 in. long, without petals: berries orange-red, ⅓ in. across. Var. **vestìta** has lvs. densely pubescent beneath.

ÍDRIA. *Fouquieriaceæ.* One odd tree with soft often hollow trunks and lopping branches, native in Lower Calif. **I. columnàris** (*Fouquieria columnaris*). To 70 ft., with spines to 1½ in. long: lvs. oblanceolate, to ¾ in. long: fls. yellow, about ½ in. long, in large panicles at top of trunk: fr. a caps. to ¾ in. long. Sometimes planted in S. Calif.

ILAMA: *Annona diversifolia.*

ÌLEX. Holly. *Aquifoliaceæ.* Trees or shrubs, sometimes evergreen, with alternate simple lvs., mostly polygamous or diœcious: fls. small, whitish, usually in axillary cymes, the petals somewhat united at base and sepals persistent: fr. a berry-like drupe with large hard seeds or nutlets: planted for good habit, attractive foliage and showy berries. Some species have medicinal value. The lvs. of one kind (*I. paraguariensis*) are used in S. Amer. for a tea or yerba de maté, and probably more than a single species is involved.

Most hollies succeed in rich well-drained soil, although some species are native in swampy land. They do not bear transplanting well and most of the leaves should be stripped off first. Early fall or spring before growth starts are the best times for transplanting. Propagated by seeds which should be stratified as they do not germinate until the second year. The evergreen species may be propagated by cuttings under glass. Varieties may be grafted or budded.

altaclarénsis. Hybrid between *I. Aquifolium* and *I. Perado*. Here belong the vars. **camelliæfòlia, Hódginsonii** and **Lawsoniàna.**

ambígua: *I. caroliniana.*

Amelánchier: *I. dubia.*

Aquifòlium. ENGLISH H. Evergreen tree to 40 ft.: lvs. shining, ovate, with coarse spiny teeth: fls. in May–June on growth of previous year: berries scarlet. Eu., Asia. There are many hort. forms, the best known being: **álbo-marginàta** (var. *argenteo-marginata*), lvs. with narrow silvery margin; **aùreo-regìna** (var. *aureo-marginata*), the lvs. mottled with gray and having a yellow margin; **bacciflàva** (var. *fructo-luteo*), fr. yellow; **baleárica,** lvs. variously toothed; **camelliæfòlia** is a form of *I. altaclarensis;* **fèrox,** HEDGEHOG H., lvs. with strong teeth and numerous small spines and its form **aùrea** with yellow spines and margins; **fértilis,** listed as heavy fruiting strain; **flavéscens,** lvs. suffused with yellow; **handsworthénsis,** lvs. 2 in. or less long, with numerous spines; **hastàta,** lvs. halberd-shaped; **heterophýlla,** lvs. entire or some of them with few teeth; **Hódginsonii** is *I. altaclarensis;* **laurifòlia,** lvs. usually entire; **microphýlla,** lvs. small with small spines; **myrtifòlia,** lvs. 1½ in. or less long; **nìgra** has deep purple sts.; **péndula** with pendulous branches; **polycárpa** has numerous berries; **prínceps,** large broad lvs. with strong spines; **pyramidàlis** with ascending branches; **recúrva** (var. *tortuosa*), lvs. spirally twisted; **serratifòlia,** lvs. with numerous small spiny teeth; **variegàta,** lvs. variegated with silver and gold.

Aquipérni is listed as a hybrid of *I. Aquifolium* × *I. Pernyi.*

attenuàta (*I. Topelii*). Hybrid between *I. opaca* and *I. Cassine.*

bronxénsis: *I. verticillata* var. *tenuifolia.*

Búrfordii: properly a var. of *I. cornuta*, of more globose form and drooping branches and lvs. with few or no spines.

caroliniàna (*I. ambigua*). Deciduous shrub or a tree to 20 ft.: lvs. oval to obovate or elliptic, to 3 in. long, serrate toward apex, glabrous: fls. solitary or several in axils: berries about ¼ in. diam., red. N. C., Fla. to Tex.

Cassìne (*I. Dahoon*). DAHOON. Evergreen shrub or tree to 25 ft.: lvs. obovate, entire or shallow-toothed: fls. in May, on wood of season: berries dull red, rarely yellow. Va. to Fla. and La. Var. **angustifòlia,** narrow-lvd. form.

ciliospìnosa. Evergreen shrub to 15 ft., similar to *I. dipyrena:* lvs. ovate, to 1½ in. long, with small spiny teeth. China.

convéxa: *I. crenata* var.

corállina. Evergreen tree to 25 ft.: lvs. lanceolate, spiny- or wavy-toothed, shining above: berries red. China.

coriàcea (*I. lucida*). Deciduous shrub to 10 ft.: lvs. obovate to elliptic, to 3½ in. long, acute or briefly acuminate, somewhat spiny-toothed above middle, dark green, glossy above: berries to ⅓ in. diam., black. Swamps, S. Va. to Fla. west to La.

cornùta. Evergreen shrub to 10 ft.: lvs. shining, quadrangular-oblong, 3-pointed at apex, with strong spines: fls. June–July on branches of previous year: berries scarlet. N. China.

crenàta (*I. Fortunei*). JAPANESE H. Evergreen shrub to 20 ft.: lvs. oval to oblong, wavy-toothed: fls. May–June, on the seasons growth: berries black. Japan. Var. **buxifòlia,** of columnar habit with broad box-like lvs. Var. **convéxa** (var. *bullata*), lvs. nearly round. Var. **globòsa,** dwarf compact form. Var. **Hélleri,** dwarf, 6–8 in. Var. **latifòlia** has elliptic lvs. Var. **lùteo-variegàta** (var. *variegata*) has lvs. spotted yellow. Var. **macrophýlla** has lvs. larger than type. Var. **microphýlla** has lvs. ½ in. or less long. Var. **nummulària,** dwarf with broad-ovate lvs. to ½ in. long. Var. **rotundifòlia,** lvs. round and glossy. Var. **variegàta** is var. *luteo-variegata.*

Dahoòn: *I. Cassine.*

decídua. POSSUM-HAW. Deciduous shrub or tree to 30 ft.: lvs. obovate, wavy-toothed: fls. in May: berries red or orange. Swamps, Va. to Fla. and Tex.

dipyrèna. Evergreen tree to 40 ft.: lvs. ovate to oblong, remotely spiny-toothed: fls. Apr.–May, on branches of previous year: berries red. Himalayas.

dùbia. The plant commonly grown under this name is *I. montana.* True *I. dubia* (*I. Amelanchier*) is a deciduous shrub to 7 ft. with elliptic-oblong lvs. and scarlet fr. with stalks ⅓ in. long or more. Va. to La.

emarginàta: *Eurya emarginata.*

europèa: hort. name, probably for *I. Aquifolium.*

Fárgesii. Tree or shrub to 20 ft.: lvs. oblong- to linear-lanceolate, finely toothed above middle: fls. May–June: berries red. China.

Fórtunei: *I. crenata.*

fujisanénsis: *I. pedunculosa.*

geniculàta. Deciduous shrub: lvs. ovate, to 2 in. long, sharp-toothed, turning yellow in autumn: fls. May–June: berries red, on slender drooping stalks. Japan.

glàbra. INKBERRY. WINTERBERRY. Evergreen shrub to 8 ft.: lvs. obovate, entire or with a few teeth at apex: fls. June–July, on seasons growth: berries black. Mass. to Fla. and Miss.

Hélleri: *I. crenata* var.

Hódginsonii: see *I. altaclarensis.*

íntegra. Evergreen shrub or tree to 40 ft.: lvs. oval to oblong, entire or rarely with few teeth: fls. in spring, on branches of previous year: berries red. Japan.

intricàta. Low straggling evergreen shrub: lvs. obovate, coarsely toothed: berries red. Himalayas.

lævigàta. SMOOTH WINTERBERRY. Deciduous shrub to 6 ft.: lvs. oval to oblong, finely toothed, turning yellow in autumn: fls. May–June: berries orange-red. Swamps, Me. to Ga.

lanceolàta: confused name applied to forms from Cuba and S. E. U. S.

latifòlia. TARAJO. Evergreen tree to 60 ft.: lvs. oblong, shallowly toothed, shining, to 7 in. long: berries red. Japan.

lùcida: *I. coriacea.*

macrocárpa. Tree to 30 ft.: lvs. elliptic or lanceolate-oblong, finely toothed: fr. black. China.

macrópoda: *I. montana* var.

maderénsis: *I. Perado.*

micrococca. Tree or shrub to 40 ft.: lvs. elliptic-ovate to elliptic-oblong, to 6 in. long, acuminate, base rounded, margins shallowly serrulate: berries red, in small cymes to 1 in. across. Japan.

móllis: *I. montana* var.

montàna (*I. dubia* of Auth. *I. monticola. I. dubia* var. *monticola*). Deciduous tree to 30 ft. and more or a shrub: lvs. ovate to oblong-lanceolate, to 4 or 5 in. long, serrate, soft-pubescent underneath: berries cherry-red, about ⅓ in. across, on very short stalks. N. Y. to S. C. west to Ala. Var. **macrópoda** has lvs. more elliptical, coarsely-toothed. Var. **móllis** (*I. mollis*) has lvs. broadly ovate to ovate-lanceolate, to 5 in. long, soft-pubescent beneath. Mass. to Ga.

montícola: *I. montana.*

myrtifòlia. Evergreen shrub or small tree: lvs. oblong to linear, entire: fls. in spring, on seasons growth: berries red, rarely yellow. Swamps, N. C. to Fla. and La. Var. **Lòwei** has yellow berries.

Óldhamii: *I. purpurea* var.

opàca. AMERICAN H. Evergreen tree to 50 ft.: lvs. elliptic to obovate, with large spiny teeth, rarely entire: fls. in June, on seasons growth: berries dull red or rarely yellow. Mass. to Fla. and Tex. The so-called var. **fémina** is only the pistillate tree of the type and not a distinct form or var. Var. **Howàrdii** has darker lvs. and fruits more abundantly. Var. **xanthocárpa** has yellow berries.

paraguariénsis. Evergreen shrub or small tree to 20 ft.: lvs. obovate or oblong, wavy-toothed: berries red or reddish-brown. Brazil.

pedunculòsa (*I. fujisanensis*). Evergreen shrub or tree to 30 ft.: lvs. ovate, to 2¾ in. long, entire: berries bright red, on long stalks. Japan. Var. **continentàlis** has lvs. to 4¾ in. long, usually finely toothed above middle.

Peràdo (*I. maderensis*). Evergreen shrub or tree to 20 ft.: lvs. ovate to oblong-lanceolate, spiny-toothed: berries dark red or nearly black. Canary Isls., Azores. Var. **aùrea** has yellow-tipped or margined lvs.

Pérnyi. Evergreen shrub or tree to 30 ft.: lvs. rhombic-ovate, about 1 in. long, with 1–3 spines on each side, shining: fls. in May: berries red. China. Var. **manipurénsis** (*I. Wilsonii* in part) has larger ovate lvs. with shorter terminal spine. Var. **Veìtchii** has larger lvs. with 4–5 spines on a side.

purpùrea. Tree to 50 ft.: lvs. oblong to oblong-lanceolate, usually 3 in., rarely 5 in., long, margins crenulate-serrate, brownish-green above, leathery: fls. small, axillary, 4-merous: berries red. Java. Var. **Óldhamii** (*I. Oldhamii*), lvs. narrower, more leathery. Japan.

rotúnda (*I. rotundifolia*). Evergreen tree to 40 ft.: lvs. entire, elliptic, to 4¼ in. long, petioles to 1 in. long: berries bright red. Japan, Korea.—Differs from *I. pedunculosa* in its larger lvs. and berries on shorter pedicels.

rotundifòlia: *I. rotunda.*

serràta (*I. Sieboldii*). Deciduous shrub to 15 ft.: lvs. ovate, finely toothed, glabrous beneath: fls. in June: berries bright red. Japan. Var. **xanthocárpa** has yellow frs.—Similar to *I. verticillata*, but smaller in all respects.

Sièboldii: *I. serrata.*

Tòpelii: *I. attenuata.*

verticillàta. Black-Alder. Winterberry. Deciduous shrub to 10 ft.: lvs. oval to lanceolate, toothed, pubescent beneath at least on nerves: fls. June–July: berries bright red. Mass. to Fla. and Mo. Var. **chrysocárpa** has yellow berries. Var. **polycárpa,** an improved form with numerous berries. Var. **tenuifòlia** (*I. bronxensis*), lvs. obovate, larger, with pellucid dots, berries usually solitary.

vomitòria. Yaupon. Cassena. Evergreen shrub or small tree to 25 ft.: lvs. oval to oblong, wavy-toothed: fls. in May, on branches of previous year: berries scarlet. Va. to Fla. and Tex.

Wílsonii. Shrub: lvs. ovate, oblong to obovate, to 3 in. long, coriaceous, margins slightly recurved: fls. small, axillary. China.—See also *I. Pernyi* var. *manipurensis.*

ILLECEBRÀCEÆ. Knotwort Family. A small family of ann. and per. herbs having usually opposite entire lvs. and small greenish or whitish fls. in forked cymes or clusters, characterized by the persistent calyx on which are borne the stamens, petals absent or minute, styles 2 and frequently united and fr. a 1-seeded utricle. By some authors it has been united with the Pink Family, Caryophyllaceæ, but differs in the 1-ovuled ovary and the corollas vestigial or absent. Herniaria, Paronychia and Scleranthus are cult.

ILLÍCIUM. *Magnoliaceæ.* Evergreen trees and shrubs native in S. U. S. and the Orient, mostly aromatic, having simple, entire, short-stalked lvs. and small axillary fls. solitary or in 3's; grown for ornament in warm countries. Propagated by seeds and cuttings of half-ripened wood.

anisàtum (*I. religiosum*). Small tree or shrub: lvs. elliptic, to 3 in. long: fls. greenish-yellow, about 1 in. across, with spreading petals, borne on bracted peduncles. Japan. Var. **variegàtum** has variegated foliage.—Yields a poison.

floridànum. Shrub to 10 ft.: lvs. elliptic, to 6 in. long: fls. purple, to 2 in. across, nodding; petals very narrow, 20–30. Fla. to La.

Hénryi. Small tree or shrub: lvs. oblanceolate to oblong-ovate, acute, alternate, close together on long petioles, pale green beneath, nerves very conspicuous: fls. on long peduncles. Cent. China.

religiòsum: *I. anisatum.*

vèrum. Star Anise. Small tree or bush: fls. globose, on short nearly or quite bractless peduncles, the petals not spreading. China.—Some of the stock grown in this country as *I. anisatum* may belong here.

IMANTOPHYLLUM: *Clivia.*

IMMORTELLE: *Xeranthemum annuum;* see *Everlasting;* also *Erythrina.*

IMPÀTIENS. Touch-Me-Not. Snapweed. *Balsaminaceæ.* More or less succulent ann. and per. herbs with simple lvs., very irregular spurred fls. solitary or clustered in the axils, and capsular fr. which bursts elastically into spirally coiled valves, expelling the seeds; grown in the flower-garden or under glass for the odd and showy bloom; tender to frost.

Common garden balsam, *I. Balsamina,* requires a fertile sandy soil and should be spaced about 2 feet apart for best development. It makes a stout central stem and many side branches. It may be grown to a single stem by pinching off the side shoots and thereby expose the bloom. Seeds should be sown in boxes or pots in April and transplanted. The greenhouse species may be increased by seeds or cuttings and can be grown in the open if treated like tender annuals.

Bálfouri. Per. to 3 ft.: lvs. ovate-lanceolate: fls. light rose on standard, red on keel, yellow at base of wings and rose at apex, on long stalks in racemes at top of st. W. Himalayas.—A good flower-garden subject if seeds are started early.

Balsámina. Garden Balsam. Ann. to 2½ ft.: lvs. lanceolate: fls. of various colors, white to red or yellow, spotted, the cult. forms mostly double, borne close to the st. and overtopped by leafy shoots. Trop. and subtrop. India, Malaya, China.—An old flower-garden favorite, in many vars.; tender.

biflòra. Jewel-Weed. Ann. to 5 ft.: lvs. ovate, to 3½ in. long, coarsely toothed: fls. orange-yellow, spotted with reddish-brown, to 1 in. long, spur strongly incurved, in 2–4-fld. clusters. Newf. to Fla. and Neb.

capénsis. Ann. to 14 in.: lvs. ovate to rhombic, to 3 in. long: fls. pale rose, to 1¼ in. long including spur, solitary, axillary. S. Afr.

fírmula. Suffrutescent per.: lvs. oblong-elliptic, to 3½ in. long, tapering at ends, serrulate with bristle in each sinus, petiole margined with 2–3 clavate glands: fls. reddish, with subulate spur about 1 in. long, solitary, axillary on ascending peduncles to 2 in. long. Cent. Madagascar.

glandulígera: *I. Roylei.*

Hòlstii. Per. to 3 ft.: main lvs. ovate and little if at all tapering at base, 3–4 in. long and three-fourths as broad: fls. scarlet, to 1¾ in. across, on long stalks and borne toward top of st., with slender downward spur about 1½ in. long. E. trop. Afr.—Modified under cult. Var. **Liegnítzia** (*I. nana* var. *Liegnitzia*) is more floriferous, brilliant colored and compact than the type.

nàna: see *I. Holstii.*

Nòli-tángere (*I. Noli-me-tangere*). Ann. to 2 ft.: lvs. ovate, to 3 in. long: fls. yellow spotted with orange, to 2 in. long. Eu.

Óliveri. Per. to 8 ft.: lvs. oblanceolate to oblong, with setose serratures: fls. lilac or rose, on long stalks toward top of st., with long slender spur. E. trop. Afr.

pállida. Similar to *I. biflora* but very pale yellow fls. having a short spreading spur. N. S. to Ga. and Kans.

Petersiàna. Differs from *I. Holstii* in the general red or bronzy color, the elliptic lvs. and carmine-red fls. W. trop. Afr.

platypétala. Per.: lvs. lanceolate to oval: fls. rose-colored, on long stalks toward top of st., with long curved spur. Java.

Róylei (*I. glanduligera*). Ann. to 4 or 5 ft., very erect: lvs. ovate to ovate-lanceolate: fls. dark purple, on long stalks toward top of st., with very short spur. Mts. of India.

scábrida. Ann. to 5 ft.: lvs. ovate to lanceolate: fls. golden-yellow spotted with red, on long stalk toward top of st., spurred. Himalayas.

Súltanii. Per. to 2 ft.: main lvs. ovate-lanceolate, long-tapering at base and apex, 2–3 in. long and half or less as broad: fls. scarlet (varying to white and pink), to 1½ in. across, on long stalks toward top of st., with slender upcurved spur, sometimes twice as long as petals. Zanzibar.—Plants grown under this name may be *I. Holstii.*

IMPERATORIA: *Peucedanum Ostruthium.*

INCARVÍLLEA. *Bignoniaceæ.* Several Asian herbs with alternate simple or pinnate lvs., funnelform red or yellow fls. in terminal clusters, and narrow capsular frs.; good border plants, doing best in sunny positions in light sandy loam. Propagated by seed or division. Some of them hardy in N. Y.

brévipes: *I. grandiflora* var.

compácta. Per. to 1 ft. or more: lfts. nearly entire: fls. purple, 1½ in. across and 2½ in. long. China.

Delavàyi. To 2 ft.: lvs. pinnate into 15–20 toothed lfts. to 5 in. long: fls. rose-purple with yellow tube, to 3 in. long and wide. China.

Fárreri: listed name for plant said to differ from *I. Delavayi* in having yellow fls., perhaps a form of it.

grandiflòra. Similar to *I. Delavayi* but shorter, with lfts. nearly entire, and fewer rose-red fls. China. Var. **brévipes** has brilliant crimson fls.

lùtea. To 4 ft.: lfts. wavy-toothed: fls. yellow, 2 in. across. China.

Ólgæ. To 3 ft., shrubby: lfts. entire or toothed toward apex: fls. pale pink, 1½ in. long and 1 in. across. Cent. Asia.

variábilis. Shrubby, to 2 ft. or more: lvs. 2–3-pinnate into cut segms.: fls. pink, 1 in. across. China.

INCISED: cut; slashed irregularly, more or less deeply and sharply.

INCLUDED: not protruded, as stamens not projecting from the corolla; not exserted.

INDEHISCENT: not regularly opening, said of a seed-pod or anther.

INDIAN CUP: *Silphium perfoliatum.* **Pipe:** *Monotropa uniflora.* **Shot:** *Canna indica.*

INDIGEN: an indigenous plant or species; native in origin and normal to the country or region; to be employed in contrast to cultigen, which see.

INDIGO: *Indigofera.* **Bastard:** *Amorpha fruticosa.* **False:** *Amorpha, Baptisia.* **Wild:** *Baptisia.*

INDIGÓFERA. Indigo. *Leguminosæ.* Shrubs and per. herbs with pinnate lvs. or sometimes reduced to 1 lft., papilionaceous fls. in axillary racemes, and cylindrical pods; grown for ornament in borders and shrubberies, and some species formerly for indigo and now run wild. Most of the species are not hardy in the northern states. Propagated by seeds and cuttings.

amblyántha. Shrub to 6 ft.: lfts. 7–11, to 1½ in. long: fls. pink, ¼ in. long, in racemes shorter than the lvs. China; hardy N.

Ánil: *I. suffruticosa.*

austràlis. Shrub to 4 ft.: lfts. 9–17, to ¾ in. long: fls. red, about ¼ in. long, in racemes about length of lvs. Australia.

decòra: *I. incarnata.*

divaricàta. Differs from *I. Kirilowii* in its lavender fls. Habitat not definitely known.

Dosùa. Low shrub: lfts, 21–31, to ½ in. long: fls. red, to ½ in. long, in racemes about length of lvs. India. Var. **tomentòsa** is more pubescent, with longer lvs. and racemes. —Plants in cult. under this name are likely to be *I. Gerardiana* and *I. stachyodes.* The latter, *I. stachyodes* also from India, apparently specifically distinct, differs from *I. Dosua* in being more vigorous, bearing more numerous acutish lfts., longer and stouter racemes, and has dense brownish pubescence.

floribúnda: *I. Gerardiana.*

Gerardiàna (*I. floribunda*). Shrub to 6 ft., much branched: lfts. 13–21, to ½ in. long: fls. rosy-purple, ½ in. long, in racemes about length of lvs. India.

hebepétala. Tall shrub: lvs. to 6 in. long, lfts. 7–11, opposite, ovate-oblong, to 1½ in. long, obtuse: fls. pale pink to deep crimson-red, to ⅜ in. long, in lax tapering racemes 2–4 in. long. Himalayas.

incarnàta (*I. decora*). Shrub to 2 ft.: lfts. 7–13, to 2½ in. long: fls. pink with white standard, to ¾ in. long, in racemes longer than lvs. China. Var. **álba** has white fls.

Kirilòwii. Shrub to 4 ft.: lfts. 7–11, to 1½ in. long: fls. bright rose, ¾ in. long, in racemes longer than lvs. N. China, Korea; hardy N.

leptosépala. Per., the decumbent sts. to 2 ft. long: lfts. 5–9, to 1 in. long: fls. pink or purplish, ¼ in. long, in racemes longer than lvs. Ga. to Mex.

Potanìnii. Shrub to 5 ft.: lfts. 5–9, to 1¼ in. long: fls. lilac-pink, ⅓ in. long, in racemes longer than the lvs. China; hardy N.

pseùdo-tinctòria. Small shrub differing from *I. tinctoria* in racemes longer than lvs., lfts. usually 11, and corolla red. Asia.

stachyòdes: see *I. Dosua.*

suffruticòsa (*I. Anil*). Shrub to 6 ft.: lfts. 11–13, to 1½ in. long: fls. orange, ⅕ in. long, in racemes shorter than lvs. W. Indies; nat. in S. U. S.

tinctòria. Shrub to 2 ft.: lfts. typically 9, but sometimes to 17, to ¾ in. long: fls. reddish-yellow, ¼ in. long, in racemes shorter than lvs. Tropics.

INFERIOR: beneath, lower, below; as an inferior ovary, one that is below the calyx-leaves.

INFLATED: blown up; bladdery.

INFLORESCENCE: mode of flower-bearing; technically less correct but much more common in the sense of a flower-cluster.

ÍNGA. *Leguminosæ.* Trees or shrubs with pinnate lvs. of large lfts., the petiole often winged, large fls. in racemes, spikes or heads, not papilionaceous, the stamens long-exserted, often 4-angled pods thickened on the margins; native in trop. Amer. where some of the species are planted for shade in coffee plantations and as windbreaks; the fleshy pulp around the seeds is also an article of food. Some of them stand in S. Calif. and S. Fla.

dúlcis: *Pithecellobium dulce.*

Feuìllei. To 30 ft.: lvs, of 6–8 lfts., the petioles winged: fls. white: pods flat, to 2 ft. long. Peru.

laurìna. Guama. To 50 ft.: lvs. of 4–6 lfts.: fls. white, fragrant, in long racemes: pods flat, 6 in. long. Trop. Amer.

pulchérrima: *Calliandra Tweedii.*

Samán: *Samanea Saman.*

vèra. Guaba. To 50 ft.: lvs. of 8–12 lfts., the petioles winged: fls. white, in short spikes: pods 4-ribbed, to 6 in. long. Trop. Amer.

INGENHOÙZIA. *Malvaceæ.* A few Mexican shrubs or subshrubs, one sometimes planted in warm regions. **I. tríloba.** To 10 ft.: lvs. alternate, parted nearly to the base into 3–5 narrow lobes, or the upper lvs. may be mitten-shaped or entire: fls. white turning to pink, about 1 in. long: fr. a caps. about ½ in. long.

INKBERRY: *Ilex glabra.*

INODES: *Sabal.*

INSERTED: attached; as of a stamen growing on the corolla.

INSIDE-OUT FLOWER: *Vancouveria parviflora.*

INTERRUPTED: not continuous; in particular, the interposition of small leaflets or segments between large ones.

ÍNULA. *Compositæ.* Showy herbaceous perennials, mostly hairy, with alternate or basal lvs. and solitary or few daisy-like heads, yellow, seldom white; pappus of bristles; native in Eu., Asia and Afr.

The species grow well in the average garden soil but require a sunny situation. Propagated by division and by seeds. Useful in the border, and mostly hardy North.

acaùlis. Stemless: lvs. all basal, oblong-spatulate, entire, to 1½ in. long: heads solitary, yellow. Asia Minor.

bìfrons. Bien., sticky-glandular: lvs. oval-oblong, glabrous. S. Eu.

británnica (*Aster orientalis*). To 1½ ft., hairy: lvs. lanceolate, slightly toothed: heads lemon-yellow, to 1½ in. across. June–Aug. Eu., Asia.

bubònium: *I. ensifolia.*

dysentérica: *Pulicaria dysenterica.*

ensifòlia (*I. bubonium*). To 2 ft., nearly glabrous: lvs. linear-lanceolate: heads yellow, 1½ in. across. July-Aug. Eu., N. Asia.

glandulòsa. Caucasian I. To 4 ft., hairy: lvs. oblong-spatulate to oblong, entire: heads solitary, yellow. Caucasus. Var. **laciniàta** has fringed half-drooping golden-yellow rays. Var. **supérba** is listed as an improved strain.

glaùca. Per. to 15 in.: lvs. ovate to obovate, to 2½ in. long, cordate, glaucous above, margins densely ciliate, entire: heads usually 1–2, to 1½ in. across. Turkestan.

grandiflòra. To 4 ft., hairy: lvs. elliptic-oblong, toothed, to 4 in. long: heads solitary, orange-yellow, to 5 in. across. Himalayas, Caucasus.

Helènium. Elecampane. To 6 ft.: lvs. oblong, to 2 ft. long, toothed, velvety beneath, rough above: heads yellow, to 4 in. across. Eu., N. Asia; widely nat. in E. N. Amer.

hírta. To 15 in.: lvs. lanceolate or ovate-oblong, nearly entire, reticulated: heads yellow, to 2 in. across. July–Aug. Eu., W. Asia.

Hoòkeri. To 2 ft.: lvs. oblong-lanceolate, to 5 in. long, glandular, denticulate: heads to 2½ in. across, ray-fls. pale to orange-yellow. Himalayas.

japónica. To 7 ft. or more, much branched above: lvs. incised-palmate, lobes or segms. dentate, basal ones to 1½ ft. long, st.-lvs. smaller: heads corymbose, peduncled, ray-fls. yellow to orange. Japan.

limonifòlia. To 1 ft., shrubby, gray-pubescent: lvs. ovate or oblong-spatulate, entire: heads yellow. Greece.

macrocéphala: *I. Royleana.*

magnífica. Per. to 4 ft.: upper lvs. ovate-oblong, acuminate, coarsely toothed, setose-pilose: heads yellowish-orange, to 6 in. across or more, on peduncles about 1 ft. long. Caucasus.

montàna. To 1½ ft.: lvs. lanceolate, entire, hairy: heads solitary, 1½ in. across, with many narrow yellow rays. S. Eu.

Óculus-Chrísti. To 2 ft., silky-hairy: lvs. oblong, entire: heads yellow, about 1 in. across. Eu.

odòra: *Pulicaria odora.*

rhizocéphala. Bien., stemless: lvs. in basal rosettes, oblong, to 3 in. long, slightly toothed: heads 10–20, in dense clusters 2 in. across. Asia Minor.

Royleàna (*I. macrocephala*). To 2 ft.: lvs. ovate, to 10 in. long, toothed, tomentose beneath: heads orange-yellow, to 4 in. across, buds conspicuous, black. Himalayas.

salícina. To 2 ft., nearly glabrous: lvs. lanceolate, usually entire, sessile, cordate or rounded at base: heads golden-yellow, 1½ in. across. Eu., Asia.

squarròsa. To 1 ft., erect, somewhat branched: lvs. oblong, somewhat scabrous, acuminate: heads solitary or corymbose, involucral scales reflexed, ray-fls. yellow. Cent. Eu.

INVERTED: turned over; end-for-end; top-side down.

INVOLUCEL: a secondary involucre; small involucre about the parts of a cluster, prominent in some of the Umbelliferæ.

INVOLUCRE: a whorl or aggregation of small leaves or bracts standing close underneath a flower or flower-cluster.

IOCHRÒMA. *Solanaceæ.* Trop. shrubs and small trees sometimes grown under glass and in the open in warm or subtrop. parts, with entire often large lvs. and showy tubular or bell-shaped fls. in pairs or sometimes clusters, purple, blue, scarlet, yellow or white. Propagated by cuttings in Feb. or early Mar., and by seed when obtainable.

cárneum: hort. name.

coccíneum. Shrub, the branches pubescent: lvs. oblong, wavy, long-acuminate: fls. scarlet, 2 in. long, in drooping clusters. Cent. Amer.

fuchsioìdes. Shrub, nearly glabrous: lvs. obovate to oblong, very obtuse: fls. more or less clustered, drooping, orange-scarlet, 1½ in. long. Peru.

hýbridum: hort. name.

lanceolàtum. Shrub to 8 ft., pubescent: lvs. ovate or oval-lanceolate, acute: fls. rich deep purple-blue, to 2 in. long, in umbels. Ecuador.

purpùreum: hort. name.

tubulòsum. Shrub to 8 ft., pubescent: lvs. ovate, acute or acuminate: fls. deep blue, 1½ in. long, in drooping clusters. Colombia.

IONACTIS: *Aster linariifolius.*

IONÍDIUM. *Violaceæ.* Herbs or rarely shrubs of wide distribution with simple lvs. and irregular fls. saccate or gibbous at base, solitary or in racemes in axils.

linearifòlium (*Viola linearifolia*). To 1½ ft.: lvs. oblong-linear or obovate, to 2 in. long and ⅓ in. wide: fls. bluish or bluish-white, ¼ in. long. W. Indies.

IONOPSÍDIUM. Diamond-Flower. *Cruciferæ.* A single flower-garden ann., **I. acaùle,** from Portugal, adaptable also to pots in the cool greenhouse. It is a running miniature, the violet or sometimes white dianty little fls. rising 3 or 4 in. above the ground on very slender stalks: lvs. very long-petioled, the blade nearly orbicular, to ½ in. across.—Seeds may be sown in early spring for bloom before midsummer; or in summer for autumn bloom; or in autumn for spring bloom, the transplants being carried over in pots under glass. See that the plant is well protected from drying winds and burning sun.

IONÓPSIS. *Orchidaceæ.* Small genus of trop. American epiphytic orchids similar to Rodriguezia but differing in possessing shortly spurred sepals and not a spurred lip and in having much smaller indistinct pseudobulbs. Cult. as for Oncidium; see *Orchids.*

satyrioìdes (*I. testiculata*). Plant small, to 12 in. high: lvs. terete, to almost 6 in. long and ⅛ in. wide: infl. racemose or narrowly paniculate; fls. creamy-white often with purple lines, small, about ¼ in. long; lip entire, scarcely longer than sepals. Mar.–Nov. Honduras, Costa Rica, W. Indies.

testiculàta: *I. satyrioides.*

utricularioìdes. Plant to 30 in. high: lvs. basal, flat, to nearly 7 in. long and ¾ in. wide: infl. racemose or spreading-paniculate; fls. white to pale rose often veined or variegated with purple; lip 2-lobed, much longer than sepals. Jan.–July. Fla. and trop. Amer.

IONOXALIS: *Oxalis.*

IPECAC, AMERICAN: *Gillenia stipulata.*

IPOMŒA. Ipomea. Morning-Glory (see also *Argyreia*). *Convolvulaceæ.* Plants of many kinds and habits but mostly known to hort. as twining ann. and per. herbs: lvs. alternate, simple or compound: fls. funnelform, with 5-angled limb. Differs from Convolvulus in having a capitate instead of 2 linear stigmas, and from Calonyction and Quamoclit in the stamens and style not prominently exserted and other characters. The species are widely distributed over the earth.

Ipomeas are of easy cultivation in any good soil. In the North the tubers of the perennial kinds should be dug up and kept indoors over winter. They are useful for covering fences, trellises and banks and may also be grown in pots. Propagated by seeds which germinate more readily if small notches are filed in them. The perennial species are increased by cuttings under glass, and rarely by division or grafting on common stocks.

althæoìdes is listed as a per. trailer with silvery lvs. and pink fls.; the name has no known botanical standing.

Batàtas. Sweet-Potato (which see). Per. with trailing rooting sts. and tuberous edible roots: lvs. varying from ovate and entire to digitately lobed, to 6 in. long: fls. rose-violet or pale pink, 2 in. long, infrequently produced in U. S. Tropics; cultigen.

Bòna-Nóx: *Calonyction aculeatum.*

cairìca. Per., twining: lvs. palmately divided into 5 oval lfts. to 2 in. long; fls. pale pink, to 2½ in. long. Tropics.

cardinàlis: *Quamoclit Sloteri.*

coccínea: *Quamoclit coccinea.*

crassicaùlis (*I. fistulosa*). Sts. fleshy, becoming woody, prostrate or ascending: lvs. heart-shaped, to 6 in. long, acuminate, glabrous above, soft-hairy beneath, petiole hairy, 1–2 in. long: fls. purplish, to 3 in. long, solitary or in pairs; sepals rounded at apex, imbricated: caps. globose, glabrous. Brazil.

digitàta: *I. paniculata.*

dissécta. Per., twining, sts. hairy: lvs. to 4 in. long, digitately 5–7-parted into toothed or lobed segms.: fls. white with purple throat, to 2 in. across, the calyx much enlarged in fr. Tropics, Ga. to Fla. and Tex.

fistulòsa: *I. crassicaulis.*

grandiflòra: *Calonyction aculeatum.*

hederàcea. Ann., twining, hairy: lvs. cordate-ovate, to 3½ in. long, usually 3-lobed to the middle: fls. blue or pale purple, to 2 in. long. Trop. Amer.—Differs from related species in the sepals contracted into linear recurved or spreading tips. Improved forms are **grandiflòra** and **supérba.**

hederifòlia: *Quamoclit coccinea* var.

hirsùtula. Ann., twining or trailing, pubescent: lvs. cordate-ovate, to 3 in. long, becoming deeply 3-lobed: fls. bright bluish-purple to white, to 2½ in. long. Trop. Amer.

Hórsfalliæ. Per., twining: lvs. palmately divided into 5–7 obovate entire thick lfts. to 4 in. long: fls. rose or pale purple, to 2½ in. long, the limb becoming revolute. Tropics. Var. **Bríggsii** has many magenta-crimson fls.

Hùberi: *I. purpurea* var.

imperiàlis: *I. Nil.*

Leàri. Blue Dawn-Flower. Per., twining: lvs. cordate-ovate, to 8 in. long, entire or sometimes 3-lobed, finely pubescent beneath: fls. blue turning pink, the tube white, to 5 in. across. Trop. Amer.

leptophýlla. Bush M. Per., with large tuberous roots and erect or ascending sts. to 4 ft.: lvs. linear, to 5 in. long, entire: fls. purple or pink, 3 in. across. S. D. to New Mex.

limbàta: *I. Nil* var.

máxima: plants so listed in the trade are probably forms of *I. hederacea;* the *I. maxima* of botanists is the Indian *I. sepiaria.*

melanótricha. Vigorous long twiner with blackish retrorsely hairy-hispid sts.: lvs. 5–7-lobed with broad rounded sinuses, not dentate: fls. purple, 4 in. or more long, strongly ribbed; calyx long-hairy. Mex.; cult. in S. Tex.—Has been confused with *I. setosa.*

mexicàna grandiflòra: *Calonyction aculeatum.*

montàna: *Jacquemontia montana.*

mutábilis. Per., twining: lvs. broad-cordate-ovate, to 6 in. long, entire or sometimes 3-lobed, gray-pubescent beneath: fls. blue or purplish, the tube white, to 3½ in. long. Trop. Amer.

Nìl. Per., twining or trailing, hairy: lvs. broad-cordate-ovate, to 6 in. across, usually shallowly 3-lobed: fls. blue, purple or rose, 2 in. across, often double. Tropics. Var. **limbàta** (*I. limbata*). fls. violet-purple margined with white.—Here belong the **Imperial** Japanese morning-glories, *I. imperialis* of hort.

noctiflòra: *Calonyction aculeatum.*

panduràta. Wild Sweet-Potato Vine. Per., with large tuberous root, trailing or twining: lvs. broad-cordate-ovate, to 6 in. long, entire or fiddle-shaped: fls. white with purple throat, to 4 in. across. Conn. to Fla. and Tex.

paniculàta (*I. digitata*). Per., twining or trailing: lvs. to 7 in. across, digitately parted nearly to base into 5–7 narrow entire lobes: fls. lilac or pink, to 3 in. across; sepals thick, much shorter than tube of corolla. Tropics.

Pés-cápræ. Creeping to 60 ft., roots to 2 in. thick and 10 ft. long: lvs. orbicular to elliptical, broader than long, to 4 in. across, fleshy: fls. blue or purple, bell-shaped, to 2 in. long. Tropics and semi-tropics; Ga. to Tex.

pteròdes. Per., twining, with large tuberous root: lvs. cordate, to 3 in. long: fls. yellow, 2 in. long and across. Panama to Guiana.

purpùrea. Common M. Ann., twining, sts. hairy: lvs. broad-cordate-ovate, to 5 in. long, entire: fls. purple, blue or pink with pale tube, to 3 in. long, sometimes double. Trop. Amer., and more or less nat. Var. **álba** has white fls. Var. **Hùberi** (*I. Huberi*), lvs. marked silvery-white, fls. pink to purple and margined white. Var. **violàcea,** fls. violet-purple, a double fld.-form is known.

Quámoclit: *Quamoclit pennata.*

rùbro-cærùlea: *I. tricolor.*

sanguínea: a bright red hort. form, perhaps of *I. purpurea.*

scarletìna: hort. form, perhaps of *I. purpurea.*

Schiediàna. Sts. woody at base: lvs. suborbicular to cordate, acute to acuminate: fls. pale blue, in axillary and terminal racemes of 6–10, stamens included, style nearly exserted. Probably Mex.

sepiària (*I. maxima,* in part). Per. twining vine: lvs. ovate-cordate, to 3½ in. long, rarely lobed, glabrous or hairy: fls. white to pale purple with dark purple eye, to 2 in. long. India.

setòsa. Brazilian M. Per., twining, sts. with stiff purplish hairs: lvs. cordate-ovate, to 10 in. across, 3-lobed and grape-like, notched and toothed: fls. rose-purple, to 3 in. long, calyx nearly smooth. Brazil.—See *I. melanotricha.*

Slòteri: *Quamoclit Sloteri.*

tiliàcea. Per., twining: lvs. cordate-ovate, to 3 in. long: fls. purple or pink with darker throat, rarely white, to 2½ in. long. Trop. Amer.

trícolor (*I. rubro-cærulea*). Per. but grown as ann., twining: lvs. cordate-ovate, to 5 in. long, entire: fls. purplish-blue, the tube white and limb red before opening, to 4 in. across. Trop. Amer.

Tùba: *Calonyction Tuba.*

tuberòsa. Per. vine: lvs. to 8 in. across, digitately parted nearly to base into 5–7 narrowly elliptical acuminate entire lobes: fls. yellow, sepals herbaceous, half the length of corolla-tube. Tropics.

violàcea: *I. purpurea* var.

IPOMŒA, STAR: *Quamoclit coccinea.*

IPOMOPSIS: *Gilia rubra.*

IRESÌNE. Blood-Leaf. *Amaranthaceæ.* Herbs and subshrubs, sometimes climbing, with ornamental foliage, the fls. small and borne in panicles; native in many trop. and temp. regions, a few cult. as house and bedding plants.

Propagated by cuttings taken in late summer for house plants and in February or March for summer bedding purposes in the North; the stock plants for these are easily wintered over. They are handled in the same way as coleus. They are commonly grown only as seasonal plants for foliage and not allowed to go into the flowering stage.

acuminàta: *I. Lindenii.*

Émersonii: *I. Lindenii.*

formòsa: *I. Lindenii.*

Hérbstii (*Achyranthes Herbstii. A. Verschaffeltii*). To 6 ft.: lvs. broad-ovate, to 5 in. long, notched at tip, purplish-red or green with yellowish veins. S. Amer. Var. **aùreo-reticulàta** has green or greenish-red lvs. with yellow veins.—**I. Wállisii** of the trade probably belongs here.

Líndenii (*I. acuminata. Achyranthes acuminata*). Lvs. usually deep blood-red, narrow and sharp-pointed. Ecuador.—Here evidently belong **I. Émersonii** (*Achyranthes Emersonii*) and **I. formòsa.**

Wállisii: *I. Herbstii.*

IRIDÀCEÆ. Iris Family. Irids. About 60 widely distributed herbaceous monocotyledenous genera having corms, bulbs or rootstocks, mostly narrow basal lvs., bisexual fls. subtended by bracts or spathes, the perianth of 6 segms. in 2 series, 3 stamens, inferior usually 3-celled ovary, and capsular fr. The family yields many ornamental subjects, some medicinal products, and other genera have minor economic uses. Some of them are hardy perennials for the open garden, others are summer "bulbs," and a few are known mostly with us as glasshouse subjects. There are no special difficulties in the cult. of the irids except, perhaps, that some of the bulbous and stoloniferous species of iris may require careful attention to conditions. Genera known to cult. in N. Amer. are: Acidanthera, Anapalina, Antholyza, Aristea, Babiana, Belamcanda, Chasmanthe, Cipura, Crocosmia, Crocus, Curtonus, Cypella, Dierama, Diplarrhena, Eustylis, Ferraria, Freesia, Geissorhiza, Gladiolus, Herbertia, Hermodactylus, Hesperantha, Hexaglottis, Homeria, Iris, Ixia, Lapeirousia, Libertia, Melasphærula, Moræa, Nemastylis, Neomarica, Patersonia, Rigidella, Romulea, Salpingostylis, Schizostylis, Sisyrinchium, Sparaxis, Streptanthera, Synnotia, Tigridia, Trimeza, Tritonia, Watsonia.

ÌRIS. Iris. *Iridaceæ.* Per. herbaceous plants widely spread in the northern hemisphere, of 200 species or more, many of them highly prized for the showy and characteristic bloom. The fls. vary greatly in conformation and color. The general structure is a perianth of 6 parts united below into an evident or a very short tube; the 3 outer parts or segms. are mostly long and hanging or horizontal and are known as the "falls," the narrowed lower or stem-like part being the "haft"; the 3 inner segms., known as "standards," are commonly erect or inwardly or outwardly arched, often small, being narrowed below into a "haft" or "claw." There are 3 flat and more or less petal-like colored style-branches, covering the 3 stamens beneath, the stigmatic part being underneath and at some distance from the notched or crested tip of the branch. The ovary is inferior, and it matures into a 3-celled more or less angled many-seeded mostly dry pod or caps. The fls. are borne singly or few together in the axils of green bracts or spathes, at the top of the st. or culm and sometimes from the axils. The infl. from each spathe is known technically as a "head," whether the fls. are one or several; when the fls. are more than one in a spathe or head, they follow each other successively, the old ones withering.

These plants yield a wide range of color, from the lilacs and purples to whites, browns and yellows. The color arangement is difficult to describe because of the complicated markings and the shading of one tint into another. In the lilac series of colors the tints are numerous from blue to purple and it is practically impossible to express them in words; and different persons will describe the same plant in different color terms.

Irises are spring- and summer-flowering plants, the common kinds following the late tulips. They are excellent for borders and also in special beds by themselves; if shaded by bushes or other tall plants they may not make proper late root development for the next years bloom.

The "blue flags" of old gardens are irises, mostly of the bearded type. The horticultural kinds have been greatly improved in recent years and the named varieties are very numerous. In a work of this kind only the species can be entered. Many of the named garden kinds cannot be definitely referred to botanical species, as they are widely variable derivatives and probably in part the results of old hybridizations. One desiring descriptions of varieties should consult books and reports and the publications of the iris societies. The American Iris Society publishes bulletins.

The great diffusion of horticultural irises has arisen in the past from the Kaempferi group or Japanese kinds, and the Germanica group or German bearded kinds. A new group of horticultural irises is undoubtedly to arise from the American species, most of which have been recognized and separated only recently. The introductions to commerce in the past decade of new American irises are represented by *I. Albispiritus*, *callilopha*, *chrysæola*, *chrysophœnicia*, *citricristata*, *citriviola*, *elephantina*, *fourchiana*, *fulvaurea*, *giganticærulea*, *ianthina*, *iodantha*, *Kimballiæ*, *lancipetala*, *ludoviciana*, *miraculosa*, *mississippiensis*, *moricolor*, *œnantha*, *oolopha*, *regalis*, *rhodantha*, *rhodochrysea*, *rivularis*, *rosiflora*, *savannarum*, *Thomasii*, *tripetala*, *vinicolor*, *violilutea*, *violipurpurea*, *viridis*, *viridivinea;* and those longer in cultivation are *I. foliosa*, *fulva*, *lacustris*, *missouriensis*, *prismatica*, *rubicunda*, *Shrevei*, *verna*, *versicolor*, *virginica* among the eastern American types. Many other species will be introduced. Breeding of new combinations and races is under way, with promise of a new type of horticultural iris. It is of the greatest importance that care be taken at the beginning to make dependable records and to forestall confusion in nomenclature.

Latin-form names in the trade of no botanical standing or of unknown origin are listed for whatever record they may be worth. Probably most of them are horticultural forms named as if they were regular species; the value of these forms to plantsmen is not involved in these statements but only the nomenclature in the interest of clarity. The habit of giving a Latin binomial to a horticultural variety leads directly to confusion and should be discontinued; thus, *aurea maculata* is not a variety of *Iris aurea*, as one would suppose, but a form of *I. pumila*.

Special terminology has long been developed in descriptions of the iris flower. The outer three flower parts (sepals) are known as the *falls*, each consisting of an expanded part or *blade* and a contracted base or *haft* (sometimes called claw). The inner flower parts or leaves are the *standards* (petals), consisting also of a blade and claw (sometimes called haft). Still inside are three narrow colored petal-like parts, which are *style-branches*, the stigmatic parts being at the base underneath of terminal expansions. Beneath the style-branches are the anthers.

The classes of iris

Iris separates rather naturally into two divisions: species with rhizomes or rootstocks that are mostly thick and durable; species with a basal bulb rather than rhizome. There is really a third division, with a corm rather than bulb represented by the single species, *I. Sisyrinchium*.

The rhizomatous kinds are again of three main groups: the bearded irises or pogons, in which the basal half of the fall is variously provided with beards or hairs; the crested or evansia irises, in which the falls bear a central ridge or serrated or cockscombed crest; and the beardless irises, or apogons, in which the falls are free of beards or protuberances.

The bulbous kinds may be ranged in three groups: the juno irises, with standards spreading or deflexed and small or even minute, the bulb bearing thick fleshy roots from the base at the resting stage; the xiphiums, or so-called Spanish and English irises, with large and erect standards and smooth bulbs without roots in the resting stage; the reticulatas, differing from the xiphiums particularly in the netted covering of the bulbs and a different nativity.

Included in the general bearded group are associations of various habit and floral characters: the true pogonirises in which the beards or hairs are in a line on the fall and the seeds are without an evident or a conspicuous aril, the rhizomes being stout and more or less regular, and the leaves commonly broad; and other subgroups in which the seeds have prominent cream-colored arils and the beards may be of different character, as the regelias with stolons arising from the main rhizome and flowers 2 or 3 in a spathe and beards in a line on both fall and standard, the pseudoregelias in which the rhizome is compact and without stolons and with hairs in lines on the fall and capsule pointed, and the oncocyclus species with reddish crowded rhizome bearing stolons and 1 flower to a spathe or stem and scattered hairs on the fall.

Apogons or beardless irises are the most numerous in species and the most widely distributed. They are the only ones native in North America, and they occur in the temperate regions of Asia and Europe, often in wet or moist places; the leaves are prevailingly narrow or grass-like. The pogons or bearded irises are native from Portugal and Morocco through southern and central Europe to Asia Minor, Manchuria and western China. The oncocyclus group is small, native in southwestern Asia to Egypt. The evansias or crested irises are a small group in North America and eastern Asia. Regelias are native in the Afghanistan and Turkestan region north of the great mountains, and pseudoregelias east of the Pamirs on the southern side of the Himalayas. The junos are native in the Mediterranean region to Asia Minor, Turkestan and the frontiers of India. The xiphiums proper are in southwestern Europe and northwestern Africa, and the reticulata group in the Caucasus, Asia Minor and southern Palestine.

Cultivation of iris

Irises are planted in either autumn or spring. In the colder parts of the country, spring planting is to be preferred unless transplanted soon after blooming so that the roots become well established before winter; if the bearded iris varieties are divided and planted just after the flowering period, in July or August (in the North) bloom should be obtained the following year, if proper land and care are provided. The kinds with thick heavy rhizomes may be moved when dormant, but those with slender root parts only when new roots are starting so that the plants may become quickly established. Clumps of strong iris should produce 8 or 10 flowering stalks, and the plants should be spaced for this result, say 1½–2 feet apart. Irises are durable perennials, but new plantings are likely to give best results in bloom. A little chemical fertilizer should give good returns, but stable-manure is not advised. Winter mulching is desirable in cold climates, particularly the first year. There are diverse opinions and practices as to the cultivation of iris, which indicates that the plants may thrive under varying conditions.

Named horticultural forms of bearded iris (pogoniris) are particularly numerous and constitute the larger part of the current listed varieties aside from the very different Japanese race; they have been known under the collective name of German iris, but this designation is inexact and should be given up (see *Iris germanica*). The bearded horticultural irises are commonly classified as to stature into dwarf, intermediate, and tall. The rhizome is thick and stands near the surface of the ground, and will withstand considerable drying and exposure; the bearded irises require an open sunny exposure and well-drained ground, and should be shallowly planted. It is well to take up the plants about every fourth year, after blooming, remove the old and weak parts of the rhizomes, and replant in newly worked ground.

Horticultural beardless kinds (apogoniris) are of several subgroups, of which the Japanese and Siberian irises are the most prominent (see *Iris Kaempferi*). The rhizome in the apogons is mostly rather slender or fibrous and will not withstand much exposure. Most of the kinds thrive best in moist places; they usually do not prosper with lime. The Japanese irises are of two groups, one derived apparently from *I. Kaempferi* and the other from *I. lævigata*, the common cultivated varieties probably being from the former. *I. Kaempferi* is not a real bog plant and should be kept comparatively dry except when in active growth, at which time the spaces or channels between plants may be filled with water. *I. lævigata*, however, is a bog plant and thrives where continuously wet. Some growers recommend application of liquid manure to Japanese irises just before blooming if specially good flowers are desired.

Regelia and pseudoregelia irises are rather difficult to manage except in mild countries, as southern California, where there are dry and moist seasons, the moisture coming so late that the plants do not start into autumn growth. The roots may be hardy in the East and North but they are dormant in summer and are likely to start in the autumn and be injured. If lifted when the foliage is about ripe, the roots may be kept dry and then planted so late that they will not start till spring. The oncocyclus irises require similar treatment, although the odd *I. susianus* (the commonest one of them in cultivation) is rather difficult to grow permanently.

Horticultural crested irises (evansias) are about a half dozen species, not greatly modified by cultivation. There are no general rules for culture, as they are of various requirements and degrees of hardiness. *I. japonica* thrives in California; *I. tectorum* thrives where the winters do not destroy the evergreen foliage. *I. gracilipes* of Japan and *I. cristata* of North America are hardy and excellent.

Bulbous irises are not generally grown, as they are likely to start into growth in autumn and they may need protection in cold regions. As garden plants, where they can be given good conditions and care, they are excellent because of their showy often orchid-like early bloom. They do well in California, and can be raised successfully also in the northeastern states. They are sometimes bloomed indoors after the manner of tulips, and good results are attained if the bulbs have been properly ripened. The bulbs are planted in autumn for this purpose, in deep pans or boxes, then set outside and brought in as required like other hardy bulbs, or placed in a cool house and then grown on slowly in a temperature of 50° to 55°, for bloom in late winter or early spring.

Propagation of irises is commonly by dividing the rhizomes, or by using the offsets or bulbels in the bulbous species. Each piece of the rhizome should preferably bear at least one strong bud. Bearded irises are commonly divided just after flowering, so that flowering buds may be formed before autumn. Beardless and crested species may be handled similarly, but preferably, as a rule, by division when growth begins in spring.

Seeds commonly germinate readily in spring if sown immediately on ripening the previous year. Transplant into permanent position as soon as the seedlings are large enough to handle; the bearded irises usually bloom the year following germination, but other kinds mostly the second year.

Species of iris cultivated, or so listed, in North America

To economize space in the following brief diagnosis of species, or of plants under Latin names, letters are employed to distinguish the group or association into which the plant falls: B, plant bulbous; R, plant rhizomatous; a, apogon or beardless; c, crested or evansia; j, juno; o, onocyclus; p, pogon or bearded; ps, pseudoregelia; reg, regelia; ret., irids with reticulated bulbs; x, xiphium. It is understood that the entries here are for the purpose of accounting for the Latinized binomials appearing currently in lists and literature and not as recommendations. Other Latin-form names appearing in lists are likely to be only hort. vars., particularly of the common bearded irises.

acoroìdes: *I. Pseudacorus.*

Ácorus aùrea: listed as a beardless iris of the *spuria* type; hort.

acùta: *I. sibirica.*

æquilòba: *I. pumila.*

alàta (*I. scorpioides*). B, j: nearly stemless, the fl.-tube reaching to the ground: lvs. 6–12 in.: falls 3–4 in. long, blue or sometimes white or variegated white, yellow-keeled, haft broadly winged; standards 1 in. long. Spain to Sicily and Tripoli.

álba: white-fld. forms of many species.

Álbertii. R, p: lvs. erect, broad, to 20 in.: st. branched, each branch 3-fld.: falls lavender-purple or occasionally yellow veined reddish-brown, obovate; beard white tipped with yellow; standards pure white. May. Turkestan.—Place in hot dry position.

álbicans (*R. florentina* var. *albicans*). R, p: much like a white *I. germanica* but lateral fls. closer and on shorter branches that are covered in the scarcely scarious bracts; falls look as if pointed as they hang; standards without hairs or barbs. Probably Arabia; employed in Mohammedan graveyards.

Albispìritus. Ghost I. R, a: st. erect and rigid: lvs. 3–5 in number and 2–3 ft. long: fls. large, white with yellow signal; falls to 5 in. long, undulate and toothed; petals shorter, spatulate, broad claw greenish. S. Fla.

albopurpùrea: *I. lævigata.*

ánglica: *I. xiphioides.*

aphýlla. R, p: to 15 in., branched below: lvs. glaucescent, 6–12 in., withering in autumn: falls and standards purple, beard white or tipped blue. E. Eu.—Synonyms appearing in lists are *I. biflora, bifurca, bohemica, breviscapa, extrafoliacea, falcata, Fieberi, furcata, hungarica, nudicaulis, reflexa, rigida, Schmidtii, subtriflora.*

arenària: *I. flavissima.*

atrofúsca (*I. Haynei*). R, o: st. about 1 ft. concealed in lf.-sheaths: lvs. about 1 ft., broad: falls veined and dotted red-black, beards yellow tipped brown; standards similarly veined and dotted on gray ground. Palestine.

atropurpùrea (*I. Eggeri*). R, o: st. to 8 in., 1-headed, fls. rather small: lvs. slightly glaucous, about 6 in.: falls somewhat oval, blade nearly black with a yellow and a velvety black patch, beard yellowish tipped purple; standards orbicular, reddish-purple. Syria.—See also *I. germanica* var. *nepalensis.*

atroviolàcea: hort. offering of a dwarf bearded very early small-fld. iris, velvety red-purple with white-tipped beard, said to be a var. of *I. pumila. I. atroviolacea* of old botanical publication is unidentified.

áttica: *I. pumila.*

auranítica. R, o: lvs. 6, to 10 in. long, nearly erect: falls and standards bronze-yellow with reddish-brown dots and veins, hairs yellow. Palestine.

aùrea. R, a: st. 3 ft. or more, several-fld.: lvs. 2–3 ft.: fls. golden-yellow, 2 or 3 in a spathe; falls with frilled margin. Probably Kashmir.

azùrea: soft lavender-blue dwarf iris, probably not the botanical *I. azurea.*

Bakeriana. B, ret.: st. short or none: lvs. cylindrical and hollow, becoming 1 ft. or more, 8-ribbed: fl. fragrant, tube to 6 in. long; falls with violet ovate blade with central white and spotted area; standards deep lilac. Asia Minor, Mesopotamia.

baleárica: catalogue name.

balkàna: *I. Reichenbachii.*

Bárnumiæ. R, o: st. 3–6 in.: lvs. linear, to 6 in.: fl. 1 to a spathe, self-colored, red-purple with darker veins; beard of close yellow purple-tipped hairs. Palestine to Egypt. There are yellow-fld. forms, var. **urmiénsis** (*I. chrysantha*). A form with outer lvs., in the tuft falcate is var. **Mariæ** (*I. Mariæ, I. Heleniæ*).

Bártonii: *I. kashmeriana.*

Báxteri: listed as a Siberian beardless with white slightly veined blue falls and blue standards.

bícolor: trade name of uncertain application.

biflòra (*I. lisbonensis. I. subbiflora*). R, p: st. to 12 in., with small clasping lvs., and commonly 1 fl. which is deep blue-purple or violet-purple: lvs. to 9 in. long and 1 in. broad: falls obovate, to 2½ in. long, beard blue to yellowish; standards somewhat lighter. Portugal, Spain, N. Afr. Var. **fràgrans** is listed.—Another *I. biflora* is *I. aphylla.*

bifúrca: *I. aphylla.*

biglùmis: *I. ensata.*

Biliòttii. R, p: like *I. germanica* with red-purple falls and the haft is white with purple-brown veins: stigmatic crests iridescent: spathes long, narrow and green or scarious (if at all) only at the tip. N. E. Asia Minor.

binàta: probable hybrid of *I. aphylla* and *I. pumila.*

Bismarckiàna. R, o: st. 1 ft. or more, sheathed: lvs. 8 in., broad, glaucous: falls black-purple dotted and veined on cream-yellow ground, and standards with blue on cream-white ground; beard purple-black on yellowish ground. N. Palestine.

Bloudòwii (*I. flavissima* var. *Bloudowii*). R, p: st. to 6 in., leaf-bearing only at base, 2–3-fld.: lvs. to 8 in. long and ½ in. broad: falls rounded, yellow and haft veined brownish, beard yellow; standards bright yellow. Turkestan to N. China.

bohèmica: *I. aphylla.*

Boissièri (*I. heterophylla*). B, x: st. about 1 ft., with 1 or 2 fls.: lvs. linear, channelled, about 1 ft. long: fall obovate, blue-purple with red-purple veins, yellow on haft, beard yellow; standards purple but reddish on lower part. Portugal.

Bornmùelleri: *I. Danfordiæ.*

bosnìaca: *I. Reichenbachii.*

bracteàta. R, a: st. 4–12 in., bracted, 1-headed: lvs. few and rigid, linear, exceeding st.: falls broad-oblanceolate, yellow, veined brown-purple; standards short, yellow. Ore.

brévipes. R: to 6 in., st. zigzag, often reclining on the ground or ascending: fls. usually in pairs; falls violet-blue, crest yellow: caps. 6-angled, to 1¼ in. long. S. La.

breviscàpa: *I. aphylla.*

buchárica. B, j: st. to 18 in., with 5–7 fls.: lvs. broad, to 1 ft. long, glaucous underneath: falls 2 in. or more long, golden-yellow with white haft and with a wavy golden crest; standards small, pure white. Bokhara, Turkestan.

Bulleyàna. R, a: st. to 18 in., hollow, with single head of 1 or 2 fls.: lvs. 18 in. long, ½ in. broad, glaucous underneath: falls obovate, blue-purple on creamy ground; standards oblanceolate, pale blue-purple. W. China, or perhaps a hybrid.

cærùlea. B, j: st. 15 in., with 3–5 fls. in lf.-axils: lvs. about 8, broad, with white edge: falls with obovate-oblong bright lilac blade, crest whitish, yellow blotch in throat; standards to 1 in. long, drooping, lanceolate-pointed. Turkestan.—The name *cærulea* may also be applied to other blue-fld. irises.

cæspitòsa: *I. ensata.*

califórnica. R, a: usually referred to *I. macrosiphon* but differs in greater size (st. to 16 in. high), fls. cream-color with lilac veins. Calif.

callilópha. R, a: st. erect and stiff: falls to 4 in., with yellow haft and lilac or purple blade, haft-center orange-yellow with darker markings; standards of similar color as falls, yellow claw nearly wingless; radial zone of signal deep yellow with the outline of it streaked into the falls color. S. La.

canadénsis: *I. setosa* var. *canadensis*, east-American representative of an Asian and Alaskan species sometimes separated as *I. Hookeri.*

carolìna, caroliniàna: *I. virginica.*

Céngialtii. R, p: st. to 1 ft., 1–3-headed: lvs. about 6 in. long, slightly glaucous: falls broad-obovate, blue-purple, haft veined, beard white tipped orange; standards somewhat lighter color than falls. S. Tyrol, N. Italy.—Probably a form of *I. pallida,* distinguished by less glaucous foliage and spathes pale brown rather than silvery and of more slender and lower habit.

chalcedónica: "light mauve and purple."

Chamæìris (*I. italica. I. lutescens. I. olbiensis. I. virescens*). R, p: st. 1–10 in., commonly 1-headed and fls. mostly 2 to spathe: lvs. 3-6 in. long and ½ in. broad, slightly glaucous: falls obovate, blue, red-purple, yellow or white, beard of same range but usually contrasting; standards slightly shorter; tube about 1 in. long. N. W. Italy and adjacent France. Var. **Cámpbellii** is listed as to 4 in. high with deep purple fls.—Often sold as *I. pumila.*

Chékillii: st. 4 ft.: beardless hort. iris, old rose overlaid with coppery veins, lighter at edges.

chinénsis: *I. japonica.*

chrysæòla. R, a: stout and rigid: fls. violet-blue, with yellow signal and veins; petals broadly spatulate; sepals recurved-spreading. S. La.

chrysántha: *I. Barnumiæ* var. *urmiensis.*

chrỳsofor. R, p: a hybrid strain of hort. origin listed as to 1 ft. and of wide color range.

chrysógraphes. R, a: st. to 18 in., hollow, with 1 or 2 small lvs., the other lvs. to 18 in. long, ½ in. broad: falls oblong, deep violet-velvety-purple, haft with golden veins; standards oblanceolate, deep violet. W. China.—Of the *I. orientalis* type.

chrysophœnícia. R, a: falls somewhat shorter than in *I. callilopha;* radial zone of signal light yellow with the outline clearly separated or demarked from the general falls color. S. La. Var. **álba** is listed.

chrysophýlla. R, a: probably a form of *I. californica* with lanceolate stigma-crests to ¾ in. long. S. Ore.

Chrysowègii: listed as a hybrid with grass-like lvs., fls. royal purple.

cítrea: dwarf bearded iris with yellow fls.

citricristàta. R, a: st. erect and stiff: fls. violet or violet-blue, signal of falls lemon-colored with a paler zone; falls to 4 in. long, blade a little longer than haft and oval-obovate; standards much shorter than falls, cuneate-spatulate. S. La., forming great colonies. Var. **álba** is listed.

citriviòla. R, a: st. erect and rigid: fls. deep violet with brilliant lemon-color on signal; falls recurved-spreading, haft greenish-white veined yellowish; standards same color as blade of falls. S. La.

Clárkei (*I. himalaica*). R, a: like *I. sibirica,* but st. solid and usually branched, lvs. shining above and glaucous underneath, spathes all herbaceous and green. Himalayas, 6,000–11,000 ft.

Clusiàna: a confused name, applied to two or three species.

columncàta: listed name.

compácta: dwarf bearded: falls black-purple; standards violet-blue: hort.

cóncolor: one of the forms of bearded iris, probably to be associated with *I. sambucina.*

confùsa. R, c: to 3 ft.: fls. 1½–2 in. across, white faintly tinged with mauve, with yellow stain and orange spots; falls and segms. undulate-crenate at margins, crests ciliate-fimbriate. Yunnan.—Some of the material grown as *I. Wattii* may belong here.

coreàna is listed.

creténsis, crética: *I. unguicularis.*

cristàta. R, c: st. 1–3 in. high, 1–2-fld.: lvs. about 6, to 9 in. long and ¾ in. broad: fls. blue, segms. obovate, to 1½ in. long, the falls little longer than standards and bearing a white and yellow more or less dotted crest; tube slender and exceeding the spathes. Md. to Ga. and Mo. Var. **álba,** white-fld. race. Var. **cærulea** is listed.

cùprea: *I. fulva.*

cyànea: dwarf bearded iris with violet-blue fls.

cypriàna. R, p: st. about 3 ft., with terminal head of 3 fls. and 2 or 3 lateral heads: lvs. somewhat blue-green, rather narrow, 2 ft.: falls wedge-shape, blue-lilac, beard whitish; standards paler than falls. Cyprus.

dahùrica: *I. flavissima.*

Dánfordiæ (*I. Bornmuelleri*). B, ret.: st. 2–4 in., 1-headed: lvs. 2, at first short but becoming 12 in., 4-sided: falls with ovate-lanceolate orange blade veined and dotted olive-green; standards reduced to small bristles. E. Asia Minor.

darwásica (*I. Suwarowii*). R, reg.: to 1 ft.: lvs. glaucous: fls. 3; falls and standards narrow, greenish-yellow veined reddish-brown, beard white tipped with blue, segms. all very acute, late Apr. Persia.

Delavàyi. R, a: st. 3–4 ft. or more, hollow, with 2 or 3 heads: lvs. to 2½ ft. and to 1 in. broad, glaucescent: falls orbicular and notched, violet-purple with white patch and markings; standards lanceolate, small. S. W. China.

delicatíssima: tall bearded hort. iris, lilac-rose.

demawéndica. R, o: st. 6 in., with 1 lf. and fl.: lvs. 6–8 in. long, almost linear: falls deep violet-purple, veined and dotted, beard dark; standards paler. N. Persia.—Perhaps a form of *I. iberica.*

dichótoma. R: single representative of the pardanthopsis section (Pardanthus-like) with many fls. in racemes on forked sts. 2 ft. or more high: lvs. 6–8, bluish-green and white-edged, to 12 in. long, borne fan-shaped: blade of falls nearly square and horizontal, white with brown-purple spots, haft barred and flecked; standards grayish-white striped purple. Siberia to N. China. Var. **álba** is listed.—Fls. late and then usually dies; seeds quickly produce new flowering plants; very floriferous.

Douglasiàna (*I. Watsoniana*). R, a: st. to 20 in., simple and 1-headed or sometimes branched: lvs. equalling or surpassing st., about ½ in. broad: fls. variable, lilac-purple to cream-white or white; blade of falls broadly oblanceolate, standards lanceolate and somewhat shorter. Calif., Ore. Var. **pygmæa** is said to be a dwarf form.

ebúrnea: dwarf bearded hort. iris: falls creamy-yellow; standards creamy-white.

Éggeri: *I. atropurpurea.*

elephántina. R, a: st. erect and rigid: fls. ivory-white; falls to 4 in. long, recurved, blade nearly or quite oval and exceeding greenish haft, with signal lemon-colored and radiating lateral veins; standards spatulate, shorter than falls. S. La. Var. **álba** is listed as having pure white fls.

elongàta: *I. scariosa.*

ensàta (*I. biglumis. I. cæspitosa. I. lactea. I. longifolia*). R, a: making close clumps: st. 6–16 in. high, flattened, 1-headed: lvs. linear, equalling or exceeding st.: fls. lilac to white, sometimes finely veined, rather small; blade of falls oblanceolate; standards usually darker than falls. Cent. Asia, China, Japan. Var. **álba,** fls. white. Var. **hyacínthina,** catalogue name. Var. **pabulària** (*I. pabularia*) is large and robust, 2–3 ft., producing much foliage, once intro. for forage under the name "krishum," withstanding drought.

Euleféldii: *I. scariosa.*

excélsa: listed name of unknown botanical standing.

extrafoliàcea: *I. aphylla.*

falcàta: *I. aphylla.*

falcifòlia. R, reg.: small, 10 in. or more: lvs. linear and rush-like, curved, shorter than sts.: fls. 2–4, lavender; falls oblong, 1½ in. long; standards narrow-lanceolate, 1½ in. long. Caspian region to Afghanistan.

Fièberi: *I. aphylla.*

filifòlia. B, x: st. to 18 in. or more, 1-headed and usually 2-fld.: lvs. 1 ft. or more, very slender: fls. reddish-purple with darker veins; falls with orbicular blade and orange central patch; standards obovate and emarginate. S. Spain, N. W. Afr.

fimbriàta: *I. japonica* or *I. tectorum.*

Físheri: listed name of a dwarf bearded iris.

flàva: light yellow late hort. iris.

flavéscens. R, p: st. 2–2½ ft., with 2–4 heads, the spathes not inflated and dry (scarious): lvs. about half as long as st., to 1½ in. broad: falls obovate-cuneate, 2½ in. long, blade pale yellow to nearly white with brownish veins, beard yellow, standards obovate, pale lemon-yellow. Probably a hybrid.—The name *flavescens* is sometimes applied to *I. imbricata.*

flavíssima (*I. arenaria. I. dahurica*). R, p: st. 1–3 or 6 in., 1-headed with 2 or 3 yellow fls.: lvs. 3–4 and about 3–8 in. long, very narrow: falls oblong, the haft faintly veined brown-purple, beard orange; standards oblong-clawed, veined brown-purple on edge. Hungary to Mongolia.

flexicaùlis. R, a: relative of *I. foliosa* but much less leafy, and of *I. hexagona,* from which it differs in the weak zigzag prostrate sts., with 1 or 2 fls. arising at each node: fls. deep or dull violet; falls broad-spatulate, to 2¾ in. long, spreading and perhaps recurved at tip; standards erect-spreading, shorter than falls. South cent. U. S.

flexuòsa: *I. sibirica* var.

florentìna: *I. germanica* var.

floribúnda: trade name for a bearded iris.

flórida: dwarf bearded pale yellow hort. iris.

fœtidíssima. GLADWIN. R, a: st. 2–3 ft., 2- or 3-headed: lvs. to 1½ ft. and 1 in. broad, evergreen, ill-smelling when bruised: fls. small or inconspicuous, purplish-gray (but a yellow-fld. form); blade of falls nearly orbicular and slightly notched at end; standards narrow. W. and S. Eu. and N. Afr.—Grown for the striking large pods that open in autumn and display the many scarlet globular seeds.

foliòsa. R, a: st. zigzag and to 18 in.: lvs. green, to 1½ in. broad and surpassing the blue-purple fls.: falls with ovate blade with greenish-white patch; standards oblanceolate. Ky. to Kans.

Fontanèsii. B, x: like a slender *I. tingitana*, but color clear light blue and central yellow band on rounded falls. Morocco.

Fórrestii. R, a: much like *I. Wilsonii* but more slender: sts. to 18 in.: lvs. narrow and glossy, not equalling st.: fls. clear yellow, sometimes with inconspicuous purplish veins; standards almost erect. S. W. China, at high altitudes.

fourchiàna. R, a: st. erect and strict: fls. red-violet; falls about 3 in. long, the haft yellow-green, signal yellow not extending into blade; petals often brighter violet than falls, the claw apricot. S. La.

fràgrans: doubtful name in the lists; may be *I. ensata*.

fúlva (*I. cuprea*). R, a: st. rather slender, 2–3 ft., several-fld.: lvs. somewhat glaucous, equalling or less than st., to 1 in. broad: fls. reddish-brown or copper-colored, variegated blue and green; falls oblanceolate, 2½ in. long; standards emarginate. Ga. to Ill., Mo. and Tex.

fulvàla. Hybrid between *I. fulva* and *I. foliosa* (*Lamancei*).

fulvaùrea. R, a: st. rather slender, erect and straight: fls. red or orange-red; falls spreading with apricot-yellow crimson-veined haft and crimson-scarlet blade, signal yellow to red-orange; standards apricot and crimson. S. La.

furcàta: *I. aphylla*.

Gàtesii. R, o: st. to 18 in., spathe 1-fld.: lvs. glaucous, to ¾ in. broad, to 12 in. long: fls. very large, the under color pale greenish or grayish-white with close purplish veins and dots; blade of falls and standards 4–5 in. across. Asia Minor.

georgiàna: *I. virginica*.

germánica (*I. vulgaris*). R, p: st. about 2 ft., bearing 4 or 5 fls.: lvs. glaucous, to 18 in. long and 1½ in. broad: blade of falls obovate, reddish shade of blue-purple, beard white more or less tipped yellow; standards obovate, blue-purple, the claw often bearing a few whitish hairs. Perhaps Medit. but unknown native —The forms of this plant are many and they constitute one source of the cult. tall bearded irises, and these vars. are frequently known as "German irises" but this vernacular should be discarded; *I. pallida*, *I. variegata* and other species are involved. Var. **florentìna** (*I. florentina* of many authors, var. *alba*) has fls. nearly white, with traces of pale blue or purple, plant rather slender; one of the sources of the perfumed orris-root. Var. **nepalénsis** (var. *atropurpurea*), Purple King, has red-purple fls., the falls being darker. Varieties listed with Latin-form names are: **asiática, aùrea, Brookiàna, honorábilis, lùtea, magnífica, màjor.**

giganticærùlea. R, a: st. erect and stout, to 4 ft.: fls. violet-blue, musk-scented; falls about 4 in. long, recurved-spreading, blade oval, haft greenish with yellow signal; standards broad-spatulate, somewhat shorter than falls. S. La. Var. **álba** is listed.

glaucéscens: *I. scariosa*.

Górmanii. R, a: sts. slender, 1-fld., to 16 in. high: lvs. linear, those on st. 2 or 3: fls. cream-color to pale yellow; sepals or falls ascending, more or less spatulate, about 1¼ in. long; petals or standards erect, somewhat shorter. Coast mts., Ore.

gracílipes. R, c: slender, st. to 10 in., forked: lvs. to 1 ft. long and ⅓ in. broad: falls about 1 in. long and ½ in. broad, notched, pink-lilac with deeper veins and central patch of white, crest yellow; standards narrower, pink-lilac. Japan. Var. **álba,** hort. name.

grácilis: name of various applications, perhaps most correctly an albino-like form of *I. aphylla* with fls. pale yellowish or grayish-white somewhat splashed purple; also a synonym of *I. prismatica*.

gramínea. R, a: st. 8–9 in., 2-edged, its lvs. sometimes surpassing the 1 or 2 fragrant fls.: lvs. grass-like, mostly very narrow but sometimes 1 in. broad, 1–3 ft. long: blade of falls orbicular, yellowish-white veined purple; standards broad-lanceolate, somewhat redder. Cent. and S. Eu. to Caucasus.

grándis: listed as a Siberian iris, violet reticulated white: hort.

Gránt-Dúffii. R, a: st. 6 in., 1-headed: lvs. linear, 18 in.: blade of falls obovate, yellow with orange patch; standards oblanceolate, yellow with lilac or purple on claw. Palestine, S. E. Asia Minor.

Gueldenstadtiàna: *I. halophila*.

hæmatophýlla: plants under this name may be *I. orientalis* or *I. ensata*.

halóphila (*I. Gueldenstadtiana*). R, a: st. 12–18 in., with 2 or 3 heads: lvs. mostly exceeding sts., ample: fls. rather small; blade of falls rounded and ½–¾ in. broad, white veined purple, dull yellow or gray-purple; standards shorter and erect. Caucasus to N. W. India. Var. **lùtea** is listed.—Allied to *I. spuria*, but known by the small horizontal blade of fall.

Hártwegii. R, a: st. to 1 ft., flattened, its lvs. 1–3: lvs. linear, longer than st.: fls. 2, yellow with lavender veins, or pale lilac with deeper veins and yellow patch; falls obovate-cuneate; standards oblanceolate, a little longer than falls. Coniferous forests, N. Calif. Var. **australis,** fls. lilac-purple and larger; high elevations in S. Calif. and by some not considered distinct from *I. tenax*.

hauranénsis. R, o: to 16 in.: lvs. erect, closely sheathing, to 6 in. tall: falls and standards white with many minute dark purple dots, beard of short white hairs. Palestine.

Hàynei: *I. atrofusca*.

Héleniæ: *I. Barnumiæ* var. *Mariæ*.

heterophýlla: *I. Boissieri*.

hexagòna. R, a: st. to 3 ft., mostly simple, leafy: lvs. 2–3 ft. and to 1½ in. broad: fls. solitary and sessile; falls with obovate lilac or sometimes white blade to 4½ in. long; standards much narrower and erect, lilac varying to white. Swamps, S. C. to Fla. and Tex. Var. **álba,** catalogue name.

himalàica: *I. Clarkei*.

hispánica: *I. Xiphium*.

Hístrio. B, ret.: st. short or almost none, 1-headed: lvs. 4-angled, to 1 ft. long, usually appearing before the fls.: falls obliquely ascending, the blade deep blue on margins and creamy-white and blotched in center, to 2½ in. long; standards oblanceolate, blue. Syria, Asia Minor.—Differs from *I. reticulata* in lighter colored odorless earlier fls.

histrioìdes. B, ret.: like *I. Histrio* but fls. arise about as soon as lvs. appear, and the falls stand nearly horizontal and central patch is narrower; bright blue-purple, with central white blotched area and yellow ridge: lvs. stout. N. Asia Minor. Var. **màjor** is listed.

hollándica: hort. strain of *I. Xiphium*, more often referred to as Dutch Bulbous iris.

Hoogiàna. R, reg.: st. 18–20 in., fls. 2 or 3 in 1 head: lvs. to 18 in. and ¾ in. broad: fls. large, of uniform gray-blue or blue-purple, with thick golden beard; falls about 3 in. long; standards erect-connivent, broad at top. Turkestan.

Hoòkeri: see *I. setosa*.

hùmilis. R, a: st. about 1 in. high, 2-lvd.: lvs. linear, to 1 ft. or so: blade of falls nearly orbicular, deep blue-purple with darker veins, haft with greenish-yellow to white under color veined reddish-brown; standards oblanceolate, blue-purple. Transylvania to Caucasus and perhaps beyond. Var. **mìnor,** a hort. name.—Another *humilis* is a form of *I. unguicularis*.

hungárica: *I. aphylla*.

hyacínthina: see *I. ensata*.

iánthina. R, a: st. erect and rigid: fls. deep violet; falls about 3 in. long, reflexed, spreading, haft cream-colored, signal with a violet-black streak; standards flushed reddish near base. S. La.

ibérica. R, o: st. 3–6 in., 1-fld.: lvs. 5 or 6, linear, glaucous, 4–6 in. long: blade of falls nearly orbicular, about 3 in. long, with whitish-yellow ground, brownish-purple veined and triangular patch of purplish-black; standards with orbicular connivent blades silvery-white dotted and veined purplish or brownish. Caucasus to N. Persia.

illýrica: race of *I. Cengialtii*.

imbricàta (*I. sulphurea*). R, p: st. to 20 in., bearing several heads, the spathes inflated and green: lvs. broad, 6–8 in. long at flowering time, the outer ones obtuse: falls obovate, greenish-yellow veined brown-purple on haft and sometimes on blade, the beard whitish tipped orange; standards rounded-oblong, greenish-yellow. S. W. Asia.—Separated from *I. flavescens* by the spathes.

imperiàlis. Fls. imperial purple, signal with golden I-bar. La.

innominàta. R, a: like *I. Purdyi* in dark green narrower lvs., darker fls. and in characters of bracts and spathes: to 30 in. high: lvs. abundant: fls. dark yellow, usually 2, with purple lines on falls, the blade of which is nearly 2 in. long; standards somewhat shorter and lighter yellow lacking purple lines. Ore.

intermèdia. Name for hort. intermediate irises, earlier blooming than the main German, said to be crosses between *I. germanica* and form of *I. pumila*.

interrégna: hort. name.

iodántha. R, a: st. erect and stout: fls. violet; falls recurved, haft winged and greenish-yellow and creamy and veined, signal lemon-yellow; standards and blade of falls violet, and the claw streaked. S. La.

Ístria: hort. form of *I. germanica* var. *florentina* having greenish veins on the haft and a white beard.

itálica: *I. Chamæiris.*

Jacquesiàna: listed hort. name: tall bearded copper and maroon iris.

japónica (*I. chinensis*). R, c: st. 18 in., of 5–8 branches and many-fld.: lvs. to 16 in. long, thick, glossy on one side and glaucous on the other, often exceeding infl.: fls. 2–3 in. across, pale lavender-blue with conspicuous yellow crests and orange markings on falls; segm. margins undulate-serrate, crests fimbriate. Japan, China.—Individual fls. short-lived.

jordàna. R, o: to about 16 in., st. leafy: lvs. erect, to 15 in.: fls. to 6 in. across; falls reddish-purple with beard of yellow hairs; standard similarly colored with white haft, veined and dotted purple. Palestine.

júncea. B, x: st. about 1 ft., with 1 or 2 golden-yellow fls.: lvs. narrow, about 18–24 in. long, mostly appearing in autumn: falls about 2¼ in. long, the blade nearly orbicular, emarginate, usually faintly brown-veined in lower part; standards much shorter, spreading. Sicily, N. Afr.

Junònia. R, p: st. to 2 ft., with usually 5 heads: lvs. shorter, about 1¾ in. broad, glaucous: falls obovate, about 3½ in. long, the blade light purple, beard white tipped orange; standards obovate, pale blue, sides reflexed. Asia Minor.

Kaémpferi (*I. lævigata* var. *Kaempferi*). JAPANESE I. R, a: st. to 2 ft. or more, with terminal head of 2 fls. and commonly a lateral head: lvs. to 2 ft. and more, with a marked midrib: fls. reddish-purple (in the wild); falls hanging, 3 in. long, blade oval or obovate, the haft with yellow center; standards about ⅔ as long as falls, narrow, also reddish-purple. Manchuria, N. China, Japan. Var. **grandiflòra** is listed.—Source of numberless cult. forms, varying in form and color of fl.; sometimes the fl. is partially double due to the style becoming petal-like. See *I. lævigata.*

kamaoénsis: *I. kumaonensis.*

kashmeriàna (*I. Bartonii*). R, p: st. about 2 ft., with 1 or 2 fragrant fls. in 1–3 heads, spathes 3 or 4 in. long: lvs. to 20 in., glaucous: falls obovate, blade creamy-white, sometimes tinged blue, beard white and yellow; standards white. Kashmir, Afghanistan, Baluchistan.

Kerneriàna. R, a: st. 12 in. or less: lvs. ½ in. or less broad, in clusters: fls. yellow; falls broad-lanceolate and undulate, about 2½ in. long; standards linear-lanceolate and undulate, notched at end, more or less twisted. Asia Minor.

Kímballiæ. R, a: st. erect and rigid: fls. violet with yellow center on haft; falls to 4 in. long, recurved-spreading, blade ovate and violet with yellowish blotch; standards spatulate, somewhat shorter than falls, red-violet. N. W. Fla.

Kòchii. R, p: probably a form of *I. germanica*, rather dwarf (st. mostly about 18 in., sometimes 2 ft.), fls. red-purple without white under color displayed between the brownish veins at end of haft. Istria.

koreàna. R, a: small, somewhat taller than *I. minuta* with 2 fls.: lvs. to 14 in. long: fls. yellow; sepals obovate, petals erect. Korea.

Korolkòwii. R, reg.: st. about 1 ft., with 2 or 3 small lvs. and 2 or 3 fls. in one head: lvs. glaucous, about 1 ft. long: falls obovate, pale olive-green with brown veins; standards erect, obovate, whitish with brown veins. Turkestan. Var. **cóncolor,** trade name.

kumaonénsis. R, ps: st. practically none or seldom 2–3 in., 1-headed and 1- or 2-fld.: lvs. glaucous, finally becoming 18 in. long: fls. bright lilac or blue-purple; blade of falls oblong-ovate, veined and mottled, haft white with purplish veins. Himalaya, at high altitudes.

láctea: *I. ensata.*

lacústris (*I. cristata* var. *lacustris*). R, c: differs from *I. cristata* in its commonly smaller size and rather narrower lvs., and perianth-tube only 1 in. or less long and not exceeding spathes: fls. blue. Shores, Lakes Huron, Michigan, Superior.

lævigàta (*I. albopurpurea*). R, a: like *I. Kaempferi* but lvs. lacking distinct midrib, standards as long as falls, fls. blue-purple (in wild). E. Asia, China, Japan. Vars. **atropurpùrea** and **semperflòrens** are listed.—Source of some of the irises grown by the Japanese.

lancipétala. R, a: st. slender but erect and rigid: fls. lavender; falls spreading, blade lavender and much veined, haft yellowish with signal very narrow and dark yellow; standards pale lilac-brown veined. S. La.

làzica: *I. unguicularis* var.

Leichtlínii: *I. stolonifera.*

linifòlia. B, j: bulb slender; lvs. 3–4, narrowly ensiform, acute, dark green with white horny edge: falls greenish-white with yellow marginal blotch; standards minute and horizontal: seeds characterized by presence of white aril. Persia.—Infrequent and grown with difficulty.

lisbonénsis: *I. biflora.*

longiflòra: *I. scariosa.*

longifòlia: *I. ensata.*

longipétala. R, a: st. to 2 ft., 1-headed or with 1 or 2 lateral heads: lvs. narrow, equalling or exceeding st.: fls. bright lilac; falls obovate, drooping, central ridge yellowish; standards oblanceolate. Coastal Cent. Calif.—See *I. missouriensis.*

Lortétii. R, o: st. about 1 ft., bearing 1 large beautiful fl. with creamy-white under color closely veined and dotted crimson: falls obovate, reflexed, with dark crimson patch, beard of scattered brown hairs; standards orbicular, 3–4 in. broad, erect. Mt. Lebanon.

ludoviciàna. R, a: st. rigid and erect: fls. red-violet; falls recurved-spreading, about 3 in. long, haft yellow and dark-veined, signal light yellow; standards red-purple with red-violet toward center. S. La.

lupìna: *I. Saari.*

lùrida (*I. Redoutiana*). R, p: st. about 18 in. high, 1-headed with 2 fls. and sometimes 1 lateral fl.: lvs. rather narrow, reaching 1 ft.: falls long and narrow, blade reddish-maroon, beard prominent of orange hairs; standards oval, emarginate, brownish-purple. Probably of garden origin.

lusitánica: *I. Xiphium.*

lùtea: *I. Pseudacorus.*

lutéscens: a confused name and plants so listed may be either *I. Chamæiris, I. pseudo-pumila, I. pumila* or forms of these.

macedónica: *I. Reichenbachii.*

macrántha: hort. name of a tall bearded iris.

macrocárpa: listed name of a dwarf bearded iris.

macrosìphon. R, a: st. very short but sometimes to 8 in.: lvs. very narrow, exceeding sts.: fls. 1 or 2, bright lilac-purple; falls 2 in. long broadly oblanceolate; standards lanceolate, edges undulate. Cent. and N. Calif.

maculàta: a confused name, the true form from Mesopotamia, and here described, is believed not to be in cult. R, o: lvs. falcate, to 6 in. long; fl.-st. short: fls. large; falls obovate to 2 in. long, said to be "pale, marked with a blue or lilac central spot"; standards oblong-lanceolate, cuspidate, as long as falls, styles about 1 in. long with obtuse crest.—The material in cult: under this name may be *I. Sisyrinchium.*

magnífica: very large-fld. form of German iris, sts. 4 ft. high: falls dark reddish-purple, standards light violet-blue.

màjor: name applied to large forms.

Mandraléscæ: *I. pallida.*

mandshùrica. R, p: yellow-fld. plant like *I. flavissima*, apparently not in cult. although the name is in the hort. literature.

Manissádjanii: *I. Saari.*

mardinénsis: listed name (Mardin is in Armenia).

Marìæ: *I. Barnumiæ* var.

marítima: *I. sibirica.*

melanostícta. BLACK-SPOTTED I. R, p: st. to 16 in.: lvs. narrowly linear: falls yellow with violet-black spots and veins; standards pale yellow. Palestine.

mellìta (*I. rubro-marginata*). R, p: st. to 4 or 5 in., 1-headed: lvs. 3–5 in. long and ½ in. broad: fls. of delicate texture, fragrant, brown-purple (varying to yellow); falls obovate, shorter than the standards. S. E. Eu., Asia Minor.—Differs from *I. pumila* in more rigid keeled herbaceous spathes.

mesopotámica. R, p: large, the st. 3–4 ft., erect, 3 fls. in terminal head and 2 in lateral ones: lvs. to 2 in. broad and 2 ft. long: fls. lavender-blue; blade of falls obovate, haft nearly white overlaid with purple-bronze veins, beard white and orange; standards obovate, somewhat lighter than falls. Probably Armenia.—Under the form known as *I. Ricardii* it has entered into the development of hort. tall bearded irises.

Mìlesii. R, c: st. to 3 ft., leafy, bearing 2–4 branches: fls. about 4 in. across, pale reddish-lilac with darker veins and blotches and prominent orange or yellow crests on the falls, crests finely laciniate. N. W. Himalayas.

minùta. R, a: st. very short: lvs. 5–6 in. long, ⅛ in. or less broad: fls. yellow; falls with obovate emarginate black-brown at edges; standards obovate and emarginate, shorter than falls and somewhat paler in color. Japan.

miraculòsa. R, a: st. rigid and strict: fls. large, lavender or white; falls 4 or more in. long, recurved-spreading, blade elliptic to obovate, signal marked bright yellow; standards spatulate or cuneate, shorter than falls and of similar color. S. La.

mississippiénsis. R, a: st. zigzag, to 8 in. long: lvs. long: fls. lavender to violet; falls more or less recurved, about 2½ in. long, haft white and darker veined, signal yellow; standards scarcely clawed, white toward base. La.

missouriénsis (*I. Tolmieana. I. longipetala montana*).

R, a: st. mostly simple and rather slender, 6–24 in. high, much like *I. longipetala* but usually not so tall and spathes dry (scarious) rather than foliaceous (green) and lvs. commonly shorter than st.: fls. pale blue and variegated. S. D. to B. C., S. Calif. and Ariz.

monaùrea. Hybrid between *I. Monnieri* and *I. aurea:* very large deep clear yellow fls.

mongólica: listed name.

Monnièri. R, a: perhaps a color form of *I. ochroleuca*, the fls. soft lemon-yellow: blade of falls 1½ in. broad, orbicular, emarginate; standards oblong-cuneate, 3 in. long. Probably of garden origin.—Some authors treat *I. Monnieri* and *I. ochroleuca* as variants of *I. spuria.*

mónspur: strain of hort. hybrids from W. Asiatic stock.

montàna. R, a: similar to *I. missouriensis* with which it may be confused in the trade, differing in its fewer fls. which are lilac or lavender with darker veins and a central yellow blotch on the blade of the falls. Rocky Mts.

morícolor. R, a: st. rigid: fls. crimson-maroon; falls recurved-spreading with short haft dark yellow and flecked and the central line a yellow ridge, blade oval; standards somewhat shorter than falls, spatulate. S. La.

mussulmánica: probably *I. halophila.*

neglécta. R, p: st. to 2 ft., with many fls.: lvs. shorter, somewhat glaucous: falls obovate and very obtuse, 2 in. long, margin violet-blue, center whitish-veined and blue, beard yellow; standards lilac. In cult. only; probably a hybrid, and the name does not have definite standing.

nepalénsis. R, usually assigned to the Nepalensis section: rootstock dahlia-like, flattened, white and fleshy: lvs. about 12 in. long: falls white with violet veins, broadly lanceolate, central ridge brownish-yellow to pale rose-violet; standards darker violet, styles pale violet. Cent. Asia.—In many localities the roots must be lifted and stored in dry sand during winter. Much of the material so listed may be referred to *I. germanica* var.

nígricans. R, o: to 12 in.: lvs. narrowly-ensiform, many, to 6 in. long, mostly basal: fls. large; falls white veined and dotted dark purplish-brown, obovate, blade dark purple on white ground; standards white veined dark purple-lilac. Apr. Palestine.—Perhaps only a variant of *I. atropurpurea.*

nótha: dubious name, probably to be associated with *I. spuria.*

nudicaùlis: *I. aphylla.*

ochràcea cærùlea: hort. iris, old gold, falls flushed blue.

ochraùrea: listed as a tall hybrid, *spuria* group, in two shades of yellow.

ochroleùca (*I. orientalis* of some authors). R, a: st. 3 ft. and more with terminal head and lateral ones: lvs. 2–3 ft. and 1 in. or more broad, with a spiral twist: fls. commonly white with patch of golden-yellow on falls which have an orbicular blade; standards lemon-yellow to whitish. W. Asia Minor. Listed Latin-form names are: **aùrea, gigantèa, sulphùrea, Wàrei.**—By some considered a variant of *I. spuria.*

odoratíssima: *I. pallida.*

œnántha. R, a: st. erect and stout: fls. violet and purple; falls to 4 in. long, drooping, with haft orange-yellow and darker flushed, blade much exceeding haft and wine-purple with darker center; standards nearly as long as falls, light red-violet. S. La.

olbiénsis: *I. Chamæiris.*

oolópha. R, a: st. erect and strict: fls. lilac or lavender; falls recurved, about 3 in. long, haft yellow with deep yellow and radial signal, blade smoky lilac or pale violet; standards light bluish-lilac to pale lavender-violet. S. La.

orchioìdes. Orchid I. B, j: st. jointed, 1 ft. or so, leafy with 3 or more fls. solitary in the axils: lvs. 9 in. or more long, 2 in. broad: fls. not large, deep yellow but variable; falls ovate, with greenish and darker color either side crest; standards small, commonly deflexed. Turkestan.

orientàlis (*I. sibirica* var. *orientalis. I. sanguinea*). R, a: st. hollow, with terminal head of 2 or 3 fls.: lvs. to 18 in., usually exceeding the st., to ½ in. broad: fls. typically rich blue-purple (white under color) but sometimes white; falls with nearly orbicular blade; standards broad-oval, a little shorter than falls, blue-purple or white. Manchuria, Japan. Latin-form names of vars. are **aùrea, gigantèa, sanguínea, supérba.**—Two plants have passed under this name: see *I. ochroleuca.*

pabulària: *I. ensata* var.

pállida (*I. Mandralescæ. I. odoratissima*). R, p: much like *I. Cengialtii* but a tall and stouter iris, sts. 2–3 ft., spathes silvery-white: lvs. glaucous: fls. pale lavender-blue; falls obovate, beard white tipped yellow; standards obovate, somewhat paler than falls. S. Tyrol. Var. **dalmática** is a garden form. Listed vars. with Latin-form names are **atroviolàcea, racemòsa, speciòsa.**—One of the most important sources of tall bearded irises of gardens.

panormitàna: *I. pseudo-pumila.*

paradóxa. R, o: st. to 6 in., spathe 1-fld.: lvs. linear, to 6 in.: fl. large, showy; falls narrow, 2 in. long and ¾ in. or less broad, horizontal, pale pinkish-crimson with purple-black hairs; standards orbicular, blue or white under color with blue-purple veins and dots. Caucasus to N. Persia.

parisiénsis: a listed name.

pavònia: *Moræa pavonia.*

pérsica (*I. præcox*). B, j: st. not evident, with 1 or 2 fls.: lvs. linear, 2–3 in. long but becoming twice that length: fls. white tinged with pale greenish-blue or sea-green; blade of fall to 2½ in. long, rounded-oblong, with orange ridge and patch of purplish; standards about ¾ in. long. E. Asia Minor, Persia.

picturàta: catalogue name.

plicàta: hort. name of a tall bearded iris like an albino *pallida*, origin unknown.

Plùmeri: hort. name, a tall bearded variety.

prǽcox: *I. persica.*

prismática. R, a: st. slender, to 3 ft., mostly simple: lvs. narrow, somewhat glaucous, usually shorter than st.: fls. solitary or 2, blue or violet veined yellow; falls to 2 in. long, the blade ovate, lighter at base; standards shorter, lanceolate. N. S. to Ga.

Pseudácorus (*I. acoroides. I. lutea*). Yellow Flag. R, a: stout st. to 3 ft. or more, commonly several-fld.: lvs. more or less glaucous, to 1 in. or more broad and equalling or surpassing st.: fls. not large, bright yellow; falls about 2 in. long, the blade broadly obovate to ovate, often veined violet; standards shorter, oblong, nearly erect. Widespread in Eu., N. Afr., Asia Minor; nat. in E. N. Amer. Vars. with Latin-form names are **álba, aùrea, gigantèa, manschùrica, variegàta.**

pseùdo-pùmila (*I. panormitana*). R, p: like *I. Chamæiris* but spathes narrower, fl. usually 1 and tube 2 or 3 in. long: from *I. pumila* distinguished by st. longer than fl.-tube: st. 4–6 in.: fls. purple, yellow or white. S. Italy.

pùmila (*I. æquiloba. I. attica. I. stenoloba. I. taurica. I. transsilvanica. I. tristis*). R, p: resembles *I. Chamæiris* but almost or quite stemless and fl.-tube 2 or 3 in. long, thus exceeding the st.: fls. varying from yellow to bright or dark lilac. Austria to Russia and Asia Minor. Many Latin-named vars. are offered: **álba, atropurpùrea, atroviolàcea, aùrea, cærùlea, cinèrea, compácta, cyànea, excèlsa, floribúnda, formòsa, gigantèa, hýbrida, lùtea, maculàta, manschùrica, purpùrea, sulphùrea, Sweètseri, variegàta, violàcea.**—Variable in cult., and the true or original species may not appear.

Púrdyi. R, a: differs from *I. Douglasiana* in the sts. bearing somewhat overlapping inflated and sheathing bract-like lvs.: st. to 1 ft.: lvs. exceeding st. and about ¼ in. broad: fls. 2, cream-color with purple and yellow lines. N. Calif., Ore. Var. **álba** is offered.

puríssima: listed as a tall bearded white hort. iris.

purpùrea: "raisin-purple wild hybrid collected in the southern U. S."

pygmǽa: *I. Tigridia.*

pyrenàica: *I. xiphioides.*

Redoutiàna: *I. lurida.*

refléxa: *I. aphylla.*

regàlis. R, a: st. erect: fls. lilac, musk-scented; falls 4 in. long more or less, spreading, haft suffused green and signal yellow, blade rosy-lilac with darker veins; standards broad-spatulate, a little shorter than falls, blade oval or elliptic or obovate and rosy-lilac. S. La.

Règelii: *I. tenuifolia.*

Reìchenbachii (*I. balkana. I. bosniaca. I. macedonica. I. serbica*). R, p: eastern representative of *I. Chamæiris*, and has sharply keeled spathes: st. 3–12 in., 1-headed: fls. delicate in texture, clear yellow varying to brownish-purple. S. Hungary, Balkans.

reticulàta. B, ret.: st. none until fr. matures, the single fl. being raised on a long tube: lvs. linear and 4-angled, 8–10 in. but becoming 2 ft.: falls with long haft and small oval blade which is deep violet, marked, veined and spotted, with orange ridge; standards slightly longer, 2½ in., narrow, erect, deep violet. Caucasus. Vars. **cyànea** and **supérba** are offered.—The name *reticulata* is also given to a tall bearded garden iris.

rhodántha. R, a: st. erect and strict: fls. rose and yellow; falls recurved, haft lemon-yellow and brown-streaked, signal bright lemon-yellow, blade deep orange-rose veined brownish; standards light rose with apricot claw. S. La.

rhodochrýsea. R, a: st. stiff and erect: fls. rose-lilac and yellow; falls spreading, haft orange-yellow and brown-veined with deep orange signal, blade old rose-lilac and darker veined; standards old rose and veined lilac. S. La.

Rìcardii: *I. mesopotamica.*

rígida: *I. aphylla.*

rivulàris. R, a: tall and rigid: fls. slightly fragrant, violet-blue with green signal, petals subulate. Ga., Fla.

ròsea: "variant form of *versicolor* in a striking red tone."

Rosenbachiàna. B, j: st. very short or practically none, with 1–3 fls. in axils: lvs. channelled, 1–2 in. long but becoming 9 in. long and 2 in. broad: fls. brilliant, variable in color; falls long-oblong, about 2 in. long, blade dark crimson-purple and other parts of fl. faint purple or white; standards about 1 in. long. Turkestan.

rosiflòra. R, a: st. strict and rigid: fls. lilac; falls spreading, about 3 in. long, haft cream or greenish and brown-veined with yellow signal, blade obovate to nearly orbicular, old rose-lilac and darker veined; standards spatulate, much shorter than falls, claw yellowish and brown-veined, blade usually paler than falls. S. La.

Róssii. R, a: st. 4 in. or less: lvs. about 3 in. at anthesis, grass-like: fls. lilac, pink to white; falls with oblong blade as long as haft; standards oblanceolate. Korea, China.

rubicúnda. R, a: st. erect and stiff: fls. lilac-rose; falls about 3 in. long, haft greenish-yellow with veins and spots, signal orange-yellow, blade magenta-cerise veined brown; standards shorter, lilac-old rose veined orange. S. La.

rùbro-marginàta: *I. mellita.*

ruthénica. R, a: st. to 8 in., **1**-headed: lvs. linear and grass-like, 6 in. but becoming **1** ft.: falls broad-oval, under color creamy-white overlaid with blue dots and veins; standards lanceolate, deep purple-violet. E. Eu. to N. China and Korea. Var. **nàna,** listed as a dwarf form.

Saàri (*I. lupina. I. Manissadjanii*). R, o: st. about 6–8 in., concealed in lf.-sheaths: lvs. linear, becoming 1 ft. long: falls 3 in. long and half as broad, under color yellow or greenish with brownish-red veins giving a lilac effect, beard bright yellow; standards larger, nearly orbicular, connivent, somewhat darker. Asia Minor.—Latterly but not originally written *Sari.*

sambucìna. Bearded iris related to *I. squalens*, probably a hybrid: plant less robust, the fls. veined claret-color and with a sambucus-like odor.

sanguínea: *I. orientalis.*

savannàrum. R, a: st. strict and rigid: fls. blue-violet; falls 3 in. or less, recurved-spreading, haft greenish, blade elliptic to oval, violet or violet-blue with central greenish part extending into blade; standards spatulate to nearly linear, often shorter than falls, bluish or violet. Fla. Variable in color, and offered in vars. **álba, azurèa, pállida, Ròyalii.**

scariòsa (*I. elongata. I. Eulefeldii. I. glaucescens. I. longiflora*). R, p: st. to 6 in. or so, bearing 1 or 2 red-purple fls. with darker veins on falls, the spathes to 2½ in. long, dry and more or less transparent: lvs. very glaucous, to 1 ft. or so long and ¾ in. broad: falls obovate, reflexed, 1¾ in. long, beard yellow and white; standards obovate. Caspian Sea to Turkestan and Altai.

Schmídtii: *I. aphylla.*

scorpioìdes: *I. alata.*

sérbica: *I. Reichenbachii.*

setòsa. R, a: st. stout, forked, bearing 2 or 3 heads: lvs. to 2 ft. long and 1 in. broad, much shorter than st.: falls more or less orbicular, light lilac or purple and often with reddish tinge; standards ¾ in. or less long, various in shape. N. Asia.—Represented Me. northward by **I. Hoòkeri** (*I. setosa* var. *canadensis* and probably var. *gaspensis* of hort.), very similar.

Shrèvei. R, a: st. to 3 ft., with 1 or 2 branches: lvs. frequently somewhat glaucous, as long as st.: falls lavender-blue with flecks and lines, to 2½ in. long, recurved-spreading; standards light violet with darker tints, as long as falls. Marshes, Cent. U. S. Var. **álba** is listed.

sibírica (*I. acuta. I. maritima. I. trigonocarpa*). R, a: st. hollow, with a 2–5-fld. terminal head and commonly a lateral head: lvs. to 1–2 ft. and much shorter than st., linear: falls lilac-blue or blue-purple, the blade orbicular (varying to grayish); standards broad-lanceolate, shorter. Cent. Eu., Russia. Offered in several Latin-named vars.: **álba, cærùlea, grándis, máxima, orientàlis, sanguínea, supérba.** The var. **flexuòsa** has fls. white with curly segms.

sindjarénsis. B, j: st. to 9 in., bearing 3 or more pale blue large fls.: lvs. to 10 in. long and 2 in. broad: falls with large wings, blade rounded-oblong, with yellowish central ridge; standards obovate or narrower, horizontal or deflexed. Syria and Mesopotamia.

Síndpur: hort. hybrid of *I. sindjarensis* and *I. persica* var. *purpurea*, having turquoise-blue fls. ridged with yellow.

Síntenisii. R, a: st. to 1 ft.: lvs. linear, ½ in. or less broad: fls. purple; falls narrow, spreading, blade elliptic, blue-purple on whitish ground; standards erect, oblanceolate, emarginate, blue-purple. S. E. Eu., Asia Minor.

Sisyrínchium (*Moræa Sisyrinchium*). Sole member of the Gynandriris section, producing a corm in place of bulb and the stamens adhering to the style-branches: st. to 1 ft., bearing usually several heads of fugitive lavender or lilac or blue-purple fls.: lvs. few, to 1 ft. or more long: falls to 1½ in. long, lanceolate to obovate, with white patch; standards a little shorter. Portugal and Medit. region to Cent. Asia.

sofaràna. R, o: like *I. susiana* but under color creamy-white and veins dark purple. Mt. Lebanon.

sogdiàna: *I. spuria* var.

sórdida: probably *I. juncea.*

speciòsa: lavender-purple hort. iris.

spectábilis: *I. Xiphium;* the name is also given to a tall bearded garden iris.

spùria. R, a: sts. with 3 or 4 reduced lvs. and 1–3 spicate heads: lvs. glaucous, linear, 1 ft. long and shorter than st.: fls. blue-purple or lilac, the rather shorter standards somewhat redder; falls with nearly orbicular blade 2 in. long. Cent. and S. Eu. and Algeria, to Persia. Listed Latin-named forms include **álba, aùrea, cærùlea, lilácina, nótha, ochroleùca,** and **sogdiàna** with grayish-lilac fls.

squàlens. R, p: sts. 2–3 ft., with 3 or 4 heads: lvs. glaucous, to 1½ ft. long and 1½ in. broad: falls obovate, the blade to 3 in. long, lilac-purple, haft same with whitish or yellowish under color, beard bright yellow; standards as long and broad as falls, lilac or brownish with yellow. Cent. Eu. to Persia.—Perhaps a series of forms of tall bearded iris and not a natural species.

Státellæ: form of *I. pseudo-pumila.*

stenolòba: *I. pumila.*

stenophýlla: one of the many forms of *I. persica:* also a hort. name for a dwarf bearded iris.

stolonífera (*I. Leichtlinii. I. vaga*). R, reg.: st. to 2 ft., covered with clasping lvs., with 1–3 fls. in a single head: lvs. to 1½ ft.: fls. usually light or dark brown-purple, marked in middle of the frilled segms. with blue; falls reflexed, obovate, about 1 in. broad, haft yellow-bearded; standards of similar size, erect. Turkestan.

stylòsa: *I. unguicularis.*

suavèolens. R, p: st. to 5 in., 1-fld.: lvs. becoming 1 ft. long, glaucous: fls. greenish-yellow, very fragrant; falls oblong-cuneate, with central mark of lilac-blue, beard yellow; standards broader, crisped. Bulgaria.—Like *I. pumila*, but segms. much broader.

subbiflòra: *I. biflora.*

subtriflòra: *I. aphylla.*

sulphùrea: a confused name, the true *I. sulphurea* is a synonym of *I. imbricata*, but much of the material in the trade represents a color form of *I. orchioides.*

susiàna. MOURNING I. R, o: st. to 15 in., with few reduced lvs., 1-headed and 1-fld.: lvs. linear, 1 ft. or more: fls. large, under color gray overlaid with purple-black veins; falls 3–4 in. long, the blade ovate, with black patch, beard broad and brownish; standards orbicular, somewhat lighter. Probably Asia Minor and Persia.—An old garden plant.

Suwaròwii: *I. darwasica.*

Swértii. R, p: st. to 1½ ft.: falls to 2½ in. long, white, veined and flushed purple on margin, inner segms. white with purple keel and margin, fragrant. Known only in cult.

Taìtii: *I. Xiphium.*

taùrica: *I. pumila.*

tectòrum (*I. tomiolopha*). R, c: st. 1 ft. or more, with 2 or 3 heads: lvs. to 1½ ft. and 2 in. broad: fls. deep lilac or blue-purple, segms. nearly or quite horizontal; falls 2 in. long, blade obovate or nearly orbicular, mottled darker shade, crest cut and white-violet; standards obovate. China. Vars. **álba** and **lilácina** are listed.

tènax. R, a: st. to 1 ft., with bract-like lvs.: basal lvs. longer than st., linear: fls. solitary, bright lilac-purple (varying to white); falls lanceolate, about 2 in. long, with yellow ridge; standards nearly as long. W. Ore. and Wash. —The name, *tenax Douglasii*, listed, is presumably *I. tenax*, Douglas, the authority for the species being Douglas.

tenuifòlia (*I. Regelii*). R, a: st. 6 in. or less, sheathed: lvs. rigid, less than ¼ in. broad, to 1 ft. long: fls. with very slender tube to 4 in. long; falls blue-purple, with wedge-shaped haft; standards oblanceolate, about as long as falls. Cent. Asia to China.—Rhizome very slender.

ténuis. R, a: st. to 10 in. high: lvs. very thin, ½ in. or less broad: fls. white lightly marked with pale yellow and purple; falls oblong-spatulate, something over 1 in. long; standards somewhat shorter, emarginate. N. W. Ore.

tenuíssima. R, a: lvs. linear, to 14 in. long: fls. yellow; standards and falls narrowing, tapering, to 1½ in. long. Calif.—Somewhat similar to *I. Purdyi*, but less vigorous and more tender.

Thómasii. R, a: st. erect and rigid: fls. red-violet; falls recurved-spreading, haft yellow; standards red-violet with light orange-brown channel. S. La.

Thómpsonii: catalogue name.

Tigrídia (*I. pygmæa*). R, p: small, in dense masses: st. 1–3 in., 1-headed: lvs. narrow-linear, to 6 in.: fls. blue-purple or yellow; falls reflexed, 1¼ in. long, narrow; standards of similar length. N. E. Asia.

tingitàna. B, x: large: st. to 2 ft., with 2 fls. and lvs. clasping: basal lvs. 12–18 in.: fls. 3 in. long, blade nearly orbicular, light blue or lilac with orange-yellow ridge; standards narrow, blue-purple. Tangiers (whence the name), Morocco.

Tolmieàna: *I. missouriensis.*

tomiolópha: *I. tectorum.*

transsilvánica: *I. pumila.*

tricúspis: *Moræa tricuspis.*

trigonocárpa: *I. sibirica.*

tripétala. R, a: to 16 in., slender: fls. mostly solitary, violet to whitish, fragrant; falls 3 in. more or less, somewhat drooping, blade oval or nearly orbicular and violet to white with yellow at base; standards very short, violet at top. N. C. to Fla.

trístis: *I. pumila.*

trojàna. R, p: st. 2 ft. and more: lvs. somewhat glaucous, shorter than st.: fls. large; falls obovate, blue- or violet-purple with a somewhat reddish tint, beard white and yellow; standards obovate and rounded, light blue-purple. Intro. from region of ancient Troy (Asia Minor) but nativity uncertain. Var. **supérba,** listed form.

tuberòsa: *Hermodactylus tuberosus.*

unguiculàris (*I. cretensis. I. stylosa*). R, a: st. very short or practically none: lvs. linear, becoming 2 ft. long: fl.-tube 5–6 in. or more long; falls to 3 in. long, blade broad-obovate, bright lilac with central area of deep lilac on a lighter under color; standards oblong. Algeria, Greece, Asia Minor, Syria.—Blooms in autumn or earliest spring. Var. **làzica** (*I. lazica*), lvs. shorter and wider: fls. dark purple with shorter tube. Other vars. listed are **álba,** fls. white; **altaflòra, lilácina, marginàta, speciòsa,** fls. dark purple with odor of honey, and **violàcea.**

urmiénsis: *I. Barnumiæ* var.

vàga: *I. stolonifera.*

variegàta. R, p: st. 12 in. or more: lvs. 8 in. long or those of non-flowering shoots to 18 in.: fls. with obovate falls yellow variegated chestnut or purple, rounded-oblong standards yellow; beard yellow or orange. Austria, Balkans.—Considered to be the source of the yellows in the tall bearded irises. Var. **honorábilis** is yellow shaded brown. The name *variegata* is also applied to striped-lvd. forms of other irises.

Vártanii. B, ret.: st. none or practically so: lvs. 4-angled, to 9 in. and becoming 18 in.: fl. slaty-lilac or grayish (varying to white); falls with lanceolate blade with darker veins, yellow crest on the haft; standards narrow-lanceolate with faint veins. Palestine.

vérna. R, a: early-blooming: st. to 3 in. high and mostly 1-fld.: lvs. narrow-linear, to 8 in.: fls. violet-blue (to white); falls obovate, 1½ in. long, with slender yellow haft, standards erect, somewhat smaller. Pa. to Ga.

versícolor. R, a: st. to 3 ft., often branched: lvs. somewhat glaucous, shorter than st., to 1 in. broad: fls. purplish-blue; falls ovate to reniform-ovate, to 3 in. long, the spot at base, if present, greenish; standards shorter and narrower, about ¾ in. or less broad. The common iris from E. Canada to Pa. and Minn. Color vars. are listed as **Fósteri, kermesìna, ròsea.**

vinícolor. R, a: st. strict and erect: fls. purple, falls about 3 in. long, recurved or drooping, haft yellowish-marked, blade vinaceous-purple with yellow spot; standards broad-spatulate, much shorter than falls, vinaceous-purple. S. La.

violàcea: indefinite name; may be *I. pumila, I. germanica,* or violet forms of other species.

violilùtea. R, a: st. strict and erect: fls. violet and yellow; falls 3 in. or more long, recurved-spreading, haft whitish-green veined yellowish, signal yellow, blade dull violet; standards spatulate, much shorter than falls, blade violet and darker veined. S. La.

violipurpùrea. R, a: st. rigid and strict: fls. violet-purple; falls 3–4 in. or more, spreading or recurved, haft veined violet with creamy margins and yellow in center, blade elliptic, violet-purple; standards spatulate, much shorter than falls, violet-purple. S. La.

viréscens: *I. Chamæiris.*

virgínica (*I. carolina. I. caroliniana. I. georgiana*). R, a: st. 2–3 ft., the fls. pedicelled, solitary or 2–3 together: lvs. bright green, 1 in. broad more or less, equalling or exceeding the st.: falls broad-spatulate, to 3 in. long, lilac marked yellow, purple and brown; standards nearly erect. Va. to La.—Sometimes combined with *I. versicolor* but separated by green lvs. and seeds in 1 row (rather than 2 rows) in each cell.

víridis. R, a: st. strict and erect: fls. green and violet; falls about 3 in. long, spreading, haft greenish, blade violet and greenish-yellow; standards spatulate, somewhat less than falls, blade violet. S. La.

viridivínea. R, a: st. slender but erect: fls. green and violet; falls spreading or recurving, haft greenish-yellow veined and marked brownish, blade red-violet and flecked; standards red-violet flushed bluish-lilac in center. S. La.

vulgàris: *I. germanica.*

Wàrei: listed as an improved form of *I. ochroleuca.*

warleyénsis. B, j: related to *I. orchioides:* differs in having white hard edge on lvs. and falls velvety violet-purple often edged white, crest white and often surrounded by orange patch: st. to 18 in., with 3–5 fls. Turkestan.

Watsoniàna: *I. Douglasiana.*

Wáttii. R, c: st. to 3 ft., leafy, bearing 5–8 branches: fls. about 4 in. across, lavender-blue; crests and centers of falls white with orange-yellow spots and surrounded by darker mauve spots, crests fimbriate or entire. Assam to Yunnan.—Some of the material so listed may be *I. confusa.*

Wéstii. R, o: st. to 12 in.: lvs. falcate, to 8 in. long: fls. to 6 in. across; falls cream-colored heavily dotted purple; standards lilac with darker lilac-blue veins. Palestine.

Willmottiàna. B, j: st. to 8 in., with several fls. sessile in axils: lvs. broad and nearly flat, with whitish hard edge: fls. blue-purple or reddish-purple on oblong blade with white veined patch; standards small, cuspidate. Turkestan.

Wílsonii. R, a: st. hollow, about 2 ft., with 1 head of 2 fls.: lvs. slightly glaucous, about equalling st.: fls. long-pedicelled, not large; falls pale yellow veined in bright yellow center with reddish-brown, the blade ovate; standards narrow, yellowish-white with faint purple veins and frilled edges. China.

xiphioìdes (*I. anglica. I. pyrenaica*). ENGLISH I. B, x: st. to 18 in. with 1 head of 2 or 3 fls.: lvs. channelled, equalling st.: falls with short broadly cuneate haft bearing large wings, blade nearly orbicular, deep blue-purple with golden patch but colors variable under cult.; blade of standards almost orbicular, shorter than falls; pedicels shorter than spathe. Pyrenees.

Xíphium (*I. hispanica. I. lusitánica. I. spectabilis. I. Taitii*). SPANISH I. B, x: st. to 18 in., 1- or 2-fld.: lvs. to 2 ft., glaucous, channelled: falls with long oval haft separated from nearly orbicular blade by a narrow neck making it somewhat fiddle-shaped, color variable but in wild plants mostly blue-purple or pale slaty-blue, blade with yellow or orange patch; standards oblanceolate, as long as falls; pedicels equalling or exceeding the spathes. S. France, Spain, Portugal, N. Afr.

IRIS, SNAKES-HEAD: *Hermodactylus.*

IRONBARK: *Eucalyptus.*

IRON-TREE: see *Metrosideros.*

IRONWEED: *Vernonia.*

IRONWOOD: *Ostrya virginiana.* **Catalina:** *Lyonothamnus floribundus.* **Desert:** *Olneya Tesota.*

IRREGULAR FLOWER: some parts different in shape or size from other parts in the same series.

ÍSATIS. WOAD. *Cruciferæ.* Ann., bien. and per. herbs of the Medit. region and eastward, a few of which are more or less cult. for ornament and interest: erect and branching, glabrous to tomentose, with undivided often clasping lvs.: fls. small, yellow or yellowish, in bractless often panicled racemes in late spring and early summer: fr. an indehiscent flat pendulous pod or silique.

alpìna. Probably ann. or bien., sts. usually decumbent or ascending, to 1 ft.: lvs. spatulate to elliptic-lanceolate, to 3½ in. long, entire, sessile and often clasping, somewhat glaucous: fls. yellow, in terminal panicles to 6 in. long and as wide: pedicels as long or longer than fr. Italy.—Material so listed in trade may be *I. tinctoria* which differs from above in taller erect habit and narrower more cuneate fr. whose pedicels are less than one-half as long as fr.

Boissieriàna. Ann. to 1 ft., glaucous: lower lvs. cuneate-oblong, sinuate-dentate, upper ones cordate-sagittate: fls. yellow: pods heteromorphous. Turkestan.

glaùca. Per. to 4 ft. (perhaps sometimes bien.), glabrous, glaucous: lvs. long-oblong, to 10 in. long, obtuse and entire, tapering to petiole, not clasping on st.: fls. mustard-yellow, in very large terminal panicle. Asia Minor, Persia.—Sometimes planted for ornament; raised from seeds sown the year before blooming.

tinctòria. DYERS W. Bien. to 3 ft., glabrous above: lvs. oblong to lanceolate, to 4 in. long, entire or toothed, those on st. clasping or auricled: fls. yellow, in terminal panicles. Eu., S. W. Asia.—Formerly grown for its blue dye.

ISÉRTIA. *Rubiaceæ.* Shrubs or trees native in S. Amer. and Trinidad, having large leathery lvs., tubular red, rarely yellow or white, fls. in many-fld. panicles, and fr. a berry.

parviflòra. Shrub or small tree: lvs. oblong, to 1 ft. long: fls. light red, about ¼ in. long. Trinidad.

ISLAY: *Prunus ilicifolia.*

ISLAYA: *Parodia minor.*

ISMELIA: *Chrysanthemum Broussonetii.*

ISMENE: *Hymenocallis calathina.*

ISNARDIA: see *Ludwigia Mulerttii.*

ISOLEPIS: *Scirpus cernuus.*

ISOLÒMA (*Tydæa*). *Gesneriaceæ.* Showy trop. American herbs with creeping roots, opposite lvs., scarlet or orange fls. with ventricose tube and 5-lobed limb, and capsular frs.; grown in the greenhouse and much hybridized. Propagated by seeds.

amábile. To 2 ft., hairy: lvs. ovate, tapering to petiole, spotted and veined with purple: fls. dark rose dotted with purple, to 2 in. long, drooping. Colombia.

bogoténse (*I. Tydæa*). To 2 ft., hairy: lvs. ovate, cordate at base, spotted and veined with pale or silvery-green: fls. red, yellow spotted with red below, nodding. Colombia.

grandiflòrum: catalogue name for improved strains.

hirsùtum. To 4 ft., hairy: lvs. oblong-ovate, rounded at base and petioled: fls. purple with spotted limb, to 1 in. long, nodding. W. Indies. Var. **multiflòrum** is listed as a more floriferous form.

hondénse. To 1 ft., hairy: lvs. ovate: fls. yellow, the tube with bright red hairs, 1 in. or more long. Colombia.

hýbridum: listed name.

multiflòrum: probably *I. hirsutum* var.

Tydǽa: *I. bogotense.*

ISONANDRA: *Palaquium Gutta.*

ISOPLÉXIS. *Scrophulariaceæ.* Subshrubs with alternate lvs. and dense terminal racemes of yellow tubular fls., differing from Digitalis chiefly in the upper lip of corolla as long as lower lip; grown in the open in Calif.; two species from Canary Isls. Cult. and propagation as for the shrubby forms of *Digitalis.*

canariénsis (*Digitalis canariensis*). Stiff, to 4 ft.: lvs. shining, thick, lanceolate, to 6 in. long, sharp-toothed: fls. yellow-brown, 1 in. long, strongly 2-lipped, in racemes to 1 ft. long.—The plant sometimes grown in the East as *Digitalis canariensis* is *D. ambigua.*

Scéptrum. Differs from *I. canariensis* in the larger lvs., fls. drooping and not bilabiate, the lobes obtuse and half length of tube.

ISOPÒGON. *Proteaceæ.* Shrubs from Australia with stiff rigid lvs., bisexual fls. in dense cone-like spikes, each fl. sessile in a bract or scale, and small nut-like frs.; grown somewhat in S. Calif. Cult. as for *Hakea.*

anemonifòlius. To 6 ft.: lvs. to 4 in. long, 2–3-pinnate into linear flat entire or lobed segms.: fls. yellow, in nearly globose cones to ¾ in. across. New S. Wales.

anethifòlius. To 4 ft.: lvs. 1–2-pinnate into needle-like terete segms.: fls. yellow, in globular cones to 1 in. across. New S. Wales.

ròseus. To 4 ft.: lvs. to 3 in. long, 1–2 ternately divided into linear or lobed segms.: fls. pink, in globular cones to 1 in. across. W. Australia.

sphærocéphalus. Lvs. linear, to 4 in. long, sessile: fls. yellow-hairy, in globular cones to ¾ in. across. W. Australia.

ISOPỲRUM. *Ranunculaceæ.* Small northern delicate per. herbs with basal decompound lvs. and white fls. solitary or in panicles having 5–6 petal-like sepals, small petals or none, and numerous stamens; native in north temp. zone and sometimes transferred to the wild-garden or colonized. Propagated by seeds or division of roots.

biternàtum. Lvs. biternate, long-stalked: fls. to ¾ in. across, in clusters in spring. Ont. to Fla. and Tex.

fumarioìdes: *Leptopyrum fumarioides.*

thalictroìdes. To 6 in.: lvs. biternate, lfts. lobed, short-petioled: fls. white. Apr.–May. Eu.

ISÓTOMA. *Lobeliaceæ.* Ann. or per. herbs with alternate simple or pinnatifid lvs. and blue, purple or white fls., differing from Lobelia in the entire corolla-tube and the stamens inserted near top of corolla.

petrǽa. Per. to 1 ft., but blooming the first year: lvs. ovate-oblong, with linear irregular teeth: fls. bluish-purple, to 1 in. long and limb spreading to 1 in., on long axillary stalks. Australia. Var. **álba** is listed.

ISÒTRIA. *Orchidaceæ.* N. American terrestrial plants: roots elongate and fibrous: st. scapose, terminated by a whorl of 5–6 elliptic-lanceolate lvs.: fls. solitary or in pairs, erect or ascending. Similar to Pogonia from which it differs in having whorled lvs. and compound pollen-grains. See *Orchids* for cult.

verticillàta (*Pogonia verticillata*). Whorled Pogonia. To 14 in. high: lvs. elliptic to elliptic-obovate, acute or obtuse, usually 5 in number, to 3¾ in. long: fls. solitary (rarely 2); sepals dark madder-purple, linear, to 2 in. long; petals greenish-yellow, oblong, to 1 in. long; lip small, 3-lobed near apex. May–June. Me. to Fla. west to Mich. and Tex.

ÍTEA. *Saxifragaceæ.* Deciduous or evergreen trees and shrubs, with alternate simple narrow lvs. and small numerous white fls. in terminal or axillary racemes; about 10 species, 1 in E. U. S. and the others in trop. and temp. Asia.

The native itea is hardy as far north as Boston. It grows well in almost any soil and in both sun and shade. In autumn the foliage becomes a brilliant red. Propagated by cuttings and by division of the roots, which spread slowly and form clumps of stems; also by seed when obtainable.

ilicifòlia. Evergreen shrub to 10 ft.: lvs. to 4 in. long, spiny-toothed and holly-like: fls. greenish-white, in drooping racemes to 1 ft. long. China.—To be grown under glass N.

virgínica. Sweet Spire. Virginia-Willow. Deciduous shrub to 10 ft.: lvs. to 4 in. long, finely toothed: fls. white, fragrant, in upright racemes to 6 in. long. N. J. to Fla. and La.

yunnanénsis. Evergreen shrub: lvs. ovate, to 4 in. long, toothed or rarely nearly entire, glaucescent: fls. in racemes to 6 in. long. Yunnan.

IVESIA: *Horkelia Gordonii.*

IVY: *Hedera.* **American:** *Parthenocissus quinquefolia.* **Boston:** *Parthenocissus tricuspidata.* **Five-leaved:** *Parthenocissus quinquefolia.* **German:** *Senecio mikanioides.* **Ground:** *Nepeta hederacea.* **Japanese:** *Parthenocissus tricuspidata.* **Kenilworth:** *Cymbalaria muralis.* **Marine:** *Cissus incisa.* **Poison:** *Rhus radicans.*

ÍXIA (*Hyalis*). *Iridaceæ.* Cormous herbs of S. Afr. with grass-like lvs. mostly at base of st. and fls. of many colors in terminal spikes or racemes, the perianth-tube long or short.

Ixias may be planted out-of-doors in late November in some parts of the country, but should be well protected by mulch. Bulbs should be set about 2 to 3 inches deep in the open with a little sand sprinkled under them. They may also be planted in spring for summer bloom. After flowering the bulbs should remain in the ground until July when they are lifted and stored in boxes without packing. In the North, ixias are usually grown under glass for winter and early spring bloom. They should be retarded at first and then kept in a temperature of about 55° until after flowering. The corms may be planted in September or October, 5 or 6 of them in a 6-inch pot, about 1 inch deep. They are not hardy in the northern states.

aurantìaca: *I. leucantha* var. *lutea.*

azùrea. To 18 in., st. unbranched: lvs. very narrowly linear, to 14 in. long or more: fls. pale blue with dark basal blotch, many in lax spikes, anthers yellow on dark purplish filaments.

bucéphala: hort. name.

campanulàta (*I. speciosa. I. crateroides*). To 1 ft.: fls. dark crimson, yellow anthers on purple filaments.

cœléstina: *Salpingostylis cœlestina.*

columellàris. To 2 ft. or less: lvs. short, acute and falcate: fls. lilac- or mauve-purple, segms. to 1 in. long, usually 4–6 in corymb, anthers black.

crateroìdes: *I. campanulata.*

incarnàta: *I. scariosa.*

leucántha. To 2 ft.: lvs. to 1 ft. long, acuminate: fls. white with bright yellow anthers and white filaments, segms. ¾ in. long, in dense many-fld. erect spikes. Var. **lùtea** (*I. aurantiaca, I. lutea*) differs only in its deep yellow fls.

lùtea: *I. leucantha* var.

maculàta. To 2 ft.: lvs. conspicuously ribbed: fls. yellow but in cult. varying to white and tinged with red or purple, segms. 1 in. long, throat with large dark spot, anthers yellow, filaments cream-white, in dense erect spikes.

micrándra. To 10 in., unbranched: fls. white, few on short erect spikes, segms. ½ in. long.

monodélpha. To 1 ft.: lvs. linear, 4–8 in. long: fls. star-like, lilac with red or green basal blotch, in racemes of 4–6, tube cylindrical and twice as long as spathe-valves, May.—Many color forms are known.

Nélsonii: listed as having light red fls. with light eye.

paniculàta (*Morphixia paniculata*). To 3 ft.: lvs. 6–15 in. long: fls. creamy-white often tinged red, the cylindrical tube to 3 in. long, limb to 1 in. long, anthers yellow, filaments pale green.

polystàchya. To 2 ft.: lvs. strongly ribbed, 6–12 in. long: fls. white, fragrant, in dense many-fld. erect spikes, segms. ½ in. long, anthers yellow.

scariòsa (*I. incarnata*). To 1 ft.: lvs. short, sword-shaped: fls. reddish or lilac, usually 4–6 in lax spikes, anthers yellow, segms. ½ in. long.

speciòsa: *I. campanulata.*

spectábilis: *I. viridiflora.*

viridiflòra (*I. spectabilis*). To 2 ft.: fls. pale green, throat black, many in lax erect spikes on simple scape, tube ⅓ in. long, segms. 1 in. long, yellow anthers on black filaments.

IXIOLÍRION. *Amaryllidaceæ.* Bulbous herbs of Asia with very narrow mostly basal lvs. and blue or violet fls. in umbels, the perianth-segms. distinct. The bulbs would better be stored over winter. The genus was formerly associated doubtfully with *Liliaceæ.*

Lédebouri: *I. montanum.*

montànum (*I. tataricum. I. Ledebouri. I. Pallasii*). To 1 ft.: basal lvs. 4, persistent: fls. lilac, 1½ in. long, in 4–6-fld. umbels. Siberia to W. Asia.

Pállasii: *I. montanum.*

tatáricum: *I. montanum.*

IXÒRA. *Rubiaceæ.* Many trop. evergreen shrubs or trees with opposite or whorled lvs., white to red fls. in compact corymbs, the corolla long-tubular with spreading 4–5-lobed limb, and fr. a berry. Names in cult. are confused. See *Hamelia erecta.*

Ixoras are grown in the greenhouse, and in the open in warm climates as Florida and Gulf Coast. They should have a night temperature of about 65°. Propagated by cuttings, preferably with three or four joints, in spring and kept over bottom heat; also by seeds when produced.

acuminàta. Shrub: lvs. variable, oval to linear-oblong, to 9 in. or more long, leathery: fls. white, fragrant, ⅔ in. across, lobes rounded, in corymbs to 4 in. across. India.

amábilis: hort. name for a form with pinkish fls. suffused with orange.

amboínica. Shrub: lvs. ovate-oblong, undulate: fls. orange-yellow, the lobes acute, in branched cymes. Moluccas.

aurantìaca: hort. form with orange-red fls.

barbàta. Large shrub: lvs. elliptic, more or less acute, to 8 in. long and nearly half as broad: fls. white, in short-stalked large cymes that are broader than high, to 12 in. across. India.

Chélsonii: garden form having brilliant salmon-orange fls.

chinénsis. Shrub: lvs. obovate, to 4 in. long: fls. red varying to white, 1 in. long, lobes rounded, in dense corymbs. Malaya, China.

coccínea (*I. incarnata*). Shrub: lvs. oblong, to 4 in. long: fls. red, to 1¾ in. long, the lobes acute, in dense corymbs. E. Indies.

Còlei: hort. var. with pure white fls.

congésta. Tree: lvs. oval, to 1 ft. long, leathery: fls. orange-yellow becoming reddish, lobes rounded, in nearly sessile cymes. India.

Dixiàna: hort. form with deep orange fls.

Dúffii: *I. macrothyrsa.*

Finlaysoniàna: see *I. Thwaitesii.*

flòre-lùteo: hort. name for a yellow-fld. kind.

fúlgens. Shrub: lvs. narrow-oblong, to 8 in. long, shining above: fls. orange-scarlet, to 1¾ in. long, the lobes acute, in large sessile cymes. India, E. Indies.

incarnàta: *I. coccinea.*

javánica. Shrub: lvs. ovate-oblong, to 7 in. long: fls. orange-red, 1½ in. long, lobes rounded, in corymbs with coral-red branches. Java.

laxiflòra. Slender shrub to 4 ft.: lvs. oblong-lanceolate and acuminate: fls. white tinged pink, with tube 1½ in. long, fragrant, in large 3-forked panicles. Guinea.

lùtea. Garden plant similar to *I. coccinea* and apparently a form of it, but with pale yellow fls. and larger lobes; more than one thing may be grown under this name.

macrothýrsa (*I. Duffii*). Large shrub: lvs. linear-oblong, to 1 ft. long: fls. deep red, 1 in. across, lobes obtuse, in many-fld. corymbs to 8 in. across. E. Indies.

odoràta. Small shrub: lvs. ovate to somewhat obovate, acute or acuminate, firm, sometimes 12 in. long: fls. white changing to brownish, very fragrant, corolla to 4 or 5 in. long, in large purple-branched clusters. Madagascar.

parviflòra. Tree: lvs. oblong or oval, to 6 in. long: fls. white, fragrant, ⅓ in. long, in clusters in cymes to 6 in. across. India.

ròseo-spléndens: hort. name.

Thwàitesii. Large shrub or somewhat tree-like: lvs. somewhat coriaceous, oblong to broadly oblanceolate, to 5 in., more or less undulate but entire: fls. to 1½ in. long, very slender, white, fragrant. Ceylon.—The plant known as *I. Finlaysoniana* is probably the same.

Wéstii: hort. form with pale or brilliant rose fls.

Wílliamsii: hort. name for a var. with reddish-salmon fls.

J

JABOTICABA: *Eugenia cauliflora.*

JACARÁNDA. *Bignoniaceæ.* Trees and shrubs of trop. Amer. with opposite usually 2-pinnate lvs., funnelform 5-lobed blue or violet fls. in panicles, and capsular broad frs.; grown in subtrop. regions or under glass in the N. Propagated by cuttings of half-ripened wood when seeds are not available.

acutifòlia (*J. mimosifolia. J. ovalifolia*). To 50 ft. or more: lvs. fern-like, pubescent, the ultimate segms. about ⅓ in. long: fls. blue, 2 in. long and 1½ in. across. Brazil.

cuspidifòlia. To 30 ft.: lvs. to 2 ft. long, glabrous, the ultimate segms. about 1 in. long: fls. blue-violet, 1½ in. long and very long-pointed. Brazil, Argentina.

mimosifòlia: *J. acutifolia.*

ovalifòlia: *J. acutifolia.*

JACKFRUIT: *Artocarpus integra.*

JACK-IN-THE-PULPIT: *Arisæma triphyllum.*

JACOBÆA: *Senecio.*

JACOBÍNIA. *Acanthaceæ.* Trop. American rather showy herbs and shrubs with opposite entire lvs. and red, orange or yellow, tubular 2-lipped fls. in racemes or heads.

Jacobinias are grown in greenhouses and in the open in warm regions. They are of easy cultivation but likely to become weedy unless properly restrained and cared for. Propagated by cuttings as well as by seeds.

aùrea: *J. umbrosa.*

cárnea (*Justicia magnifica* and *carnea*). To 5 ft.: lvs. ovate or oblong, to 7 in. long: fls. rose-purple or pink, 2 in. long, in dense terminal heads 4 in. long, with acuminate bracts ¾ in. long. Brazil.—Most of the plants grown under this name are *J. obtusior.*

coccínea: *Pachystachys coccinea.*

floribúnda: listed name, possibly referable to *J. pauciflora.*

Ghiesbreghtiàna (*Justicia Ghiesbreghtiana*). To 5 ft.: lvs. lanceolate-ovate, to 6 in. long: fls. orange or crimson, 1½ in. long, in loose panicles, with small bracts. Mex.

Mohíntlii: *J. spicigera.*

obtùsior. Lvs. lanceolate or ovate-lanceolate: fls. pink to crimson, in short dense terminal infl., the bracts very obtuse. Brazil.

pauciflòra (*Libonia floribunda. Sericographis pauciflora*). To 2 ft.: lvs. oblong or oval, about ¾ in. long: fls. scarlet deeply tipped with yellow, ¾ in. long, solitary and nodding. Brazil.

penrhoziénsis. Hybrid between *J. pauciflora* and *J. Ghiesbreghtiana:* fls. carmine slightly tipped with yellow, 1¼ in. long.

Pohliàna. To 5 ft. or more: lvs. ovate, often purplish: fls. bright crimson, in spikes, the bracts acute. Brazil.

ròsea: hort. name.

spicígera (*J. Mohintlii. Justicia spicigera* and *Mohintlii*). To 5 ft.: lvs. lanceolate-oblong to ovate, to 7 in. long: fls. red or orange, 1½ in. long, in few-fld. cymes. Mex.

umbròsa (*J. aurea*). To 12 ft.: lvs. lanceolate-oblong to ovate, to 1 ft. long: fls. yellow, 2 in. long, in dense terminal infl. to 1 ft. long, with acute bracts. Mex., Cent. Amer.

velùtina. Similar to *J. obtusior* but lvs. pubescent on both sides. Brazil.

JACOBS-LADDER: *Polemonium cæruleum.* **-Rod:** *Asphodeline.* **-Staff:** *Fouquieria splendens.*

JACQUEMÓNTIA. *Convolvulaceæ.* Herbaceous twining vines of trop. Amer. with usually entire lvs. and blue or white bell-shaped fls. in cymes or panicles; differs from Ipomœa in the 2 flattened stigmas, fls. usually smaller and in closer clusters. Cult. as for *Ipomœa;* sometimes planted S.

cærùlea: probably *Ipomœa hederacea.*

califórnica: listed name.

Eastwoodiàna. Small bush or trailing, densely tomentose: lvs. cordate-ovate, to 1 in. long: fls. bright blue, ⅗ in. across, on peduncles longer than lvs. Isls., Gulf of Calif.

montàna (*Ipomœa montana*). Plant densely tomentose: lvs. ovate, to 3 in. long, entire or 3-lobed and toothed: fls. yellow, ½ in. across, in dense cymes on peduncles much longer than lvs. Brazil.

pentántha (*J. violacea*). Lvs. cordate-ovate, to 2 in. long: fls. blue, 1 in. across, the cymes on peduncles as long as or longer than the lvs. Fla. to S. Amer.

violàcea: *J. pentantha.*

JAJOBA: *Simmondsia californica.*

JAKFRUIT: *Artocarpus integra.*

JAMBOS, JAMBOSA: *Eugenia.*

JAMÈSIA (*Edwinia*). *Saxifragaceæ.* Deciduous shrubs native in W. N. Amer., with opposite toothed lvs. and fls. in terminal cymes.

One species is planted, hardy North; it succeeds in sunny positions in well-drained soil. Propagated by seeds and cuttings of ripe wood.

americàna. To 3 ft. or more: lvs. ovate, to 2½ in. long, gray- or white-tomentose beneath: fls. white or in var. **ròsea** pink, about ½ in. across. May–June. Wyo. to New Mex. Var. **califórnica** is lower in habit than type, fls. rose. Sierra Nevada Mts.

JAMESTOWN-WEED: *Datura Stramonium.*

JANKÆA: *Ramonda Heldreichii.*

JAPONICA: *Camellia japonica.*

JARRAH: *Eucalyptus marginata.*

JASIÒNE. *Campanulaceæ.* Many ann. and per. European herbs with alternate simple lvs., blue or white 5-parted fls. in close heads subtended by an involucre, and many-seeded capsular frs.; only a few species in cult. with us; useful in the rock-garden and for borders. Propagated by seed and division.

biénnis: listed name.

hùmilis. Per. to 9 in., hairy: lvs. linear-obovate, entire: fls. blue, in short-stalked heads ½ in. across. Pyrenees.

Jánkæ. Per., sts. many, simple or branched, naked above, glabrous, perhaps hispid on lower part: lvs. lanceolate to linear-oblong, repand-dentate: fls. violet-blue, in heads with very narrow bracts. Balkans.

montàna. Bien. to 1 ft.: lvs. linear or lanceolate, wavy: fls. pale blue, in long-stalked heads to 1 in. across, subtended by ovate-lanceolate bracts. S. E. Eu.

perénnis. SHEPHERDS-SCABIOUS. SHEEPS-BIT. Per. to 1 ft.: lvs. obovate to oblong-linear, entire: fls. blue, in long-stalked globose heads to 2 in. across. S. Eu.

JASMINE: *Jasminum.* **Cape-:** *Gardenia jasminoides.* **Chilean-:** *Mandevilla suaveolens.* **Confederate-:** *Trachelospermum jasminoides.* **Crape-:** *Ervatamia coronaria.* **Madagascar-:** *Stephanotis floribunda.* **Night-:** *Nyctanthes Arbor-tristis.* **Rock-:** *Androsace.* **Star-:** *Trachelospermum jasminoides.*

JÁSMINUM. JASMINE. JESSAMINE. *Oleaceæ.* Attractive trop. and semi-trop. mostly Old World shrubs, often clambering climbers, with pinnate opposite or alternate lvs., white, yellow or pink salverform fls. having slender tube and 4–9 corolla-lobes, and fr. a more or less 2-lobed mostly black berry; most of them are evergreen, often very fragrant. They are essentially plants of warm or mild climates; none is hardy in the open in the northern states although *J. humile, J. nudiflorum* and *J. officinale* stand near the coast in central parts.

The jasmines fall into three botanical groups: Unifoliata, in which the leaflets are reduced to 1, as if the leaf were truly simple; Trifoliata, when the leaflets are 3; Pinnatifolia, leaflets more than 3. Recognition of these sections will aid the gardener in making determinations. In the following entries, these groups are designated by the letters U, T, P, even though the leaf number is not always definite.

Jasmines are grown out-of-doors in warm regions and as greenhouse plants elsewhere. They are of easy cultivation. Propagated by cuttings of nearly ripe wood in summer, of ripe wood in autumn, by layers, and sometimes by seeds.

absímile. U: evergreen vigorous climber, very floriferous: single lft. ovate-lanceolate, briefly blunt at apex, narrowed to base, about 2 in. long: fls. white, in axillary and terminal panicles, about 1 in. long, corolla-lobes 6 or 7 and narrow; calyx-teeth narrow, about as long as cup of calyx. Country unknown.—Planted in Calif. It has been erroneously known as *J. calcarium*, a species not in cult. in this country.

acuminàtum. U: climber: single lft. ovate-acuminate, about 3 in. long, rather shortly narrowed to base: fls. white, in a terminal divaricating panicle, about ¾ in. long; calyx-teeth very short, much exceeded by the calyx-cup. Australia.

azóricum. T: climbing, evergreen: lvs. opposite, of 3 broad-ovate lfts. to 3 in. long, and obtuse or nearly so, the terminal one long-stalked: fls. white, 1 in. across, in many-fld. rather open cymes; teeth of calyx very short. Canary Isls.

bahiénse. T: much like *J. azoricum*, of which it is considered a var. by some authors, but lfts. ovate or narrower, acuminate, prominently pointed. Brazil, and planted in Cuba.—Grown in S. Fla.

Beesiànum. U: to 3 ft. or more, somewhat clambering: lvs. opposite, simple, lanceolate or ovate-lanceolate, to 2 in. long, sharp-pointed: fls. pink or rose, fragrant, to ¾ in. across, in 1–3-fld. cymes; teeth of calyx ¼ in. long. China.

calcàrium. U: Australian species not in cult. in N. Amer.; the name has been applied erroneously to *J. absimile*.

dichótomum. Gold Coast J. T: climbing or clambering evergreen, blooming continuously: lvs. in 2's or 3's, thick and glossy, oblong, pointed, to 3 in. long: fls. white, fragrant, more than 1 in. long, opening at night. W. Afr.; promising in S. Fla.

diversifòlium (*J. heterophyllum*). U, T: climbing or scrambling: lvs. thickish, simple or with 3 ovate-lanceolate lfts., shining above, 3–5 in. long: fls. yellow, tube ⅓ in. long, in corymbs; calyx-teeth minute. Himalayas.

flóridum. T, P: erect, half-evergreen: lvs. alternate, of 3 or rarely 5 oval to ovate-oblong lfts. to 1½ in. long: fls. yellow, ½ in. across, in many-fld. cymes; teeth of calyx as long as tube. China.

frùticans. T: to 9 ft. or more, not climbing, evergreen or partially so, the branches weak: lvs. alternate, of 3 oblong obtuse lfts. to ¾ in. long: fls. yellow, in 2–5-fld. cymes; teeth of calyx as long as tube. S. Eu., N. Afr.

Giráldii. T, P: to 6 ft., erect, deciduous: lvs. alternate, of 3 or rarely 5 ovate or oblong-ovate lfts. to 1½ in. long, obtuse or acute: fls. yellow, ½ in. across, in 3–9-fld. cymes; teeth of calyx about length of tube. China.

grácile. U: tall, vigorous, profuse bloomer, climbing or scrambling: lft. privet-like, ovate, glossy above, 2 in. or less long, blunt or apiculate: fls. white, nearly or quite 1 in. long; petals narrow and sharp; calyx-lobes minute: panicle upwardly branched or forked. Australia; nat. in Bermuda. —Erroneously known as *J. simplicifolium*.

gracíllimum. U: climbing, pubescent: lvs. opposite, simple, ovate-lanceolate, to 1½ in. long: fls. white, fragrant, 1 in. or more across, in many-fld. cymes; teeth of calyx to ½ in. long. N. Borneo.

grandiflòrum: *J. officinale* var.

Hackènia: said to be a dwarf jasmine.

heterophýllum: *J. diversifolium*.

hùmile (*J. Reevesii. J. triumphans*). T, P: to 20 ft., erect and sometimes almost tree-like, evergreen, with weak branches: lvs. alternate, of 3–7 ovate to lanceolate lfts. to 2 in. long: fls. yellow, to 1 in. across, fragrant, in clusters; teeth of calyx very short. Trop. Asia. Var. **glàbrum** (*J. Wallichianum*), lfts. 7–13, ovate or narrower, terminal ones usually caudate. Var. **revolùtum** (*J. revolutum*), lfts. 5–7, ovate, oval or ovate-lanceolate, acute.—One of the commonest and hardiest in cult.

ilicifòlium: *J. dichotomum*, probably.

ligustrifòlium: *J. rigidum*.

lùcidum: probably *J. gracile*.

Mésnyi (*J. primulinum*). T: to 10 ft., not climbing, evergreen, the long branchlets 4-angled: lvs. opposite, of 3 oblong to lanceolate lfts. to 3 in. long: fls. yellow with darker center, often double, to 2 in. across, solitary, the corolla-tube short; teeth of calyx leafy, longer than tube. China.—Showy, and sometimes grown under glass.

nítidum. U: partly climbing: lvs. opposite, simple, oval-lanceolate, to 3 in. long: fls. white, 1½ in. across, fragrant; teeth of calyx short. S. Pacific.

nudiflòrum. T: to 15 ft., diffuse but not climbing, deciduous, the branchlets 4-angled: lvs. opposite, of 3 oblong or ovate lfts. to 1 in. long: fls. yellow, 1 in. across, solitary, before the lvs.; teeth of calyx leafy, as long as tube. China.—Showy shrub in early spring.

officinàle. Poets Jessamine. P: to 30 ft., climbing or with weak sts.: lvs. opposite, of 5–7 ovate lfts. to 2½ in. long, the terminal lft. larger: fls. white, ¾–1 in. across, fragrant, in clusters; teeth of calyx to ½ in. long. Persia. Var. **aùreo-variegàtum** has variegated lvs. Var. **grandiflòrum** (*J. grandiflorum*), fls. larger and more showy, the corolla about 1½ in. across.

Párkeri. T, P: to 1 ft.: lvs. alternate, of 3–5 ovate lfts. to ¼ in. long: fls. yellow, ½ in. across, solitary; teeth of calyx half as long as tube. Himalayas.

poéticum: probably applied to *J. officinale*, but also to *J. absimile*.

primúlinum: *J. Mesnyi*.

pubéscens. U: climbing evergreen, pubescent: lvs. opposite, ovate and acuminate, to 2 in. long: fls. white, often double, 1 in. across, in dense clusters; teeth of calyx ½ in. long, yellow hairy-pubescent; cool season. India.

Reèvesii: *J. humile*.

revolùtum: *J. humile* var.

rígidum (*J. ligustrifolium*). U: stiff shrub: lvs. opposite, ovate, to 2 in. long, leathery: fls. white, fragrant, in few-fld. cymes; teeth of calyx linear. India.

Sámbac. Arabian J. U: to 5 ft., climbing, the sts. pubescent: lvs. opposite or perhaps sometimes in 3's, broad-ovate, to 3 in. long: fls. white, to 1 in. across, fragrant, in clusters, often full double; teeth of calyx ¼ in. long. India.

simplicifòlium: species of the S. Sea Isls., not in cult., the plant so named being *J. gracile*.

speciòsum: hort. name for a dwarf jasmine, 4 ft. high, with glossy lvs. and yellow fls.

stephanénse. Hybrid between *J. Beesianum* and *J. officinale* var. *grandiflorum:* fls. with color of former and fragrance of latter parent. Yunnan.

trinérve. U: climbing: lvs. opposite, ovate-oblong, 3-nerved from base: fls. white, in clusters; teeth of calyx longer than tube. India.

triúmphans: *J. humile*.

undulàtum. U: climbing: lvs. opposite, lance-ovate, acuminate, to 3 in. long: fls. white, fragrant, in cymes; teeth of calyx much longer than tube. India.

Wallichiànum: *J. humile* var. *glabrum*.

JASÒNIA. *Compositæ.* Per. herbs of S. Eu., allied to Inula and differing in achenes tapering at each end with pappus at distal end composed of 2 circles, the outer of short bristles and the inner of long hairs. Probably only 2 species, of which one, **J. tuberòsa,** is sometimes cult. To 18 in., plant glandular, rootstock woody, black and tuberous, sts. erect or ascending, pubescent: lvs. linear-spatulate, to 3 in. long, acute, entire, glandular on both sides: heads yellow, of both ray- and disk-fls.

JÁTROPHA. *Euphorbiaceæ.* Herbs, shrubs or trees with milky juice, alternate palmately lobed or cut lvs. and unisexual fls. with or without petals; a few of them are listed for sale. Propagated by seeds and cuttings. They often bear stinging hairs. The species are mostly tropical.

Berlandièri. Per. to 1 ft., from a starchy root: lvs. 3 in. across, deeply 7-parted into acuminate pinnately cut lobes, glaucous beneath: fls. purple, with petals, in long-stalked many-fld. cymes. Tex., Mex., Cent. Amer.

Cúrcas (*Curcas Curcas*). Barbados-Nut. Physic-Nut. Tree to 15 ft.: lvs. roundish, to 6 in. across, slightly 3–5-lobed, long-stalked: fls. yellow, in cymes, with petals. Trop. Amer.

hastàta (*Adenoropium hastatum*). Peregrina. Shrub to 5 ft., glabrous or close-pubescent: lvs. oblong-obovate and constricted below into a fiddle-shape, sharp-acuminate: fls. scarlet or rose, to 1 in. across, in terminal cymes. Cuba.

Mánihot: *Manihot esculenta*.

multífida (*Adenoropium multifidum*). Coral-Plant. Shrub or tree to 20 ft.: lvs. nearly orbicular, to 1 ft. across, deeply parted into entire or cut lobes, glaucous beneath: fls. scarlet, with petals, in compound cymes. Trop. Amer.

podágrica. Tartogo. Trunk short and swollen and gouty, to about 1½ ft., with bristled scars: lvs. orbicular-ovate in outline, peltate, long-stalked, to 10 in. across, deeply 3–5-lobed with obtuse sinuses: fls. small, coral-red, in terminal long-peduncled cymes with red pedicels. Cent.

Amer.—Planted in warm countries and sometimes seen under glass.

texàna: *Cnidoscolus texanus.*

JEFFERSÒNIA. *Berberidaceæ.* Two small per. herbs native in E. N. Amer. and Asia, the former transferred from the woods: lvs. basal, palmately veined or lobed: fls. white, solitary at tip of slender scape: fr. a leathery caps.

diphýlla. Twin-Leaf. To 1 ft.: lvs. 2-parted into kidney-shaped entire or lobed divisions, glaucous beneath: fls. 1 in. across. May. Ont. to Va. and Tenn.

dùbia. Young lvs. cordate, margins irregularly angled: petals oblong, very obtuse, narrowed into a short claw: fls. bluish. China.

JERUSALEM CROSS: *Lychnis chalcedonica.*

JESSAMINE: *Jasminum, Cestrum.* **Carolina Yellow:** *Gelsemium sempervirens.* **Orange-:** *Murræa.*

JETBEAD: *Rhodotypos tetrapetala.*

JEW-BUSH: *Pedilanthus tithymaloides.*

JEWEL VINE, MALAY: *Derris scandens.*

JEWEL-WEED: *Impatiens biflora.*

JIMSON-WEED: *Datura Stramonium.*

JOBS-TEARS: *Coix Lacryma-Jobi.*

JOE-PYE WEED: *Eupatorium dubium, maculatum, purpureum.*

JOINTED: with nodes, or points of real or apparent articulation.

JOINT-FIR: *Ephedra.*

JOINTWOOD: *Cassia nodosa.*

JONQUIL: *Narcissus.*

JOSEPHS-COAT: see *Amaranthus tricolor.*

JOSHUA-TREE: *Yucca brevifolia.*

JOVELLÀNA. *Scrophulariaceæ.* Herbs or small shrubs from Chile and New Zeal., allied to Calceolaria and differing in the 2 lobes of the corolla being nearly equal in size.

Sínclairi. To 1½ ft., glandular-pubescent: lvs. opposite, ovate, to 3 in. long, coarsely toothed or lobed: fls. white or yellow spotted with purple, ¼ in. across, in terminal panicles. New Zeal.

violàcea (*Calceolaria violacea*). To 1½ ft., the st. white-hairy: lvs. ovate, to 1 in. long, coarsely toothed or sometimes lobed: fls. yellowish-white spotted with purple, ½ in. across, in terminal panicles. Chile.

JUÀNIA. *Palmaceæ.* One monœcious unarmed graceful feather-palm of isl. Juan Fernandez (Chile), which has been intro. into S. Calif.: spadices among the lvs., about 1 ft. long, simply branched, the sexes in different inflorescences; stamens 6: fr. size of cherry, with the stigmatic point terminal rather than basal and in that respect differing from Ceroxylon. **J. austràlis.** Tree of medium stature: lvs. 4–6 ft. long; pinnæ many, 2–3 together, linear and acuminate, bifid at apex into slender points, scaly or lepidote underneath, with about 2 secondary nerves either side midrib, margins somewhat thickened; peduncle more than 1 ft. long.

JUBÆA. *Palmaceæ.* One massive unarmed monœcious feather-palm of Chile, frequently planted in S. Calif., also sometimes grown under glass in the juvenile state and in tubs for planting out in subtrop. clumps; does not thrive in Fla.

spectábilis (*J. chilensis*). Syrup Palm. Trunk columnar even when the tree is low, 4–6 ft. diam., bearing scars of the expanded fallen lf.-bases, carrying a thick crown of erect-spreading foliage; height to 80 ft. or more: petioles relatively short, margined with stiff hair-like filaments but not truly spiny; lvs. green, 6–12 ft. long; pinnæ numerous, 2 ft. or more long and about 1 in. broad, conduplicate, bifid at tip: spadices from lower lf.-axils, the large spathes hanging long; staminate fls. on upper part of branches, stamens 15–30: fr. globose-ovoid, 1½ in. long, yellow, 1-seeded, drupe-like with fibrous flesh.—In Chile sugar or "honey" is made from the sap, and the nuts are employed in confectionery.

JUDAS-TREE: *Cercis.*

JUGLANDÀCEÆ. Walnut Family. Six woody monœcious genera in the north temp. zone, having alternate pinnate lvs., staminate fls. in hanging catkins with 3-many stamens and with or without perianth, pistillate fls. with 3–5-lobed calyx and inferior ovary and borne a few together or in racemes, and fr. a nut, winged nutlet, or drupe. Carya, Juglans, Platycarya and Pterocarya are grown for ornament, shade, and for the edible nuts; many of the species are timber trees.

JÚGLANS. Walnut. *Juglandaceæ.* Conspicuous deciduous monœcious trees with large odd-pinnate lvs., staminate fls. in drooping catkins from last-year wood, pistillate fls. on wood of current year, and fr. a furrowed nut inclosed in a thick indehiscent husk. Walnuts may be distinguished from hickories in part by the pith of the twigs chambered or with minute cross-partitions in the former and solid or continuous in the latter. Grown for ornament, the edible nuts, and for timber used in building and making of furniture. For cult. see *Walnut.*

ailanthifòlia: *J. Sieboldiana.*

califórnica. California W. Shrub or tree to 60 ft.: lvs. of 9–17 ovate-lanceolate lfts. to 3 in. long: fr. globose, ¾ in. across, pubescent. S. Calif.

cathayénsis. Chinese W. To 80 ft.: lvs. of 9–17 ovate-oblong lfts. to 6 in. or more long, pubescent beneath: fr. ovoid, to 2 in. long, pointed, sticky-pubescent, nut thick-shelled. China.

cinèrea. Butternut. To 100 ft.: lvs. of 11–19 pubescent lfts. to 5 in. long: fr. ovoid-oblong, to 4 in. long, sticky-pubescent. N. B. to Ark.

cordifórmis: *J. Sieboldiana* var.

Hìndsii. To 75 ft.: lvs. of 15–19 ovate-lanceolate or lanceolate lfts. to 4 in. long: fr. nearly globose, to 2 in. across, pubescent, the nuts nearly smooth. Cent. Calif.

japónica: a name erroneously applied in the trade to forms of *J. Sieboldiana* or *J. regia.*

màjor. To 60 ft.: lvs. of 9–13 or more narrow-ovate to oblong-lanceolate lfts. pubescent on rib and rachis underneath: fr. nearly globose, 1 in. or more long, nut deeply grooved. Colo. to Ariz.

mandshùrica. To 60 ft.: lvs. of 9–17 oblong lfts. to 8 in. long: fr. ovate to oblong, 2 in. long, sticky-pubescent. Manchuria.

nìgra. Black W. To 150 ft.: lvs. of 15–23 ovate-oblong lfts. to 5 in. long, pubescent beneath: fr. globose, to 2 in. across, pubescent. Mass. to Fla. and Tex.

règia. Persian or English W. To 100 ft., with silvery-gray bark: lvs. of usually 7–9 oblong lfts. to 5 in. long: fr. nearly globose, to 2 in. across, glabrous. S. E. Eu., Asia. Var. **chinénsis** is a geographic form from China and Himalayas but not morphologically distinguishable from the type. Var. **laciniata,** lfts. pinnately cut. Var. **máxima** (var. *macrocarpa*), nuts much larger. Var. **monophýlla,** lvs. simple or with 3 lfts. Var. **péndula,** branches drooping. Var. **præpartùriens,** shrubby earlier-maturing form.

rupéstris. Rarely to 30 ft.: lvs. of 15–23 lanceolate lfts. to 3 in. long: fr. globose, ¾ in. across, nearly glabrous. Tex., New Mex.

Sieboldiàna (*J. ailanthifolia*). To 60 ft.: lvs. of 11–17 oval lfts. to 6 in. long, pubescent beneath: fr. globose, about 2 in. long, pointed, sticky-pubescent. Japan. Var. **cordifórmis** (*J. cordiformis*) has heart-shaped flattened sharply 2-edged lvs.

JUJUBE: *Zizyphus.*

JUNCÀCEÆ. Rush Family. Grass-like herbs of 8 widely distributed genera, with inconspicuous, greenish, chaff-like bisexual fls. borne in heads, panicles or corymbs, having 3 sepals and 3 petals, 3 or 6 stamens, superior 1- or 3-celled ovary, and capsular frs. Juncus and Luzula are occasionally planted.

JÚNCUS. Rush. *Juncaceæ.* Glabrous stiffish herbs, the following per., with lvs. reduced to basal sheaths; rarely transplanted for ground-cover or interest, and the forms of *J. effusus* sometimes grown in pots. Propagated by seeds and division. Most of the species are plants of low ground.

bálticus. Tufted, to 3½ ft.: fls. greenish, ⅙ in. long, the segms. with white margins. Eu., N. Amer.

effùsus. Tufted, to 4 ft.: fls. pale brown, 1/12 in. long. N. Amer., Eu., Asia. Var. **spiràlis** has spirally twisted sts. and var. **vittàtus** yellow-striped herbage.

Léscuri. To 3 ft.: fls. dark brown, ¼ in. long, the segms. with deep purple margins. Alaska to Calif.

JUNEBERRY. Some of the species of Amelanchier yield attractive edible berry-like small fruits. The ones grown sometimes in gardens for the fruit are dwarf bushes. The variety Success (*Amelanchier stolonifera*), which is best known, is a hardy bush 2–3 feet high, suckering at the base and by that means it is propagated. It may be grown much like currants and gooseberries. A row at one side of the garden will soon make a good border, showy with its racemes of white flowers in May (in central New York) while the leaves are small, and laden in July with red-purple blueberry-like fruits about ½ inch in diameter. Juneberries are of simple cultural requirements.

JUNÍPERUS. Juniper. *Cupressaceæ.* Evergreen mostly small trees and shrubs widely dispersed in the northern hemisphere, some of them arctic, having needle- or scale-like lvs., commonly appressed on old branchlets and spreading on new growth, yellow staminate fls. in little catkins, and fr. a berry-like body formed of the coalescence of the fleshy scales of the cone. Many species are grown for ornament and some of them supply useful timber; some, as *J. virginiana*, are known as cedars. For cult. see *Conifers.*

arizónica: possibly *Cupressus arizonica.*

Áshei: *J. mexicana.*

barbadénsis (*J. bermudiana*, sometimes erroneously *J. lucyana*). Tree to 40 ft.: lvs. mostly overlapping, spiny-pointed, pale bluish-green: fr. blue, bloomy. Bermuda, Barbados, Antigua; to be planted only far S.

bermudiàna: *J. barbadensis.*

califórnica (*Sabina californica*). Shrub to 12 ft. or rarely tree: lvs. overlapping, scale-like: fr. reddish-brown. Calif.—The names var. *glauca* and *Hetzii* are listed.

canadénsis: *J. communis* var. *depressa.*

Cédrus. Tree to 12 ft., with drooping branchlets: lvs. spreading, linear: fr. orange-brown. Canary Isls.

chinénsis. Tree to 60 ft. and more or sometimes shrubby: lvs. of two kinds, scale-like or linear and spreading with 2 white bands below: fr. brown, bloomy. E. Asia; hardy in Cent. N. Y. and New England. There are numerous hort. vars. of high ornamental value, as: **álbo-spìca** is *J. virginiana* var.; **álbo-variegàta** is var. *variegata;* **Ármstrongii**, sport of var. *Pfitzeriana;* **aùrea**, young growth golden-yellow; **aùreo-globòsa**, dwarf globose form with young growth golden-yellow; **columnàris**, narrow-pyramidal habit; **conférta**, probably *J. conferta;* **dénsa**, compact habit; **Doúglasii** is *J. horizontalis* var.; **fœ́mina**, a form with female fls. and fr.; **Fórtunei**, habit columnar; **glaùca**, foliage bluish-green; **globòsa** (*J. virginalis globosa*), of dwarf globose habit; **japónica** (var. *nana, J. japonica*), low shrub with decumbent branches, and its forms **álba** (var. *procumbens albo-variegata*) with lvs. variegated white, and **aùreo-variegàta** variegated with yellow; **Keteleèri**, of pyramidal habit with dark green scale-like lvs.; **más** (var. *mascula*, var. *neaboriensis*), conical form with male fls.; **Meỳeri**, similar to var. *glauca;* **nàna**, synonym of *japonica;* **neaboriénsis**, synonym of *mas;* **oblónga**, nearly globose, forming a distinct leading shoot with branches recurved at tips; **péndula**, branches drooping at tips; **Pfitzeriàna**, of broad pyramidal habit with nodding spreading branchlets, often without central leader and appearing prostrate, grayish-green; **plumòsa**, low, with arching branches and branchlets forming plumose sprays and **aùrea** (var. *japonica aurea*) with young lvs. golden-yellow; **procúmbens** is *J. procumbens*, but some of the material is var. *Sargentii;* **pyramidàlis**, of narrow pyramidal habit and bluish-green lvs.; **Reèvesii** is var. *fœmina;* **Sárgentii**, prostrate shrub with creeping sts.; **Shéppardii**, juvenile form of bushy drooping habit; **Smíthii**, pyramidal with drooping terminal branchlets; **sphǽrica**, fr. not glaucous; **strícta** is *J. excelsa* var.; **sylvéstris**, probably a synonym for *plumosa;* **torulòsa**, a form with twisted branchlets; **variegàta** (var. *albo-variegata*), tips of branchlets creamy-white.—Other listed names are *dentata, monumentalis, viridis.*

commùnis. Common J. Shrub or tree to 40 ft.: lvs. linear, spreading, sharp-pointed, with broad white band above: fr. dark blue, bloomy. Widely distributed in N. Amer. (E. Mass. south and west), Eu., Asia. Vars. are: **alpìna** is var. *saxatilis;* **Áshfordii**, probably a form of var. *hibernica;* **aùrea**, young growth golden-yellow; **canadénsis**, synonym of *depressa;* **columnàris**, probably a form of var. *hibernica;* **compréssa**, dwarf shrub with short crowded branchlets; **cracòvia**, Polish J., branchlets drooping; **depréssa** (var. *canadensis*), Prostrate J., shrub to 4 ft., with sts. ascending and its form **aùrea-spìca** with tips of branchlets golden-yellow; **echinifórmis**, Hedgehog J., to 2 ft. with densely crowded branchlets; **fastigiàta** is var. *suecica;* **Gràyi**, pyramidal quick-growing sport; **hemisphǽrica**, dense rounded shrub to 3 ft.; **hibérnica**, Irish J., columnar form with upright dark green branches; **horizontàlis** is probably a synonym of var. *prostrata;* **Jáckii**, prostrate shrub with slender trailing branches, Ore., N. Calif.; **montàna** is var. *saxatilis;* **nàna** is var. *saxatilis;* **nippónica**, a Japanese form differing from var. *Jackii* in having its lvs. deeply sulcate above and keeled below, high mts. of Japan; **oblóngo-péndula**, columnar form with drooping branches; **péndula**, branchlets drooping; **Pòlishii**, probably var. *cracovia;* **prostràta**, prostrate with smaller lvs. than type; **saxátilis** (vars. *alpina, montana, nana, J. nana, J. saxatilis, J. sibirica*), Mountain J., spreading shrub to 2 ft. high with denser shorter foliage, arctic and mountainous regions of N. Amer.; **sibírica** is var. *saxatilis;* **suécica** (var. *fastigiata*), Swedish J., of narrow columnar habit and branchlets drooping at tips.—Other listed names are *Dayi, koraiensis* and *pyramidalis.*

conférta (*J. litoralis*). Shore J. Procumbent shrub: lvs. linear, spreading, spiny-pointed, bluish-green with white band above: fr. black, bloomy. Japan, Saghalin; hardy in S. New England.

contórta is listed as a creeping plant characterized by fastigiate branch tips; its botanical position is unknown, but it is probably a hort. var. or form.

cupressifòlia: *J. Sabina* var.

drupàcea. Syrian J. Tree to 45 ft., of pyramidal habit: lvs. linear-lanceolate, spreading, spiny-pointed, with 2 white lines above: cones bluish or brown, bloomy. Greece, Asia Minor; to be planted far S.

excélsa. Greek J. Tree to 60 ft., of pyramidal habit: lvs. mostly scale-like, dark or bluish-green: fr. purplish-brown, bloomy. S. W. Eu., Asia Minor; hardy only far S. Var. **dénsa** is a compact form; var. **strícta** is a columnar form with young lvs. glaucous, more hardy; var. **variegàta** has lvs. variegated with yellowish-white.

fláccida. Tree to 30 ft., with drooping branchlets: lvs. scale-like, acuminate: fr. red-brown, bloomy. Tex., Mex.

formosàna (*J. oblonga pendula*). Tree to 40 ft., with drooping branchlets: lvs. linear, spreading, spiny-pointed, with 2 broad white bands above: fr. reddish or orange-brown. Formosa, China; may be planted as far north as N. Y. and New England.

Fórtunei: *J. sphærica*, but the material cult. under this name is probably a form of *J. chinensis.*

Gossinthiàna: listed name.

hibérnica: *J. communis* var.

horizontàlis (*J. hudsonica. J. prostrata. J. virginiana* var. *prostrata*). Creeping J. or Savin. Procumbent shrub with long trailing branches: lvs. mostly scale-like, overlapping, bluish-green: fr. blue. N. S. west and south.—Once thought to be a form of other species. Var. **alpìna** (*J. Sabina* var. *alpina*), sts. nearly upright at first; var. **aùrea**, young growth golden-yellow; var. **depréssa** is *J. communis* var.; var. **Doúglasii** (*J. chinensis* var.), Waukegan J., trailing form with steel-blue lvs.; var. **glaùca**, lvs. more bluish than type; var. **glomeràta**, dwarf form with branchlets crowded into dense clusters; var. **plumòsa**, depressed shrub with linear lvs.; var. **procúmbens**, very dwarf, only reaching a few in.; var. **variegàta**, procumbent with creamy-white tips of branchlets.

hudsónica: *J. horizontalis.*

japónica: *J. chinensis* var.

Kaizùda: listed name.

litoràlis: *J. conferta.*

lucayàna: see *J. silicicola.*

macrocárpa (*J. neaboriensis*). Plum J. Shrub or dense pyramidal tree to 12 ft.: lvs. linear, spreading, spiny-pointed: fr. dark brown, bloomy. Medit. region; to be grown far S.

mexicàna (*J. Ashei*). Ozark White-Cedar. Tree to 30 ft. and more: lvs. mostly scale-like: fr. dark blue, bloomy. S. Mo., Ark. to Mex.; to be planted far S.

monospérma. Cherrystone J. Tree to 50 ft.: lvs. mostly scale-like, grayish-green: fr. dark blue, bloomy. Colo. to Tex. and Mex.; useful in lower S.

morrisonícola. Mt. Morrison J. Differs from *J. chinensis* in the longer black frs. and other technical characters. Formosa.

nàna: *J. communis* var. *saxatilis.*

neaboriénsis: *J. macrocarpa* or *J. chinensis* var. *mas.*

oblónga péndula: *J. formosana.*

occidentàlis (*Sabina occidentalis*). Shrub or tree to 40 ft. and more: lvs. mostly scale-like, overlapping, grayish-green: fr. bluish-black, bloomy. Wash. to S. Calif.; to be planted only far S. on eastern side of continent.

Oxycédrus. Prickly J. Shrub or tree to 30 ft.: lvs. linear, spreading, spiny-pointed: fr. somewhat bloomy. Medit. to Persia; adaptable only far S.

pachyphlæa. Alligator J. Tree to 60 ft. with checkered bark: lvs. mostly scale-like, bluish-green: fr. reddish-brown, bloomy. Tex., Ariz., Mex.; adapted only to lower S.

Pfitzeriàna: *J. chinensis* var.

phœnícea. Shrub or tree to 20 ft.: lvs. mostly scale-like, dark or bluish-green: fr. yellow or reddish-brown. Medit. region, and to be planted only far S.—The name *Longsgoldiana* is listed here.

Pínchotii. Tree to 20 ft.: lvs. mostly scale-like: fr. reddish-brown. Tex.

procèra. African J. Tree to 100 ft. and more: lvs. of two kinds, lanceolate and spreading, or scale-like: fr. brown or purplish. E. Afr.

procúmbens (*J. chinensis* var.). Spreading shrub to 2 ft. high: lvs. linear-lanceolate, spiny-pointed, glaucous above and bluish below. Japan, where it is cult., and hardy in northern states. Var. **variegàta** is listed.

prostràta: *J. horizontalis.*

pseudosabìna. Low shrub: lvs. of two kinds, scale-like and needle-shaped. Turkestan.

recúrva. Tree to 30 ft., with curved branches and drooping branchlets: lvs. linear-lanceolate, grayish or bluish-green with white band above: fr. brown or purple. Himalayas; to be tried far S. Var. **dénsa** is *J. squamata.*

rígida. Needle J. Pyramidal shrub or tree to 30 ft., with drooping branchlets: lvs. linear, spreading, spiny-pointed, yellowish-green with white band above: fr. brownish-black, bloomy. Japan, Korea, N. China; hardy in northern states, but should be protected from severe winter winds.

Sabìna. Savin. Shrub to 10 ft., usually spreading or procumbent: lvs. of two kinds, needle-shaped and spreading or scale-like and overlapping, dark green: fr. brownish-blue, bloomy. Eu., W. Asia; hardy in northern states; the native plant once supposed to be this species is *J. horizontalis.* Some of the hort. vars. are: **cupressifòlia,** procumbent, with scale-like lvs.; **fastigiàta** (sometimes called *erecta*), shrub of columnar habit; **fœ́mina** is *J. chinensis* var.; **horizontàlis** is listed; **lusitánica,** upright shrub with scale-like lvs.; **prostràta** is *J. horizontalis;* **pyramidàlis** is listed as of more conical habit; **Sánderi,** finer blue foliage than type; **tamariscifòlia,** lvs. usually all needle-shaped, bright green; **variegàta,** branchlets variegated creamy-white.

saltuària. Tree to 50 ft.: lvs. overlapping, mostly scale-like, bright green: fr. black. W. China.

Sárgentii: *J. chinensis* var.

saxátilis: *J. communis* var.

scopulòrum (*Sabina scopulorum*). Colorado Red-Cedar. Tree to 30 ft. and more: lvs. overlapping, scale-like, yellowish-green or glaucous: fr. bright blue, bloomy. B. C. to Calif., and hardy in eastern states. Var. **argéntea** is a pyramidal form with silvery-white lvs.; var. **glaùca** has more glaucous foliage; var. **Fràseri** is advertised with silvery lvs. and growing to 20 ft.; var. **Híllii,** very light blue foliage; var. **horizontàlis** has spreading branches and bluish-white lvs.; var. **péndula** is listed as a weeping form to 15 ft., lvs. silvery; var. **rollerénsis** is offered as an erect, compact blue-green foliaged form; var. **viridifòlia** is a bright green form of pyramidal habit.—Other Latin named forms are: *Chandleri, columnaris, cupressifolia, globosa, prostrata.*

sibírica: *J. communis* var. *saxatilis.*

silicícola (*Sabina silicicola*). Southern Red-Cedar. Tree to 50 ft., with drooping branchlets: lvs. scale-like, overlapping, light green: fr. dark blue, bloomy. Ga. to Tex., W. Indies; adaptable only far S. Var. **Bedfordiàna,** juvenile form with needle-like lvs.—This plant differs from *J. virginiana* in its more slender twigs, larger staminate catkins and smaller fr. By some authors it has been confused with *J. lucayana,* a juniper of the W. Indies which differs in having smaller 4-ranked lvs. and a depressed more or less laterally flattened fr.

sphǽrica (*J. Fortunei*). A species from N. China, but the material cult. under this name is *J. chinensis.*

squamàta (*J. recurva* var. *densa*). Decumbent shrub: lvs. linear or lanceolate, pointed, grayish- or bluish-green with 2 white bands above: fr. brown to black. E. Asia, and hardy in northern states. Var. **álbo-variegàta** (*argenteo-variegata*), branchlets somewhat creamy-white; var. **Fárgesii** is a tree to 70 ft.; var. **Meỳeri** is an upright dense shrub with bluish-white lvs.; var. **Pársonii** is listed as more dwarf; var. **prostràta** is a prostrate form; var. **variegàta** has creamy-white branchlets; var. **Wílsonii** is a shrub to 6 ft. with branchlets recurved at tips.

strícta: *J. excelsa* var.

sylvéstris: a listed name of unknown botanical standing; the plant may be a var. or form of *J. chinensis.*

taxifòlia. Differs from *J. formosana* in the obtuse lvs. and shiny light brown fr. Bonin Isls.

thurífera. Pyramidal tree to 40 ft.: lvs. scale-like or needle-shaped: fr. dark blue, bloomy. S. Eu., N. Afr.; to be planted only in lower S.

utahénsis (*Sabina utahensis*). Tree to 20 ft.: lvs. mostly scale-like, overlapping, light yellowish-green: fr. reddish-brown, bloomy. Wyo. to Calif.; not hardy in northeastern states. Var. **megalocárpa** is taller with a single trunk.

venústa: *J. virginiana* var.

virginàlis globòsa: *J. chinensis* var. *globosa.*

virginiàna. Red-Cedar. Tree to 100 ft.: lvs. scale-like and overlapping or spreading and needle-like: fr. bluish, bloomy. Me. to Fla.—Liable to attacks of red-spider. There are numerous garden vars. as follows: **álbo-spìca** and "Triomphe d'Angers," tips of branchlets white; **argéntea,** lvs. and young shoots silvery; **aùrea,** lvs. dark green tipped with bronze; **Búrkii,** habit columnar, lvs. steel-blue; **Canǽrtii,** pyramidal form with dark green lvs.; **Chámberlaynii,** branchlets drooping and elongated; **elegantíssima,** tips of branchlets golden-yellow; **fastigiàta** is listed as having fastigiate branches; **filífera,** branchlets slender and much divided; **glaùca,** lvs. very glaucous; **globòsa,** globose form with bright green scale-like lvs.; **Híllii,** a form of var. *pyramidiformis;* **invérta,** branches drooping; **Kósteri,** low form with glaucous lvs.; **péndula,** branchlets slender and drooping; **plumòsa,** of pyramidal habit, white-tipped; **prostràta** is *J. horizontalis;* **pseùdo-cupréssus,** habit pyramidal with silvery-gray foliage; **pyramidàlis,** of dense columnar habit; **pyramidifórmis,** pyramidal with lvs. turning purple, its better-known form **Híllii,** Dundee J., is columnar with pale bluish-green foliage when young, plum-colored in autumn; **réptans,** low shrub with spreading branches; **Schóttii,** columnar, with scale-like lvs. bright green; **tripartìta,** dwarf densely branched form; **variegàta,** branchlets variegated with white; **Toẁsonii,** gray-green turning purple-blue in autumn; **venústa** (*J. venusta*), of columnar habit, lvs. shiny dark green.—Other listed names are *cinerascens, corymbosa, cylindrica, Donaldsonii, Libretonii, McCabei, Smithii, vegetus* and *viridis.*

Wallichiàna. Shrub or tree to 60 ft.: lvs. scale-like and needle-shaped, bright green: fr. blue. S. W. China; to be planted only in mild climates.

Whittmanniàna: a listed name.

Wílsonii: *J. squamata* var.

JUPITERS-BEARD: *Anthyllis Barba-Jovis, Centranthus ruber.*

JURÌNEA. *Compositæ.* Old World herbs or shrubs adapted to the wild garden, having white-tomentose foliage and purple fls. in long-peduncled heads forming cymose infl.: achenes 4–5-sided and crowned with a pappus of unequal stiff and rough hairs. Propagated by seeds or division and planted in any ordinary garden soil.

alàta. Bien. or per. to 3 ft.: basal lvs. lyrate-pinnatifid, oblong, to 6 in. long, glabrescent above and hairy beneath, st.-lvs. lanceolate, dentate and decurrent: heads purplish-blue, to 1 in. across, involucral bracts narrow with spreading tip. Caucasus.

anatólica. Bien. or per., gray-canescent: lvs. finely pinnately lobed, the upper ones less so and linear but not decurrent: heads purplish, large, involucre webby-tomentose, lower bracts squarrose and reflexed. Asia Minor.

móllis. Bien. or per., little branched or simple: lvs. oblong to linear-lanceolate, usually pinnately lobed, segms. linear: heads rose-purple, to 2½ in. across. S. Eu.

JUSSIÆA. Primrose-Willow. *Onagraceæ.* Shrubs and per. herbs with alternate simple lvs., yellow or white fls. solitary in the axils, and capsular frs.

Jussiæas are grown in the aquatic or damp garden, and mostly treated as tender annuals. Seeds should be sown in pots or pans which after two days should be submerged in water. The seedlings should be transferred to pots and it is not always necessary to keep them under water.

califórnica. Yellow Water-weed. Per. with sts. to 10 ft. long: lvs. oblong to ovate, to 2 in. long, floating lvs. often more orbicular and with longer petioles: fls. yellow, solitary in axils. Calif.

decúrrens. Erect per. to 2 ft.: lvs. lanceolate, to 4 in. long, sessile, decurrent: fls. yellow, to ½ in. across. Swamps, Md. to Ill. south to Fla. and Tex.

longifòlia. Erect, to 2 ft.: lvs. linear-lanceolate, long-pointed: fls. yellow. Brazil.

peruviàna (*J. Sprengeri*). Per., evergreen, prostrate, sts. winged, much branched, hairy: lvs. opposite, ovate, acute, crowded: fls. canary-yellow, large. Argentina.—Said to be adapted to aquatic or terrestrial habitats.

rèpens. Sts. creeping, rooting at nodes: lvs. oval to spatulate, to 3 in. long: fls. yellow, ⅓ in. long. Tropics.

salicifòlia: *J. suffruticosa.*

Sprèngeri: *J. peruviana.*

suffruticòsa (*J. salicifolia*). Per., woody at base, to 4 ft., erect and much branched, branchlets angled: lvs. narrowly lanceolate to elliptic-ovate, to 4 in. long, base cuneate, apex acute: fls. yellow, to ⅞ in. across. W. Indies, distributed throughout tropics.

JUSTÍCIA. *Acanthaceæ.* Trop. herbs and shrubs allied to Jacobinia and distinguished by technical characters of the stamens and pollen-grains. Cult. as for *Jacobinia.*

cárnea: *Jacobinia carnea.*

coccínea: *Pachystachys coccinea;* see also *Odontonema strictum.*

Ghiesbreghtiàna: *Jacobinia Ghiesbreghtiana.*

magnífica: *Jacobinia carnea.*

Mohíntlii: *Jacobinia spicigera.*

secúnda. Red J. Shrub to 8 ft.: lvs. ovate-oblong, to 6 in. long, long-acuminate: fls. red, 1½ in. long, deeply 2-lipped, on narrow terminal panicles. N. S. Amer.

spicígera: *Jacobinia spicigera.*

JUTE: *Corchorus capsularis.*

JUTTADINTÈRIA. *Aizoaceæ.* Subshrubs with short sts., very thick decussate lvs. and white to rose short-stalked fls. having linear recurved petals and 8–10 stigmas; a segregate from Mesembryanthemum; S. Africa.

albàta. To 1 ft.: lvs. densely imbricated, to 3 in. long, ½ in. wide and thick, keeled on back, glaucous tinged with rose: fls. solitary, white, ½ in. long.

buchubergénsis: listed name.

próxima. To 3 in., each branch with 2 pairs of lvs.: lvs. to 2 in. long and ½ in. thick, glaucous: fls. solitary, rose-pink, 1¼ in. across, fragrant.

rhèolens. Branches crowded, usually densely 4-lvd., glaucous, with rhubarb odor: lvs. to 1½ in. long, ½ in. wide and thick: fls. solitary, pale rose-lilac, 1¼ in. across.

Símpsonii (*M. Simpsonii*). To 10 in.: lvs. to 1½ in. long and ⅓ in. thick, 3-angled, with short usually red teeth: fls. solitary, white, shining, 1 in. long.

K

KADSURA. *Magnoliaceæ.* Evergreen woody twiners from trop. Asia with simple lvs., unisexual usually solitary fls., and fr. a globose head of berries (separate carpels) which are ornamental in autumn. Propagated by cuttings of half-ripened wood under glass. To be planted far S.

japónica. Lvs. oval to oblong-lanceolate, to 4 in. long, slightly toothed: fls. yellowish-white, ¾ in. across, not showy, stalked: fr. scarlet, the heads about 1 in. across. Japan, Korea.

KAFIR: *Sorghum vulgare* var. *caffrorum.*

KAGENÉCKIA. *Rosaceæ.* Small evergreen trees from Chile with leathery sharp-toothed lvs. and diœcious fls., the pistillate solitary and staminate in racemes or corymbs; one species intro. in S. Calif.

oblónga. To 30 ft.: lvs. oblong: fls. white, ¾ in. across. Chile.

KAHIKA: *Podocarpus dacrydioides.*

KAKI: *Diospyros Kaki.*

KALÁNCHOË. *Crassulaceæ.* Succulent trop. per. herbs or subshrubs, mostly in Afr., Madagascar and Asia, with opposite fleshy lvs. that are sometimes pinnatifid or pinnate, and yellow, scarlet or purple fls. in terminal panicled cymes, the corolla urn-shaped or salverform and the calyx sometimes much inflated. Plants listed here are sometimes also referred to Bryophyllum and Kitchingia.

The kalanchoës are grown in the greenhouse or out-of-doors in the South for the bloom. The cultivation is not peculiar. Propagated by stem-cuttings and seeds but more readily by placing a leaf on wet sand in a warm light propagating frame or even laying it on the ground; from the notches of the leaf young plants will grow and these may be potted when of sufficient size.

æthiòpica: listed name.

Áliciæ. Sts. robust, hairy: lvs. nearly orbicular, crenate, hairy: fls. large, with broad-ovate deeply emarginate segms., hairy, in corymbs. Madagascar.

beharénsis. Per. and woody, branching, sts. hairy at apex, 3 to even 10 ft.: lvs. in terminal rosettes, sagittate with shallow lobes on side, silvery underneath and rusty-hairy above: fls. about ½ in. long, woolly, in branched cymes, yellowish-green to white, violet inside. Madagascar.—Plants in the American trade as *Kitchingia mandrakensis* and *K. peralta* are to be referred here.

Blossfeldiàna (*K. globulifera* var. *coccinea*). Sts. short: lvs. obovate, to 1 in. long and ¾ in. wide, entire or toothed: fls. scarlet, in many-fld. cymes. Madagascar.

brachýloba. Sts. robust, glabrous: lvs. ovate-lanceolate, entire or weakly sinuate, petiolate: fls. about ½ in. across. Trop. Afr.

cárnea: *K. laciniata.*

coccínea: *K. laciniata.*

crenàta. To 6 ft., with thick root: lvs. oblong to spatulate, to 3 in. long, coarsely toothed: fls. yellow or orange. Trop. Afr.

Daigremontiàna (*Bryophyllum Daigremontianum*). Glabrous, simple, erect, 1½ ft. or more, plant green-brown: lvs. thick, long-oblong, producing plantlets from the many serratures: fls. about 1 in. long, corolla much exceeding the sharp-lobed calyx. Madagascar.

Dýeri: *K. Quartiniana.*

Éngleri: listed name.

farinàcea: *K. scapigera.*

Fedtschénkoi. Per., glabrous, about 1 ft., more or less branched at base: lvs. fleshy, obovate to nearly orbicular, crenate-dentate, short-petioled: fls. corymbose, on a terminal peduncle, hanging on their pedicels, corolla longer than tubular calyx, purple. Madagascar.

flámmea. To 1½ ft.: lvs. ovate-oblong, 2 in. long, entire or slightly toothed: fls. yellow and orange-scarlet, ½ in. across. Trop. Afr.—A good subject for a rather cool greenhouse.

formòsa: listed name.

glaucéscens: *K. laciniata.*

globulífera: see *K. Blossfeldiana.*

grándis: listed name.

kewénsis. Hybrid between *K. flammea* and *K. teretifolia*, the latter a white large-fld. species from Arabia, 3 ft., with somewhat terete and pointed lvs. in pairs at top of st., but apparently not in cult. with us.

Kírkii: *K. velutina.*

laciniàta (*K. carnea. K. coccinea. K. glaucescens. K. spathulata. K. Welwitschii*). Sts. erect, to 4 ft.: lvs. oblong, ovate or lanceolate, entire, crenate or lobed, to 5 in. long, petiolate: fls. yellow, orange, pink or scarlet, to ½ in. across. Trop. Afr.—A good conservatory plant for winter bloom; seeds sown in spring should give fls. at the holidays; established in Fla.

lanceolàta (*K. pilosa*). Lvs. ovate or lanceolate, to 1½ in. long, entire or slightly sinuate: fls. hairy, with lobes of calyx equalling the tube. Trop. Afr., India.

laxiflòra (*Bryophyllum crenatum*). Sts. to 3 ft.: lvs. oblong or ovate, to 3 in. long, crenate: fls. pale yellow or red, ¾ in. long, in branched panicles 1 ft. long. Madagascar.—This has also been mistakenly listed in the trade as *Bryophyllum cruentum.*

mandrakénsis: plants in the American trade under this name are to be referred to *K. beharensis.*

marmoràta. Sts. branching, upright or prostrate: lvs. obovate, to 8 in. long, coarsely toothed, blotched with purple on both sides: fls. white or yellowish, tubular. Abyssinia.

miniàta (*Bryophyllum miniatum. Kitchingia miniata*). To 2 ft.: lvs. ovate-oblong, to 2 in., coarsely crenate, on long petioles to 1½ in.: fls. salmon-pink, 1 in. long, drooping. Madagascar.

orgyàlis. Sts. erect, glabrous, to 3 ft.: lvs. oblong-spatulate, entire, to 6 in. long: fls. yellow, about ¼ in. across. Madagascar.

peltàta (*Kitchingia peltata*). Sts. to 6 ft. high, erect, glabrous: lvs. ovate-oblong, obtuse, crenate, to 4 in. long, with petioles somewhat shorter than blades and attached about ¼ in. above the bases: fls. pink, ¾ in. long, drooping. Madagascar.

pilòsa: *K. lanceolata.*

pinnàta (*Bryophyllum calycinum. B. pinnatum*). Air-Plant. Life-Plant. Floppers. To 6 ft.: lvs. of 3–5 oval or oblong lfts. to 5 in. long: fls. with greenish- or yellowish-white purple-tinted inflated calyx and reddish corolla to 3 in. long. Probably E. India but run wild in warm regions.

Quartiniàna (*K. Dyeri*). To 2½ ft., with stout sts., glabrous and more or less glaucous: lvs. broad, elliptic, petiolate, to 7½ in. long and 5 in. wide: fls. white, about 2 in. across, in a terminal corymbose cyme. Trop. Afr.

rotundifòlia. To 1½ ft., erect, glabrous: lvs. obovate-oblong or oblong-lanceolate, entire, subacute, to 1 in. long: fls. vermilion. S. Afr., Socotra.

scándens. St. climbing, to 10 ft. long: lvs. sessile, st.-clasping, linear-lanceolate, to 3 in. long: calyx-tube ¼–½ in. long and up to ½ in. wide; corolla campanulate, purplish-green to dark violet. Madagascar.

scapígera (*K. farinacea*). To 1½ ft., erect, glabrous: lvs. obovate-orbicular, slightly farinaceous, 1 in. long: fls. red. Trop. Afr., Socotra.

Schùmacheri. To 1½ ft., ascending or erect, glabrous and glaucous: lvs. ovate-lanceolate, acute, coarsely doubly serrate, rarely lobed, to 5 in. long: fls. yellow, to ¾ in. long. Java.

somaliénsis. Sts. leafy, erect: lvs. obovate, to 6 in. long, toothed, slightly spotted with brown: fls. white, 3 in. long. Somaliland.

spathulàta: *K. laciniata.*

teretifòlia: see *K. kewensis.*

thyrsiflòra. To 2 ft., sts. densely leafy: lvs. to 6 in. long and 2½ in. wide, hoary: fls. yellow, ½ in. long. S. Afr.

tuberòsa. Rootstock woody-tuberous, plant mealy-white: lvs. crenate, 1 in. long: fls. 1½ in. long, rose-colored. Madagascar.

tubiflòra: *K. verticillata.*

tubulòsa: listed name.

uniflòra (*Kitchingia uniflora*). Prostrate, rooting at joints: lvs. obovate, obtuse, to 1 in. long, bright green: fls. solitary or 3, 1 in. long. Madagascar.

velùtina (*K. Kirkii*). To 2½ ft., erect, pubescent: lvs. oblong-ovate, blunt, crenate, to 4 in. long, petiolate: fls. salmon-pink to yellow, ¼ in. long, in terminal cymes. Trop. Afr.

verticillàta. Per., glabrous, making single sts. erect above base 3 ft. or more high: lvs. many, long-linear, to 6 in. long, with budlets at end: fls. bright light red, about 1 in. long, hanging in many terminal clusters. S. Afr.—This is available in the American trade as *Bryophyllum tubiflorum* and *K. tubiflora*.

Welwítschii: *K. laciniata*.

KALE, BORECOLE (*Brassica oleracea* var. *acephala*, *B. fimbriata*, and others). The kales are of many kinds; they are cool-season plants grown as greens or pot-herbs, for their succulent edible leaves which are used either in autumn or spring. For autumn crop, seeds are sown in late spring where the plants are to stand or in some cases in seed-beds and the young plants transplanted. In the middle regions, as about Norfolk, kale is mostly a spring crop, seeds being sown in late summer or in autumn, the plants standing in the field over winter. In market kale, the entire plant is cut; in kitchen-gardens leaves are often taken as needed and the plants allowed to stand, in which case the distances between them may be 10–24 inches in the row depending on the variety. When the entire plant is to be removed in harvesting, the space need be only half as much or even less. The curled or crimped varieties are usually most prized. The plant goes to seed the second year. The pests are those of cabbage. See *Collard;* also *Brassica*.

KÁLMIA. *Ericaceæ.* Mostly evergreen shrubs, of the western hemisphere, with simple entire lvs., purple, pink or white fls. which are bell-shaped or saucer-shaped and bear 10 pouches on the corolla in which the anthers are held back until they discharge the pollen. The following species are amongst the good broad-leaved evergreens.

Most of the species are hardy North and very ornamental. They succeed on sandy or peaty soils which are rather moist, but do not thrive on clay or limestone. Plants can be transplanted from the wild and a mulch should be provided the first year. Propagated by seeds sown in pans of sandy peat or sphagnum and set out-of-doors the following year; also by cuttings of half-ripened wood under glass, by layers, and varieties by veneer-grafting.

angustifòlia. Lambkill. Sheep-Laurel. To 3 ft.: lvs. usually opposite, to 2½ in. long: fls. purple or crimson, to ½ in. across, in lateral corymbs. June–July. E. N. Amer. Var. **cándida** has white fls. Var. **pùmila** (var. *nana*) is a dwarf form to 1 ft.

carolìna. Resembling *K. angustifolia* but with smaller lvs. gray-pubescent beneath and purplish fls. Va. to S. C.

cuneàta. Shrub to 3½ ft.: lvs. obovate-cuneate, to 2 in. long, alternate, deciduous: fls. pinkish-white, axillary. N. C., S. C.

glaùca: *K. polifolia*.

latifòlia. Mountain-Laurel. Calico-Bush. To 10 ft. or more: lvs. alternate or irregular, to 5 in. long: fls. rose marked inside with purple, 1 in. across, in large terminal corymbs. May–June. E. N. Amer. Var. **álba,** fls. white. Var. **myrtifòlia,** dwarf, lvs. to 2 in. long. Var. **polypétala,** corolla deeply cut. Var. **rùbra,** fls. dark pink.

microphýlla: *K. polifolia* var.

polifòlia (*K. glauca*). Bog K. To 2 ft.: lvs. opposite or in 3's, to 1½ in. long, glaucous-white beneath: fls. rose-purple, ½ in. across. in terminal corymbs. May–June. N. Amer. Var. **mòntana** is listed. Var. **microphýlla** (*K. microphylla*), to 8 in., lvs. to ¾ in. long. W. N. Amer. Var. **nàna** is a dwarf hort. form.

KALMIÓPSIS. *Ericaceæ.* One evergreen shrub from Ore., **K. Leachiàna** (*Rhododendron Leachianum*). Sts. erect, to 10 in.: lvs. elliptical-oblong to nearly obovate, usually acute, glandular-dotted beneath, coriaceous, alternate: fls. regular, with rose-colored corolla and red fleshy glandular calyx, to 3/16 in. long, solitary, arising from persistent bracts in lf. axils: fr. a subglobose caps.—Grows in dry rocky exposed areas at 2,000–4,000 ft. elevation.

KALÓPANAX. *Araliaceæ.* One species, **K. píctus** (*K.* and *Acanthopanax ricinifolius* and *septemlobus*), formerly retained under Acanthopanax but distinguished in part from that genus by lvs. palmately lobed and not divided into lfts. Tree to 80 ft.: lvs. 5–7-lobed, toothed, to 1 ft. across: fls. whitish, in umbels, styles free at base but arched and fused toward apex. Japan. Var. **Maximowíczii** (*Aralia Maximowiczii*) has more deeply lobed lvs.

KALOSANTHES: *Rochea coccinea*.

KAMANI: *Calophyllum inophyllum*.

KANGAROO-THORN: *Acacia armata*.

KAPOK: see *Ceiba*.

KARANDA: *Carissa Carandas*.

KARO: *Pittosporum crassifolium*.

KARUM OIL TREE: *Pongamia pinnata*.

KASSOD-TREE: *Cassia siamea*.

KATSURA-TREE: *Cercidiphyllum japonicum*.

KAULFUSSIA AMELLOIDES: *Charieis heterophylla*.

KEELED: ridged like the bottom of a boat; the two front united petals of a papilionaceous flower constitute a keel.

KEI-APPLE: *Dovyalis caffra*.

KÉLSEYA. *Rosaceæ.* A monotypic W. American genus allied to Petrophytum, differing in having densely imbricated lvs. and solitary fls. The one species is **K. uniflòra,** a semi-prostrate subshrub: lvs. entire, leathery, persistent, to ⅛ in. long: fls. white, about ¼ in. across, inclosed in the rosette of subtending lvs.: fr. a follicle. Mountainous cliffs in Mont., Ida. and Wyo.—Adapted to rock-gardens, doing best over a limestone substratum or beneath limestone scree.

KENNÉDIA. *Leguminosæ.* Showy trailing or climbing shrubs with pinnate lvs. mostly of 3 lfts. but sometimes 5 or 1, papilionaceous fls. usually in axillary pairs, umbels or racemes, and linear pods; native in Australia and grown in N. Amer. for ornament under glass and in the open in S. Calif. and elsewhere. Propagated by seeds and cuttings. See Hardenbergia for generic differences.

bimaculàta: *Hardenbergia monophylla*.

Comptoniàna: *Hardenbergia Comptoniana*.

Márryattæ: *K. prostrata* var. *major*.

monophýlla: *Hardenbergia monophylla*.

nígricans (*Lotus nigricans*). Robust twiner: lfts. 3 or sometimes reduced to 1, broadly ovate: fls. purple-black blotched with green on the standard, in a one-sided raceme: pods flattened.

ovàta: *Hardenbergia monophylla*.

prostràta. Prostrate: lfts. 3, broadly obovate: fls. scarlet, 2–4 together on a long stalk: pods nearly cylindrical. Var. **màjor** (*K. Marryattæ*) is a larger twining form.

rubicúnda. Twining: lfts. 3, ovate to orbicular, to 4 in. long: fls. dull red, in drooping racemes: pods flat.

KÉNTIA. *Palmaceæ.* As currently understood there are only 2 true Kentias and probably neither one is known in general cult. or in this country. The original species, *K. procera*, is native in New Guinea and the other, *K. Ramsayi*, on Crocker Isl., N. Australia. Some 50 names have been made in Kentia, but as all these palms have become better understood they have been referred to other genera. Names appearing in hort. literature are as follows:

Baùeri: *Rhopalostylis Baueri*.

Belmoreàna: *Howea Belmoreana*.

Canterburyàna: *Hedyscepe Canterburyana.*
Forsteriàna: *Howea Forsteriana.*
Joánnis: *Veitchia Joannis.*
Líndenii: *Chambeyronia.*
Macárthuri: *Actinophlœus Macarthuri.*
macrocárpa: *Chambeyronia macrocarpa.*
sápida: *Rhopalostylis sapida.*

KENTIÓPSIS. *Palmaceæ.* As now defined, 1 species of feather-palm, *K. olivæformis*, a lofty tree of New Caledonia and apparently not in cult. For *K. macrocarpa*, see *Chambeyronia.*

KENTRANTHUS: *Centranthus.*

KENTROPHYLLUM: *Carthamus.*

KERNÈRA. *Cruciferæ.* A few per. species in the mts. of S. and Cent. Eu., by some authors united with Cochlearia, from which the genus differs only in technical characters; one species is grown in rock-gardens. **K. saxátilis** (*K.* and *Cochlearia Boissieri, Cochlearia saxatilis*) grows 2–12 in. high, glabrous or nearly so: lower lvs. oblong to spatulate and somewhat dentate, in a rosette, st.-lvs. few, lanceolate: fls. white, in a terminal raceme, in summer.

KÉRRIA. *Rosaceæ.* Well-known Chinese deciduous green-twigged shrub commonly planted for ornament and hardy N., **K. japónica** (*Corchorus japonicus*). To 8 ft.: lvs. oblong-ovate, to 2 in. long, doubly toothed: fls. golden-yellow, to 2 in. across, solitary. Var. **aùreo-variegàta**, lvs. edged yellow. Var. **aùreo-vittàta**, branchlets striped green and yellow. Var. **pícta** (var. *argenteo-variegata*), lvs. edged with white. Var. **pleniflòra**, fls. double, the prevailing form.—Kerria does well in partial shade. Propagated by cuttings, layers, and division of the roots.

KETELEÈRIA. *Pinaceæ.* Very tall evergreen trees of 2 or more species in China, adapted only to the lower S. and similar climates, having solitary linear lvs. pale beneath and large erect cones with woody persistent scales; belongs to the Abies group. For cult. see *Conifers.*

Davidiàna. To 120 ft.: lvs. rounded or notched at apex: cones to 8 in. long.

Fórtunei. To 100 ft., young branchlets orange-red: lvs. spiny-pointed becoming blunt: cones to 7 in. long.

KHAT: *Catha edulis.*

KHUS-KHUS: *Vetiveria zizanioides.*

KÍCKXIA (*Elatinoides*). *Scrophulariaceæ.* Ann. creeping herbs of the Old World, the fls. solitary, irregular, 2-lipped, corolla spurred and throat closed by palate; 2 species sometimes planted for ground-cover in rockeries.

Elatìne (*Linaria Elatine*). Lvs. ovate-hastate, to 1 in. long: fls. yellowish, purplish outside, ¼ in. long, spur straight. Eu., Asia; nat. in E. N. Amer.

spùria (*Linaria spuria*). Lvs. ovate, to 1 in. across: fls. yellowish with upper lip purple, spur curved. Eu.; nat. in E. N. Amer.

KIGÈLIA. *Bignoniaceæ.* Trees with pinnate lvs., bell-shaped 2-lipped orange or red fls. in long-stalked drooping panicles, and hard cylindrical indehiscent frs.; grown in S. U. S. as an oddity; native in trop. Afr.

pinnàta. Sausage-Tree. To 50 ft.: lvs. ternate, with 7–9 oval-oblong lfts. to 6 in. long: fls. claret-colored, to 3 in. long: fr. somewhat gourd-like, to 1½ ft. long, swinging on cord-like stalks to several ft. long.

KIRENGESHÒMA. *Saxifragaceæ.* One Japanese per. occasionally grown in the garden. **K. palmàta.** To 4 ft.: lvs. nearly orbicular, dentate and some of them somewhat palmately 7–10-lobed, to 4 in. or more across: fls. yellow, to 1¾ in. long, bell-shaped and nodding, 1–3 together, the calyx prominent.—Propagated by division.

KITAIBÈLIA. *Malvaceæ.* One, or perhaps more, species native in the Danube region. **K. vitifòlia.** Per. to 8 ft.: lvs. grape-like, 5-lobed or -angled, toothed, to 3 in. or more long: fls. white or rose, large, solitary or in axillary clusters.—Of easy cult. in good garden soil. Propagated by division or seeds.

KITAMBILLA: *Dovyalis hebecarpa.*

KITCHINGIA: *Kalanchoë.*

KLEÌNIA. *Compositæ.* Succulent plants of Afr. allied to Senecio and often united with that genus, distinguished mainly by the disk-florets having style-branches minutely cone-tipped; heads of disk-fls. only, white or pale yellow.

acaùlis. Nearly stemless, at most to 3 in.: lvs. linear, to 6 in. long: heads solitary on scapes to 8 in. high, to 1 in. across.

amaniénsis. St. to 1½ ft. long and ¾ in. thick, becoming prostrate: lvs. oblong or spatulate, to 4 in. long: heads nodding, yellow, about 1 in. long, on scapes to 2½ ft. tall.

Anteuphórbium. Much branched shrub to 5 ft.: lvs. to 1½ in. long and ½ in. wide, soon deciduous: heads 1–3, yellowish-white.

articulàta (*Senecio articulatus*). Candle-Plant. To 2 ft., the branches swollen and fleshy: lvs. deeply lobed, to 2 in. long: heads white, in long-stalked corymbs.

cineráscens: *Senecio cinerascens.*

crassíssima: *Senecio crassissimus.*

cylíndrica. Shrub to 2 ft., branched from base: lvs. cylindrical, to 3 in. long and ⅓ in. thick: heads white, in terminal cymes.

ficoìdes (*Senecio ficoides*). Sts. fleshy and woody: lvs. powdery-glaucous, compressed, to 3½ in. long: heads whitish, in corymbs. S. Afr.

fúlgens. Sts. spreading or prostrate, to 1½ ft. long: lvs. spatulate, to 3½ in. long, with 2–3 teeth on either side: heads 1–2, red, 1 in. across.

longiflòra. Much branched shrub to 2 ft.: lvs. scale-like, to ⅓ in. long: heads 3–5, whitish, ¾ in. long.

Mándraliscæ. Subshrub to 10 in.: lvs. semi-cylindrical, to 3½ in. long: heads whitish, ⅓ in. long, in loose cymes.

neriifòlia. Shrub to 10 ft.: lvs. in terminal tufts, linear-lanceolate, to 6 in. long and ¾ in. wide: heads yellowish-white, in cymes. Canary Isls.

péndula: *Notonia pendula.*

radìcans. Sts. prostrate and rooting, to 2 ft. long: lvs. cylindrical, 1 in. long and ⅓ in. thick: heads 1–2, white.

rèpens (*Senecio succulentus. Cacalia repens*). Subshrub to 1 ft.: lvs. at tips of branches, nearly cylindrical, to 1½ in. long and ⅓ in. wide: heads 2–3, pale yellow, ½ in. long.

réptans: *Senecio reptans.*

stapeliæfórmis. To 10 in., the fleshy sts. 4–7-angled and angles toothed, teeth tipped with small withering lvs.: heads solitary, scarlet, 1 in. long.

tomentòsa: *Senecio cinerascens.*

tropæolifòlia: *Senecio tropæolifolius.*

KNAPWEED: *Centaurea nigra.*

KNAÙTIA. *Dipsaceæ.* Eurasian per. herbs with opposite lvs. and long-stalked heads of fls. subtended by numerous involucral bracts; differs from Scabiosa in the 4-lobed rather than 5-lobed corolla and other technical characters.

ambígua. Per., sts. retrorse-hispid below, glandular-pubescent above: basal lvs. oblong-cuneate, entire, lower st.-lvs. lyrate-pinnatifid to pinnatisect: heads yellow, on long peduncles. Macedonia.—Plants of more slender habit than *K. arvensis* and with smaller heads.

arvénsis. Per. to 4 ft., sts. glandular-pubescent to hirsute: basal lvs. oblong, margins crenate-dentate, st.-lvs. lyrate to pinnatifid, segms. linear-lanceolate, entire: heads lilac, short-peduncled. Caucasia to Greece.

drymèia. To 3½ ft., sts. ascending, softly hairy: st.-lvs.

ovate to lanceolate, acuminate, serrate, pubescent: fls. reddish-violet to purple, in heads to nearly 2 in. across. Balkan region.

lyratifòlia: probably hort. name for *K. lyrophylla*.

lyrophýlla (*Scabiosa lyrophylla*). Per. to 2 ft., sts. slender, obscurely retrorse-hispid: lvs. lyrate to lyrate-pinnatifid, appressed-pubescent beneath, lower ones long-petioled: heads dark purple, small. Serbia.—Differs from *K. macedonica* only in its lvs. lyrate and not entire, and by some authors considered only a minor form of that species.

macedónica (*Scabiosa macedonica*). Per. to 2½ ft., sts. slender, much branched: lvs. lyrate, st.-lvs. pinnatifid, pubescent: fls. dark purple, marginal ones radiating. Cent. Eu.—A form with lilac fls. is known.

orientàlis. Ann., somewhat sticky-pubescent, sts. slender: lower lvs. oblong to oblong-linear, entire to pinnatisect, upper ones linear, acuminate: heads purple, usually only 5–10-fld. S. E. Eu. and Caucasus.

sylvática (*Scabiosa sylvatica*). To 3 ft.: lvs. oval to lanceolate, toothed: fls. violet, in heads to 1½ in. across. Eu.

KNAWEL: *Scleranthus*.

KNEIFFIA: *Œnothera*.

KNÌGHTIA. *Proteaceæ*. Trees and shrubs of New Zeal. and New Caledonia, one occasionally planted in Calif.: lvs. alternate, leathery: fls. in densely-fld. racemes: fr. a leathery follicle.

excélsa. Tree to 90 ft., resembling a Lombardy poplar in habit: lvs. oblong, to 6 in. long, very stiff: fls. to 1½ in. long, brown-tomentose, in racemes to 4 in. long. New Zeal.

KNIPHÒFIA (*Tritoma*). TORCH-LILY. POKER-PLANT. *Liliaceæ*. Stout per. herbs with thick roots, clumps of long grass-like basal lvs., and red or yellow drooping fls. in showy poker-like spikes or racemes terminating the scape, in summer and autumn, the perianth-segms. united into a long tube; native in Afr.

Poker-plants may be hardy in the North with a winter mulch, but it is safer to lift the roots in autumn and store in a cellar in boxes of dry earth. Propagated by root-division, offsets if produced, and seeds.

alooìdes: *K. Uvaria*.

cauléscens. St. to 1 ft.: lvs. to 3 ft. long and 3 in. across, glaucous: fls. red or lower ones yellow, 1 in. long, in spikes 6 in. long, the stamens exserted.

chrysántha: hort. name for yellow-fld. form.

corállina. Hybrid between *K. Macowanii* and *K. Uvaria;* to 2 ft.: fls. coral-red.

élegans: *K. Schimperi*.

ensàta: hort. name, perhaps for *K. ensifolia*.

ensifòlia. To 3 ft.: lvs. sword-shaped, long-acuminate, about 1½ in. wide at base, margins rough: fls. yellow, to ¾ in. long, funnel-shaped not cylindrical, in dense racemes, stamens and style much exserted.

erécta: hort. form of *K. Uvaria*.

foliòsa (*K. Quartiniana*). To 3 ft.: lvs. to 3 ft. long and 2 in. wide: fls. yellow, 1 in. and less long, cylindrical, the stamens much exserted.—One of the usual species, the fls. small.

Gálpinii. To 3 ft.: lvs. linear, about ⅛ in. wide, margins smooth, not rough: fls. reddish-orange, to ⅛ in. long, narrowly cylindrical, in dense racemes to 3 in. long, stamens not exserted.

grandiflòra: a form of *K. Uvaria*.

grándis: *K. Uvaria* var.

hýbrida: a group name to include hybrid and hort. forms.

Macòwanii. To 2 ft.: lvs. to 2 ft. long and ⅙ in. across: fls. yellowish- or orange-red, 1 in. long, in dense racemes to 4 in. long, the stamens not exserted.

mirábilis: listed name, perhaps of hybrid form.

Náthalinæ: listed name of unknown botanical standing.

Nélsonii. To 2 ft.: lvs. narrowly linear, to 20 in. long, tapering to sharp tip, margins revolute and obscurely serrulate: fls. brilliant orange-scarlet, tubular, to 1¼ in. long, in dense racemes to 3 in. long, style reddish, stamens included.

nóbilis: *K. Uvaria* var.

Nórthiæ. To 3 ft.: lvs. broadly lanceolate, to 4 ft. long or more, dark glaucous green, serrulate, acuminate: fls. red becoming pale greenish-yellow, tubular, about 1¼ in. long, in very dense racemes 6 in. and more long, style pale yellow, stamens much exserted.

Pfítzeri: a form of *K. Uvaria*.

prǽcox: a form of *K. Uvaria* flowering in summer or autumn.

pyramidàlis: hort. form of *K. foliosa*.

Quartiniàna: *K. foliosa*.

Roòperi. To 4½ ft.: lvs. ensiform-acuminate, to 4 ft. long and 1½ in. across, dull green, margins scabrous: fls. pale red to yellow, cylindrical, to 1½ in. long, in racemes to 6 in. long.—Doubtfully in cult.

rùfa. Lvs. to 1½ ft. long and ⅙ in. across: fls. yellow, the upper tinged red, ¾ in. long, drooping, in racemes to 6 in. long, the stamens exserted. Natal.

sarmentòsa. To 3 ft.: lvs. to 3 ft. long and 1 in. across: fls. red or yellow tinged red, to 1 in. long, in racemes to 1 ft. long, the stamens exserted. S. Afr.

Saùndersii: a form of *K. Uvaria* but some of the stock passing under this name in the trade is *K. foliosa*.

Schímperi (*K. elegans*). Lvs. to 2 ft. long and ½ in. across, numerous and limp: fls. pale yellow, to 1¼ in. long, on short pedicels arranged loosely in racemes to 10 in. long on scape to 2½ ft. high.

semperflòrens: a hort. name.

trícolor: hort. form.

Túckii. Lvs. to 1½ ft. long and ¾ in. across: fls. yellow tinged with red, ½ in. long, in dense racemes to 6 in. long, stamens slightly exserted.

Uvària (*K. alooides*). To 4 ft.: lvs. to 3 ft. long and 1 in. across: fls. scarlet or lower ones yellow, to 2 in. long, in racemes to 10 in. long, the stamens scarcely exserted. S. Afr. Var. **floribúnda** flowers earlier; var. **grandiflòra** is larger; var. **grándis**, to 5 ft., fls. bright red and yellow, probably much of the material in trade as *K. Pfitzeri* belongs here; var. **nóbilis** has stiffer and shorter lvs., fls. large on peduncle to 6 ft.—One of the well-known species, with large fls.

KNOTROOT: *Stachys Sieboldii*.

KNOTWEED: *Polygonum*.

KNOTWORT FAMILY: *Illecebraceæ*.

KOA: *Acacia Koa*.

KÒCHIA. *Chenopodiaceæ*. Eurasian herbs or subshrubs with alternate, narrow, entire lvs. and small fls. solitary or clustered in the axils; one species grown for ornamental form and color. Seeds may be sown in the open about May 1st or started in the greenhouse earlier and transplanted.

Chìldsii: an unidentified trade name.

hyssopifòlia. Ann. to 1½ ft.: lvs. oblong-linear, to 4 in. long. S. Eu., W. Asia.

scopària. SUMMER-CYPRESS. BELVEDERE. Ann. to 5 ft., of columnar, pyramidal or globular habit: lvs. linear, to 2 in. long, ciliate. Eu.; nat. in N. Amer. Var. **trichóphila** (*K. trichophylla*) is of globular dense habit and the foliage turns purplish-red in autumn; the form most commonly grown for borders and formal effects.

trichophýlla: *K. scoparia* var. *trichophila*.

KŒLÈRIA. *Gramineæ*. Tufted ann. or per. grasses with flat or involute lvs. and spikelets in dense spike-like contracted panicles; widely distributed in temp. regions, a few of ornamental value. See *Grasses*.

berythèa: *K. phleoides*.

brachystàchya: *K. phleoides*.

cristàta. Per. to 2½ ft.: lvs. to 1 ft. long and 1/12 in. wide, flat or involute: panicles to 7 in. long, branches erect, shining. N. Amer., Eu., Asia.

phleoìdes (*K. berythea. K. brachystachya*). Ann. to 1 ft.: lvs. to 5 in. long and ¼ in. wide, flat, hairy: panicles to 3 in. long, dense and cylindrical. Medit. region; nat. in Calif.

setàcea. Per. to 1½ ft.: lvs. involute-setaceous: panicles to 2 in. long, spike-like. S. Eu., N. Afr.

KOELLIA: *Pycnanthemum*.

KŒLREUTÈRIA. *Sapindaceæ*. Medium to large trees from China and Japan with alternate pinnate lvs., irregular yellow polygamous fls. in terminal panicles, and fr. a bladdery caps.; grown for ornament.

The species are not particular as to soil but prefer sunny locations. Propagated by seeds in autumn or stratified, or by root-cuttings.

bipinnàta. To 60 ft.: lvs. bipinnate, lfts. ovate or ovate-oblong, to 4 in. long, equally toothed. China; not hardy N.

formosàna. To 60 ft.: lvs. bipinnate, to 1½ ft. long, of ovate-lanceolate shallowly toothed lfts.: frs. papery, to 2 in. long, of 3 roundish valves. Formosa; suitable for Fla. to Calif.

integrifolìola. To 30 ft.: lvs. bipinnate, 14 in. long, of oblong-ovate entire somewhat leathery lfts. to 4 in. long: fr. inflated, about 1 in. long. China.

japónica: *K. paniculata.*

paniculàta (*K. japonica*). Goldenrain-Tree. To 30 ft.: lvs. of 7–15 ovate to oblong coarsely toothed and notched lfts. to 3 in. long: panicles to 1½ ft. long, July–Aug., showy: frs. papery, to 2 in. long, separating into 3 pointed valves. China, Korea, Japan; hardy in northern states.

KOHLRABI (*Brassica caulorapa*). Common name of the so-called "stem-turnip" because the turnip-like tuber is an enlargement of the stem 1 to 3 inches above the ground. It is a low biennial plant of unknown nativity, producing seeds the second year from old stocks left over or planted out. The tuberous stem is used the same as turnips, both for the table and for stock feed. For the table the tubers should be taken when 2 or 3 inches in diameter, before they become hard and bitter. Kohlrabi is grown the same as turnips. Seeds are usually sown where plants are to stand, in rows far enough apart for tillage (say 18–20 inches), and thinned to 5 to 10 inches in the row; sow from early spring to early summer if succession is desired, as for table turnips. Keep the plants growing rapidly for a tender product. Pests are those of the cabbage. There are green and purplish races.

KOHUHU: *Pittosporum tenuifolium.*

KÒKIA. *Malvaceæ.* Hawaiian trees of 2 species allied to Gossypium and Hibiscus, with simple lobed lvs.: fls. solitary in axils of uppermost lvs., with 3 persistent bracteoles: fr. a woody ovoid caps.: one species intro. in S. Fla.

drynarioìdes. To 15 ft. or more: lvs. 5–7-lobed, long-stalked: fls. red, to 4 in. long: caps. 1 in. across.—Yet very rare in cult.

KOLKWÍTZIA. *Caprifoliaceæ.* Showy Chinese deciduous shrub to 8 ft., hardy in the northern states. Propagated by cuttings of green wood late in summer. **K. amábilis.** Beauty-Bush. Lvs. opposite, ovate, to 3 in. long: fls. pink with yellow throat, bell-shaped, ½ in. long, with bristly sepals and pedicels, borne in axillary pairs forming terminal corymbs to 3 in. across, May–June: fr. bristly, ¼ in. long.

KONIGA: *Lobularia.*

KOPSIA: see *Ochrosia.*

KORTHÁLSIA. *Palmaceæ.* Climbing hook-bearing hermaphrodite palms of the Indo-Malayan region, 25–30 species: lvs. pinnate or pinnatisect, pinnæ broadened upwards and more or less erose, the rachis mostly prolonged into a whip-like part bearing sharp claws; petiole short, the sheath sometimes developed into an ant-nesting body: spadices axillary, loosely branched and pendulous, the branches cylindrical and catkin-like; stamens 6 or more: fr. globose or ovoid, small, scale-covered. Little known to hort., and probably not regularly planted in our area; something like Calamus.

KOSTELÉTZKYA. *Malvaceæ.* Herbs or shrubs somewhat like Hibiscus, with arrow-shaped lvs., pink, purple or white fls., involucels of linear bracts, and fr. a 5-angled caps.; a few species are native in Amer., 2 in the U. S. and others in Eu. and Afr.

híspida. Herb to 3 ft.: lvs. to 2 in. long, pubescent: fls. yellow, about ½ in. long, 1–3 in the axils. Madagascar.

virgínica. Per. to 4 ft.: lvs. to 5 in. long, pubescent: fls. pink, to 2½ in. across, in terminal panicles. Marshes, N. Y. to Fla. and La.

KOUSA: *Cornus Kousa.*

KOWHAI, RED: *Clianthus puniceus.*

KRAMÈRIA. *Leguminosæ.* Shrubs or per. herbs with alternate lvs., simple or 3-parted, and irregular purple fls. solitary or in racemes, the 3 upper petals long-clawed; native S. U. S. to Chile.

secundiflòra. Per. with decumbent sts. to 1½ ft. long: lvs. lanceolate or linear, to 1 in. long: fls. about 1 in. across. Fla. to Mex.

KRAUNHIA: *Wisteria.*

KRAUSSIA FLORIBUNDA: *Tricalysia Kraussiana.*

KRÍGIA (*Adopogon*). *Compositæ.* Small ann. or per. N. American herbs with mostly basal lvs. and solitary or clustered heads of yellow or orange ligulate fls.; pappus of scales and bristles. Sometimes planted for the bright fl.-heads.

montàna. Per. to 1 ft., branched: lvs. linear, to 8 in. long, entire or pinnately cut: heads bright yellow, 1 in. across. N. C. to Ga.

virgínica (*Cynthia virginica*). Ann. to 1 ft. or less, unbranched: lvs. radical, oblong or oval, to 8 in. long, toothed or pinnately cut: heads orange or reddish-orange, ½ in. across. Mass. to Ga. and Kans.

KRISHUM: *Iris ensata* var. *pabularia.*

KRYNITZKIA: *Cryptantha barbigera.*

KUDZU-VINE: *Pueraria Thunbergiana.*

KÙHNIA. *Compositæ.* Per. herbs of N. Amer., having alternate resinous-dotted lvs. and heads of white or purplish disk-fls. borne in terminal corymbs; pappus of plumose bristles. Sometimes planted in the border.

eupatorioìdes. To 3 ft.: lvs. lanceolate, slightly toothed or entire: heads ⅓ in. long. N. J. to Ga. and Tex.

KUHNISTERA PINNATA: *Petalostemum corymbosus.*

KULUI: *Nototrichium sandwicense.*

KUMQUAT: *Fortunella;* see *Citrus Fruits* (page 183). Australian Desert: *Eremocitrus.*

KÚNZEA. *Myrtaceæ.* Usually heath-like Australian shrubs, with mostly small entire alternate lvs., small fls. with numerous exserted stamens, and capsular frs.; grown in Calif.

ambígua (*K. corifolia*). Very similar to *K. peduncularis* but differing in the fls. being sessile.

corifòlia: *K. ambigua.*

micrántha. Small shrub: lvs. linear, to ⅓ in. long, stiff: fls. in dense terminal heads.

pedunculàris. Tall erect shrub: lvs. linear or linear-lanceolate, mostly ½ in. long: fls. white or whitish, short-pedicelled, in axils on upper branches and forming leafy corymbs or racemes.

pomífera. Prostrate shrub: lvs. ovate, to ¼ in. long, base cuneate: fls. white, in dense terminal umbels which become lateral due to elongation of the shoots.

recúrva. Tall shrub, sts. rigid: lvs. obovate to spatulate, to ¼ in. long, obtuse or with minute recurved point: fls. in globose heads, ovary-5-celled, calyx glabrous, rachis woolly.

serícea. Tall shrub: lvs. obovate, to ½ in. long, stiff, silvery-white: fls. polygamous, the bisexual solitary, staminate in terminal clusters.

KUNZIA: *Purshia.*

KURRAJONG: *Brachychiton populneum.*

L

LABIÀTÆ. Mint Family. Herbs and shrubs of about 160 widely distributed genera; plants aromatic, with usually 4-angled sts., opposite or whorled lvs., irregular 2-lipped bisexual gamopetalous fls. with variously ribbed calyx, 4 or 2 stamens, superior deeply 4-lobed ovary and 2 stigmas, and fr. of 4 one-seeded nutlets. The family is rich in volatile oils which are extracted for medicinal and other purposes. The genera known to hort. are mostly flower-garden subjects and sweet-herbs, as Agastache, Ajuga, Amethystia, Ballota, Blephilia, Brittonastrum, Cedronella, Clinopodium, Coleus, Collinsonia, Colquhounia, Comanthosphace, Conradina, Cunila, Dracocephalum, Elsholtzia, Eremostachys, Galeopsis, Hedeoma, Hemiandra, Horminum, Hyssopus, Iboza, Lallemantia, Lamium, Lavandula, Leonotis, Leonurus, Lycopus, Majorana, Marrubium, Melissa, Melittis, Mentha, Micromeria, Molucella, Monarda, Monardella, Nepeta, Ocimum, Origanum, Perilla, Perovskia, Phlomis, Physostegia, Plectranthus, Prostanthera, Prunella, Pycnanthemum, Pycnostachys, Rosmarinus, Salvia, Satureia, Scutellaria, Sideritis, Sphacele, Stachys, Teucrium, Thymus, Trichostema, Westringia.

LABIATE: lipped; as a noun, a member of the Labiatæ.

LABLAB: *Dolichos Lablab.*

LABURNOCÝTISUS. *Leguminosæ.* Hybrids between the genera Laburnum and Cytisus.

Ádamii (*Laburnum Adamii*). Hybrid between *L. anagyroides* and *C. purpureus:* resembles *L. anagyroides* but has smaller lfts. and fls. suffused with purple.

LABÚRNUM. *Leguminosæ.* Ornamental trees and shrubs with alternate lvs. composed of 3 lfts., yellow papilionaceous fls. in terminal racemes, and flattened pods; native in S. Eu. and W. Asia.

Laburnums are mostly hardy North. Propagated by seeds, layers, and choice varieties by grafting and budding on seedling stocks.

Ádamii: *Laburnocytisus Adamii.*

alpìnum (*Cytisus alpinus*). Scotch L. To 30 ft.: racemes to 15 in. long, pendulous, June–July: pods with thin wing on upper margin. S. Eu. Var. **péndulum** has pendulous branches.

Alschíngeri: *L. anagyroides* var.

anagyroìdes (*L. vulgare. Cytisus Laburnum*). Golden-Chain. Bean-Tree. To 30 ft.: racemes 4–8 in. long, pendulous, May–June: pods thickened on upper margin, pubescent. Cent. and S. Eu. Var. **Alschíngeri** (*L. Alschingeri*) has lfts. more silky beneath. Var. **aùreum** has yellow foliage. Var. **autumnàle** blooms again in late summer. Var. **bullàtum** (*L. vulgare involutum*) has curled lfts. Var. **Carlièri,** lfts. smaller. Var. **péndulum,** branches pendulous. Var. **quercifòlium,** lfts. lobed.

Vòssii: *L. Watereri.*

vulgàre: *L. anagyroides.*

Wátereri (*L. Vossii. L. vulgare* var. *Parksii*). Hybrid between *L. alpinum* and *L. anagyroides.*

LACEBARK: *Gaya Lyallii.*

LACE-FLOWER, BLUE: *Trachymene cærulea.*

LACE-LEAF: *Aponogeton fenestralis.*

LACE-VINE: *Polygonum Aubertii.*

LACHENÀLIA. Cape-Cowslip. *Liliaceæ.* Small bulbous herbs of S. Afr. with usually 2 basal lvs. and red or yellow fls. in racemes or spikes terminating the scape, the perianth-segms. partially united.

Plant in pots of rich loam in August and keep in coldframe until the last of November when they should be removed to the greenhouse with a night temperature of 50°. After flowering they should be placed in a light place and watered until ripening after which they should be kept dry and dark until repotted. Propagated by offsets and seeds.

aùrea: *L. tricolor* var.

Báchmannii. To 8 in.: lvs. linear, to 8 in. long, usually only 2, canaliculate: fls. campanulate, to ¼ in. long, in dense subspicate racemes to 2 in. long, segms. white with red keel, oblong.

contaminàta. To 1 ft.: lvs. 6–10, canaliculate becoming terete along distal half, to 9 in. long, suberect: fls. white, broadly campanulate, to ¼ in. long, in dense racemes, inner segms. tipped greenish-brown and outer ones often flushed red and shorter than inner.

glaucìna. To 1 ft.: lvs. 1 in. across: fls. to ¾ in. long, erect, white, red, yellow or tinged blue, inner segms. slightly longer than outer.

liliflòra. To 1 ft.: lvs. 2, lanceolate, falcate, to 9 in. long and 1¼ in. across, heavily pustulate on upper surface: fls. white, oblong-cylindrical, to ¾ in. long, segms. spreading, 12–20 in dense subspicate racemes.

lutèola: *L. tricolor* var.

medіàna. To 1 ft.: lvs. 2, linear-lanceolate to oblong, to 1 ft. long or more, erect, canaliculate: fls. greenish-white, tubular, to ⅛ in. long, outer segms. oblong with pale blue basal blotch, inner ones wedge-shaped with small reddish-apical blotch, all obtuse.

mutábilis: *L. orchioides.*

Nélsonii: *L. tricolor* var.

orchioìdes (*L. mutabilis*). Similar to ***L. glaucina*** but with smaller fls. about ⅓ in. long.

pállida. To 10 in.: lvs. 2, lorate, pustulate or blistered: fls. white, outer segms. tipped green, campanulate, to ¼ in. long, in rather dense racemes to 3 in. long on peduncle about 6 in. long.—Perhaps not distinct from *L. pustulata.*

péndula. To 1 ft. and more: lvs. to 2 in. across: fls. to 1½ in. long, drooping, the red-purple-tipped inner segms. only slightly longer than the outer segms. which are yellow and red above. Var. **supérba** is an improved hort. form.

purpùreo-cærùlea. To 1 ft.: lvs. to 1 in. across: fls. ¼ in. long, erect, blue-purple, inner segms. slightly longer than outer, stamens much exserted.

pustulàta. To 9 in.: lvs. to 1 in. across, blistered: fls. ⅓ in. long, spreading or erect, white or tinged red, in dense spikes 3 in. long, inner segms. slightly shorter than outer, stamens somewhat exserted.

refléxa. To 6 in.: fls. 1 in. long, erect-spreading, yellowish, with swollen oblique tube, inner segms. slightly longer than outer.

Roòdeæ. To 7 in.: lvs. to 1½ in. across, with reddish margins: fls. ½ in. long, purplish, in dense spikes 5 in. long, inner segms. longer than outer, stamens exserted.

rùbida. To 1 ft.: lvs. to 6 in. long and 1 in. wide at middle, lanceolate, spotted, narrowed to clasping base: fls. except the uppermost drooping, outer segms. bright red tipped with green, inner segms. yellow and a little longer than the outer, cylindrical, about 1 in. long and to ¼ in. diam., racemes of 6–20 fls.

trícolor. To 1 ft.: lvs. to 1 in. across: fls. 1 in. long, drooping, yellow tipped with red, the outer segms. much shorter than inner. Color variations are: **aùrea,** bright orange-yellow; **lutèola,** lemon-yellow tipped with green; **Nélsonii,** bright yellow tinged green; **quadrícolor,** red at base, greenish-yellow in middle, the outer segms. tipped with green and the inner with red-purple.

tubiflòra: listed name of unknown botanical standing.

unícolor. To 1 ft.: lvs. usually 2, lorate, smooth or pustulate on upper surface, to 6 in. long and 1 in. across: fls. ¼ in. long, bright red, campanulate, inner segms. slightly longer than outer, stamens much exserted. Var. **fràgrans,** of more slender habit, fls. white slightly tinged with red. Var. **purpùrea,** outer segms. white tipped with green, inner purple.

unifòlia. To 1 ft.: lvs. single, brown toward base: fls. ½ in. long, white tinged with red or blue, inner segms. slightly longer than outer.

LACHNÁNTHES (*Gyrotheca*). *Hæmodoraceæ.* One stout per. herb native in swamps from Mass. to Fla. and Cuba, and sometimes transplanted. **L. tinctòria.** Red Root. To 2½ ft., with red fibrous roots: lvs. linear, the upper reduced to bracts, the lower ones shorter than sts.: fls.

yellowish, in dense white-woolly panicles to 5 in. across, stamens exserted.

LACINARIA: *Liatris.*

LACINIATE: slashed into narrow pointed lobes.

LACQUER-TREE: *Rhus verniciflua.*

LACTÙCA. *Compositæ.* Many tall annuals and perennials of the northern hemisphere, often weedy and invading fields: lvs. alternate, of many forms and often pinnatifid: heads small, in irregular panicles, with yellow, pink, blue or white rays; pappus on a long or short beak terminating the flat ribbed achene or "seed." None is commonly cult. in this country for ornament; one is a garden vegetable, for which see *Lettuce.*

alpìna (*Mulgedium alpinum*). Erect per. to 4 ft., st. simple and succulent, nearly glabrous: lvs. long-oblong, ovate or broader, to 8 in. across, toothed or lyrate, terminal deltoid: heads 1 in. across, rays pale blue. Arctic and alpine Eu., Siberia.

Boûrgæi (*Mulgedium Bourgæi*). Per. to 6 ft., st. thick: lvs. bristly: heads small, the bracts and rays lilac. Medit.

Lessertiàna. Per. to 1 ft.: lvs. variable, entire or pinnately lobed: heads blackish, ¾ in. long, rays blue. Himalayas.

perénnis. Glabrous branched per. to 2 ft.: lvs. long-narrow, pinnately lobed, the segms. nearly linear, those on st. clasping: heads long-pedicelled, rays blue or pale violet. S. Eu.

Plumièri. Probably per., to 6 ft.: lvs. broad-oblong, bluish underneath, much cut or lyrate, to 16 in. long: heads terminal and corymbose, large, rays purple. S. France.

satìva. LETTUCE. Smooth erect ann., producing leafy branching st. 3–4 ft. high after making the lf. rosette (the "lettuce" of gardens): radical lvs. to 10 in. long, narrow to nearly orbicular, in garden forms variously curled and crisped: fl. rays light yellow. Cultigen. The different classes of lettuces may be ranged botanically as follows: Var. **asparagìna** (*angustana*), Asparagus lettuce, in which the thickened st. is used for food; var. **capitàta,** head lettuces, the lvs. compacted into rather dense rosettes; var. **críspa,** loose lettuces with crisped, crinkled or cut lvs.; var. **longifòlia,** Cos or Romaine lettuces, with long upright columns or rolls of foliage, tending to blanch inside.

tenérrima. Sts. simple, rough, usually 1-headed: lvs. linear, lower ones pinnatifid: ray-fls. bluish. S. Eu. and Morocco.

LADIES-SMOCK: *Cardamine pratensis.* **-Tresses:** *Spiranthes.*

LADYBELL: *Adenophora.*

LADY-FINGERS, PINK: *Astragalus utahensis.* **-of-the-Night:** *Brunfelsia americana.* **-Slipper:** *Cypripedium, Paphiopedilum, Phragmipedium.*

LADYS-MANTLE: *Alchemilla.* **-Thumb:** *Polygonum Persicaria.*

LÆLIA. *Orchidaceæ.* Trop. American epiphytes with 1- or 2-lvd. pseudobulbs and fls. solitary or in racemes, commonly showy, the sepals and petals similar, the lip 3-lobed. They thrive in an intermediate temperature; see *Orchids* for cult.

acuminàta: *L. rubescens.*

álbida. Pseudobulbs to 2 in. high, with 2 lvs. to 7 in. long: racemes loosely 3–9-fld., to 20 in. long; fls. about 2 in. across, fragrant, white often tinged with rose; lip with 3 central yellow ribs. Nov.–Jan. Mex.

ánceps. Pseudobulbs to 4¾ in. high, with 1 (rarely 2) lvs. to 8 in. long: racemes 2–5-fld., to 3 ft. high; fls. about 4 in. or more across; sepals and petals violet-rose; lip with a tawny-yellow throat lined with purple. Nov.–Feb. Mex. Var. **álba,** fls. pure white except yellow spot in throat. Var. **Âmesiæ,** fls. crimson-purple with yellow throat. Var. **Ballantiniàna** has sepals and petals tipped with deep rose. Var. **Barkeriàna** has sepals and petals deep purplish-rose. Var. **Chamberlainiàna** has very large fls. with deep crimson-purple lip. Var. **Dàwsonii** has white fls. on scapes to 3 ft. high, lip with purple lines. Var. **grandiflòra** has very large highly colored fls. Var. **Hilliàna** has white sepals and petals with yellow lip of which the front parts are blush-pink. Var. **Hollidayàna** is listed. Var. **Percivaliàna** has small fls. with sepals and petals white tinged with pink, deep purple side lobes of lip and yellowish mid-lobe. Var. **ròsea** has bright rose-colored fls. Var. **Sanderiàna** has white fls. with yellow throat and purple-edged lip. Var. **Schroederiàna** has large white fls., the lateral lobes of lip streaked with purple. Var. **Stélla** has pure white fls. with yellow throat. Var. **Veitchiàna** has white fls. suffused with lilac and lip veined with purple. Var. **Wílliamsii** has white fls. with yellow throat marked with purple.

Arnoldiàna: *Læliocattleya callistoglossa.*

aûtoceps. Hybrid.

autumnàlis. Pseudobulbs to 6 in. long, with 2–3 leathery lvs. to 7 in. long: infl. to 30 in. long, 4–9-fld.; fls. to 4 in. across, rose-purple with lip white near the base. Oct.–Apr. Mex. Var. **álba** has pure white fls. Var. **Fosteriàna** is listed.

Boothiàna: *L. lobata.*

cinnabarìna. Pseudobulbs to 10 in. long, 1- rarely 2-lvd.: lf. to about 10 in. long: infl. to 20 in. high, 4–15-fld.; fls. about 2½ in. wide or more, orange-red. Mar.–May, Nov. Brazil. Var. **crispilàbia:** *L. crispilabia.*

cinnabròsa. Hybrid between *L. cinnabarina* and *L. grandis* var. *tenebrosa.*

críspa. Pseudobulbs to 10 in. long, 1-lvd.: lf. to 1 ft. long: infl. to 1 ft. long, 4–7-fld.; fls. 4–6 in. across, white; lip yellow in throat, purple edged with white in front, lip and petals much crisped. July–Aug., Dec. Brazil.

crispilàbia (*L. cinnabarina* var. *crispilabia*). Fls. amethyst-purple, lip crisped and wavy. Brazil.

Dayàna: *L. pumilà* var.

Digbyàna (*Brassavola Digbyana*). Pseudobulbs or sts. clavate, 1-lvd.: lf. to 8 in. long, fleshy: infl. 1-fld., slightly exceeding the lf., emerging from an elongate compressed sheath; fls. 4–6 in. across, fragrant; sepals and petals pale yellow-green; lip large, cordate, convolute around the column at base, deeply fringed, cream-white. May–July. Cent. Amer.

élegans: *Læliocattleya elegans.*

Finckeniàna Schròederæ. Hybrid between *L. albida* and *L. anceps.*

flàva. Pseudobulbs to 8 in. high, 1-lvd.: lf. to 6 in. long: infl. to 1½ ft. long, 5–15-fld.; fls. golden-yellow, to 2½ in. across, the lip crisped. Aug.–Feb. Brazil.

glaùca (*Brassavola glauca*). Pseudobulbs or sts. clavate, to 4 in. high, 1-lvd.: lf. to over 6 in. long, fleshy: infl. 1-fld., about as long as the lf., springing from an elongate flattened spathe; fls. 3–5½ in. across; sepals and petals pale olive-green; lip cordate, convolute around the column at base, white. Dec.–Mar. Cent. Amer.

Gouldiàna. Pseudobulbs nearly 4 in. high, 2-lvd.: lvs. to about 1 ft. long: infl. over 1 ft. high, loosely about 3–6-fld.; fls. about 4 in. across, purple-rose, lip white or yellowish-white near base. Dec.–Jan. Mex.

grándis. Pseudobulbs or sts. to 1 ft. high, with 1 lf. to 10 in. long: infl. to about 7 in. high, 3–5-fld.; fls. 4–7 in. across; sepals and petals brownish-yellow; lip white veined with rose-purple. May–July. Brazil. Var. **tenebròsa,** fls. larger, with broader sepals and petals and a deep purple lip.

harpophýlla. Sts. to 1½ ft. high, with 1 lf. to 8 in. long: infl. shorter than lvs., 3–7-fld.; fls. to 3 in. across, vermilion, except that anterior lobe of lip is yellow edged with white. Oct.–Apr. Brazil.

Jongheàna. Pseudobulbs to 2½ in. high, with 1 lf. to 4¾ in. long: infl. shorter than lvs., 1–2-fld.; fls. to 5 in. or more across; sepals and petals rose-purple; lip with a yellow throat, crisped on margin. Mar.–Apr. Brazil.

Latòna. Hybrid between *L. cinnabarina* and *L. purpurata.*

Lindleyàna. Pseudobulbs to 8 in. high, with 2 leathery lvs. to 5 in. long: infl. shorter than lvs., 2- or more-fld.; fls. white marked with purple, 4 in. across. Brazil.

lobàta (*L. Boothiana. Cattleya lobata*). Pseudobulbs to 8 in. high, with 1 leathery lf. to 10 in. long: infl. to 20 in. high, 2–5-fld.; fls. about 5 in. across, rose-purple with deeper-colored veins. Apr.–May. Brazil.

majàlis: *L. speciosa.*

monophýlla (*Trigonidium monophyllum. Octadesmia monophylla*). Sts. to 3½ in. high, with 1 lf. to 4 in. long: infl. to 8¾ in. long; fls. 1 or rarely 2, orange-scarlet, to 2 in. across. Aug.–Nov. Jamaica.

Pérrinii. Pseudobulbs to 1 ft. high, with 1 lf. to 14 in. long: infl. to 4¾ in. long, few-fld.; fls. about 5 in. across; sepals and petals rose-lilac; lip purple-crimson in front with a straw-yellow throat. Oct.–Nov. Brazil.

præstans: *L. pumila* var. *major.*

pùmila. Pseudobulbs from a creeping rhizome, to 4 in. high, with 1 lf. to about 4¼ in. long: infl. to about 3 in. long, 1-fld.; fls. 3–4 in. across; sepals and petals rose-purple; lip deep purple in front, with a yellow throat. Sept.–Oct. Brazil. Var. **Dayàna** has bright rose-purple fls. Var. **màjor** (*L. præstans*) has larger fls. with orange-yellow throat.

purpuràta. Pseudobulbs to 2 ft. high, with 1 lf. to 16 in. long: infl. to 1 ft. long, 3–7-fld.; fls. 7–8 in. across; sepals and petals white or pale rose; lip purple in front with pale yellow throat marked with purple lines. May–July. Brazil. Var. **Russelliàna** has sepals and petals white flushed with rose, lip rose-pink, all with deeper colored veins.

rubéscens (*L. acuminata*). Pseudobulbs to 2½ in. high, with 1 lf. to 8 in. long: infl. to over 20 in. tall, with closely few-fld. raceme at summit; fls. white to rose-purple with dark purple base to lip. Sept.–Mar., July. Cent. Amer. Var. **álba** has white fls.

speciòsa (*L. majalis*). Pseudobulbs to 2 in. high, with 1 or 2 lvs. to 6 in. long: infl. as long as lvs., 1- or rarely 2-fld.; fls. about 6 in. across, rose-lilac; lip whitish in the throat, spotted with purple. May. Mex.

supérbiens (*Schomburgkia superbiens*). Pseudobulbs to over 1 ft. high, with 2 lvs. to about 1 ft. long: infl. to 6 ft. high; fls. 5–7 in. across, clustered at summit of peduncle, fragrant; sepals and petals rose-mauve; lip purple with yellow throat. Dec.–Feb. Cent. Amer.

tenebròsa: *L. grandis* var.

LÆLIOCÁTTLEYA. *Orchidaceæ.* A group of orchids comprising hybrids between the genera Lælia and Cattleya.

Ármstrongiæ (*Lc.* G. Woodhouse × *C.* Iris).

Arnoldiàna: *Lc. callistoglossa.*

Bállii (*L. cinnabarina* × *C. Trianæi* var. *Schroederiana*).

Báskettiæ (*C. Trianæi* var. *Schroederiana* × *Lc. eximia*).

bélla (*L. purpurata* × *C. labiata*).

bletchleyénsis (*L. grandis* var. *tenebrosa* × *C. Warscewiczii*).

Boỳlei (*L. anceps* × *C. Trianæi*).

Braceyàna (*Lc.* Lustre × *C. labiata*).

brilliantíssima (*C.* Fabia × *Lc.* Phoenix).

británnia (*Lc. Canhamiana* × *C. Warscewiczii*).

callistoglóssa (*Lælia Arnoldiana. Lc. Arnoldiana. L. purpurata* × *C. Warscewiczii*).

Canhamiàna (*L. purpurata* × *C. Mossiæ*).

choletiàna (*L. superbiens* × *C. Mossiæ*).

Colmaniàna (*Lc. callistoglossa* × *C. Dowiana*).

Coẁanii (*L. cinnabrosa* × *C. Mossiæ*).

Cránstouniæ (*L. grandis* var. *tenebrosa* × *C. Harrisoniana*).

críspo-Hardyàna (*L. crispa* × *C. Hardyana*).

Dàvidsoniæ (*Lc. bella* × *C. labiata*).

Dénisii (*C. Lueddemanniana* × *L. superbiens*).

Dominiàna (*L. purpurata* × *C. Dowiana*).

Dúncanii (*Lc. Gottoiana* × *C. Hardyana*).

Duvaliàna (*C. Lueddemanniana* × *L. purpurata*).

Édwardii (*L. cinnabarina* × *C. Hardyana*).

élegans (*L. purpurata* × *C. Leopoldii*).

exímia (*L. purpurata* × *C. Warneri*).

exoniénsis (*L. crispa* × *C. Mossiæ*).

Fournièræ (*Lc. elegans* × *C. Dowiana*).

Gottoiàna (*C. Warneri* × *L. grandis* var. *tenebrosa*).

Greènwoodii (*Lc. Schilleriana* × *C. Hardyana*).

Haroldiàna (*L. grandis* var. *tenebrosa* × *C. Hardyana*).

Hássallii álba (*Lc. britannia* × *C. Warscewiczii*).

Hérscentiæ (*L. Boothiana* × *C. Dowiana*).

hivernàlis. Parents not known.

Horniàna (*Lc. Schilleriana* × *L. purpurata*).

Hyeàna (*L. purpurata* × *C. Lawrenceana* var. *Hyeana*).

labiòsa (*Lc. luminosa* × *C. labiata*).

luminòsa: *Lc. Truffautiana.*

Martinétii (*L. grandis* var. *tenebrosa* × *C. Mossiæ* var. *Reineckiana*).

McBeaniàna (*C. Schroederæ* × *L. anceps*).

Mossemiliàna (*C. labiata* × *Lc. bletchleyensis*).

oxfordénsis (*Lc. callistoglossa* × *C.* Tityus).

Rabeiàna (*C. Dupreana* × *L. purpurata*).

Rothschildiàna (*Lc. Martinetii* × *C. Mossiæ*).

rubélla (*Lc.* Nella × *Lc.* St. Gothard).

Schilleriàna (*C. intermedia* × *L. purpurata*).

Schilleriàna álba (*C. intermedia alba* × *L. purpurata*).

Schròederæ (*C.* Maggie Raphael var. *alba* × *Lc. bella* var. *alba superba*).

Sláddenii (*Lc. bella* × *C.* Octave Doin).

Thurgoodiàna (*Lc. Martinetii* × *C. Hardyana*).

Truffautiàna (*Lc. luminosa. L. grandis* var. *tenebrosa* × *C. Dowiana* var. *aurea*).

Veitchiàna (*C. labiata* × *L. crispa*).

warnhaménsis (*L. cinnabarina* × *C. Trianæi*).

Wéllesleyi (*C. Warscewiczii* × *Lc. Martinetii*).

Whitiniæ (*C. Harrisoniana* × *L. purpurata*).

Wrígleyi (*L. anceps* × *C. Bowringiana*).

LAGENÀRIA. *Cucurbitaceæ.* Long-running soft scented tender mostly monœcious ann. vine of the Old World tropics but spontaneous elsewhere and widely cult. for ornament, the hard shells of the fr. used for utensils, and young frs. said to be eaten in some countries: fls. solitary, white, long-peduncled. The frs. are commonly known as gourds (see *Cucurbita Pepo* var. *ovifera*), as dipper, sugar-trough, Hercules club, calabash, bottle, knob-kerrie. Readily grown from seeds. See *Gourd.*

leucántha: *L. siceraria.*

sicerària (*L. vulgaris. L. leucantha*). WHITE-FLOWERED GOURD. To 30 ft. or more, viscid-pubescent: lvs. cordate-ovate or broader, usually not lobed: fr. smooth, hard-shelled when ripe, in many shapes and sizes, from 3 in. to 3 ft. long, nearly globular, oblong, long-cylindrical and bent, club-shaped, dumbell-shaped, crooknecked.

vulgàris: *L. siceraria.*

LAGENÓPHORA. *Compositæ.* Small per. herbs with mostly basal lvs. and small solitary heads on slender scapes; ray-fls. usually white; pappus none; related to Brachycome.

Billardièri. To 5 in., pubescent: lvs. basal, oblong to obovate, to 2 in. long, sinuate-toothed: scape slender, head to ⅙ in. across, ray-fls. white. Malasia.

Fórsteri: *L. pumila.*

pùmila (*L. Forsteri*). Tufted, with creeping and rooting stolons, daisy-like: lvs. orbicular or obovate, to 1 in. long, toothed or somewhat lobed: heads ½ in. across, on scapes to 6 in. high. New Zeal.

LAGERSTRŒMIA. *Lythraceæ.* Ornamental trees and shrubs with mostly opposite entire lvs., showy regular fls. in panicles, and woody capsular frs.

One species is widely and commonly planted for ornament in the southern states. Of easy cultivation. Sometimes grown as pot-plants in the greenhouse. Propagated by seeds or cuttings.

Flòs-Regìnæ: *L. speciosa.*

índica. CRAPE-MYRTLE. Deciduous shrub to 20 ft.: lvs. elliptic to oblong, to 2 in. long: fls. white, pink or purple as indicated in the varietal names **álba, purpùrea, ròsea, rùbra,** to 1½ in. across, the petals fringed, blooming profusely all summer. China, but widely nat. Var. **nàna cærùlea,** dwarf with bluish fls. Var. **prostràta,** prostrate with pink fls.

speciòsa (*L. Flos-Reginæ*). QUEEN CRAPE-MYRTLE. Showy tree to 60 ft. or more: lvs. oblong to ovate, to 1 ft. long, leathery: fls. mauve to purple, to 3 in. across. India to Australia.—Planted in S. Fla.

LAGÒTIS. *Scrophulariaceæ.* A small genus of arctic per. herbs having creeping rootstocks, alternate lvs., and bluish tubular fls. in a dense terminal scape: fr. a fleshy drupe-like structure containing 2 nutlets, one of which is often abortive.

glaùca. To 1 ft.: basal lvs. ovate to oblong, to 4 in. long, obtuse, margins somewhat crenate, upper lvs. smaller becoming bract-like and subtending the fls.: stamens shorter than upper lip of corolla and exceeding the style. Unalaska.

LAGUNÀRIA. *Malvaceæ.* One tree native in the S. Pacific Isls. and Australia, planted occasionally in Calif., and evergreen. **L. Pátersonii.** To 50 ft.: lvs. alternate, ovate to oblong, entire, to 4 in. long, thick, gray beneath: fls. pale rose, 2½ in. across, solitary in axils: fr. a caps. splitting into 5 parts.—Propagated by cuttings in spring over heat.

LAGÙRUS. *Gramineæ.* One ann. grown for ornament in flower-gardens and pots and for dry bouquets, native in Medit. region and nat. in Calif. **L. ovàtus.** Hares-tail-Grass. Rabbit-tail-Grass. To 1 ft., soft-pubescent: lvs. to 4 in. long and ⅜ in. wide: spikelets in dense woolly broad heads to 2 in. long, awns ½ in. long. See *Grasses.*

LALLEMÁNTIA. *Labiatæ.* Small ann. or bien. herbs native in Asia, with opposite toothed lvs. and small blue 2-lipped fls. in whorls; sometimes grown in the flower- or rock-garden.

canéscens. Bien. to 1½ ft., soft-tomentose: lvs. oblong-lanceolate: fls. blue, 1¼ in. long, the tube much longer than calyx. W. Asia.

ibérica. Ann., glabrous: lvs. oblong to linear-lanceolate, nearly entire: fls. blue, the tube included in the calyx. W. Asia.

peltàta. Ann. to 1 ft. or more, glabrous or slightly pubescent: lvs. ovate to oblong: fls. blue, the tube scarcely longer than calyx. W. Asia.

pulchélla: hort. name.

LAMA: *Maba sandwicensis.*

LAMÁRCKIA (*Achyrodes*). *Gramineæ.* One tufted ann. of the Medit. region and nat. in Calif., ornamental. **L. aùrea** (*Chrysurus cynosuroides*). Golden-Top. To 1 ft.: lvs. to 6 in. long and ¼ in. wide, soft, glabrous: spikelets awned, in clusters in one-sided glossy panicles to 4 in. long, golden-yellow or purplish. See *Grasses.*

LAMBÉRTIA. *Proteaceæ.* Australian shrubs with lvs. commonly in whorls of 3, red or yellow fls. solitary or in clusters surrounded by an involucre of colored bracts, and fr. a hard follicle; a few species intro. in Calif.

ericifòlia. To 10 ft.: lvs. linear, about ½ in. long, margins revolute: fls. 1½ in. long; inner bracts of involucre ½ in. long.

ormòsa. Tall shrub: lvs. linear, to 2 in. long, pale beneath, margins recurved: fls. to 2 in. long; inner bracts of involucre to 2 in. long.

multiflòra. To 4 ft.: lvs. linear, to 2 in. long: fls. 1½ in. long; inner bracts of involucre ½ in. long.

LAMBKILL: *Kalmia angustifolia.*

LAMB, SCYTHIAN: *Cibotium Barometz.*

LAMBS-EARS: *Stachys lanata.* **-Quarters:** *Chenopodium album.*

LÀMIUM. Dead Nettle. *Labiatæ.* Ann. or per. Old World herbs with opposite toothed lvs. and 2-lipped fls. in axillary or terminal whorls; grown in the border or rock-garden. Of simple cult. Propagated by division or by seeds. Some of them are low garden weeds.

álbum. Per., with ascending sts. to 1½ ft. long: lvs. ovate, to 3 in. long: fls. white, 1 in. long. Eu.; nat. in E. U. S.

longiflòrum. Per., erect: lvs. ovate-cordate: fls. purplish-red, 1½ in. long. S. Eu.

maculàtum (*L. variegatum*). Per., with trailing or ascending sts. to 1½ ft. long: lvs. cordate-ovate, to 2 in. long, often blotched with white along midrib: fls. purple-red, rarely white (var. **álbum**), to 1 in. long. Eu., Asia.; nat. in E. U. S.

Orvàla. Per. to 2 ft.: lvs. ovate, to 3 in. long: fls. brown-purple, the tube whitish at base and under lip pink spotted with purple, 1½ in. long. S. Eu.

purpùreum. Ann., with decumbent sts. to 1½ ft. long: lvs. ovate, to 1¼ in. long: fls. purple-red, ½ in. long. Eu., Asia; nat. in N. Amer.

variegàtum: *L. maculatum.*

LAMPRÁNTHUS. *Aizoaceæ.* Segregate from Mesembryanthemum, from which it differs in bearing marginal wings on capsules and other technical characters: lvs. very narrow: fls. large, mostly brilliantly colored and very showy in sun, among the commonest of the cult. kinds: per. branching plants. S. Afr. For cult. see *Mesembryanthemum.*

aurantìacus (*M. aurantiacum*). Differs from *L. aureus* chiefly in the smaller lvs. and fls.

aùreus (*M. aureum*). Erect, to 1½ ft.: lvs. to 2 in. long and ¼ in. broad, punctate: fls. solitary or in 3's, golden, 2 in. across.

blándus (*M. blandum*). Erect, to 1½ ft.: lvs. 3-angled, to 2 in. long, pale green, punctate: fls. in 3's, pale rose, 2 in. across.

Brownii (*M. Brownii*). Compact and erect subshrub 1 ft. high: lvs. terete and fleshy, acute, glaucous-green, to ⅔ in. long: fls. solitary or in 3's, yellowish-red to purplish, to 1½ in. across.

coccíneus (*M. coccineum*). Erect and straight, to 3 ft.: lvs. somewhat 3-angled, to 1½ in. long, prominently dotted: fls. solitary or in 3's, scarlet, 1½ in. across.

Cómptonii (*M. Comptonii*). To 9 in., much branched: lvs. 3-angled, turgid, to 1½ in. long and ½ in. thick: fls. white, 1 in. across.

conspícuus (*M. conspicuum*). Shrub to 1½ ft.: lvs. at tips of branches, to 3 in. long and ⅕ in. wide, with reddish tip: fls. purple, 2 in. across, on stalks to 3½ in. long.

curviflòrus (*M. curviflorum. M. blandum* var. *curviflorum*). Differs from *L. blandus* in stronger habit, larger lvs. and larger white fls.

emarginàtus (*M. emarginatum. M. violaceum*). Erect, to about 2 ft.: lvs. crowded, nearly terete, curved, glaucous, strongly dotted, to 1 in. long: fls. violet, petals twice longer than calyx.

falcifórmis (*M. falciforme*). To 2 ft., with angled spreading branches: lvs. crowded, acutely 3-angled, falcate, large-dotted: fls. rose, long-peduncled, 1½ in. across.

filicaùlis (*M. filicaule*). Sts. filiform and weak, creeping or prostrate: lvs. crowded, subulate, curved, about 1 in. long: fls. reddish, long-peduncled.

glaucoìdes (*M. glaucoides*). Erect or base decumbent, to 1½ ft.: lvs. linear and 3-angled, to 1 in. long, glaucous: fls. orange, about 1½ in. across.

glaùcus (*M. glaucum*). Erect, 2 ft. or more: lvs. 3-angled and flattened, rough-dotted, glaucous, to 1 in. or more: fls. sulfur-yellow, the petals 1 in. long.

glomeràtus (*M. glomeratum*). Subshrubby, with erect slender branches, to 1½ ft.: lvs. linear, green, somewhat incurved, large-dotted, to ¾ in. long: fls. somewhat clustered, reddish-violet, about 1 in. across.

Hawórthii: *Erepsia Haworthii.*

multiradiàtus (*M. multiradiatum*). Subshrubby, branches spreading, to 2 ft.: lvs. linear, 1 in. or more long, somewhat 3-angled, incurved, glaucous: fls. few together, pale rose, 1½ in. across.

prodúctus (*M. productum*). To 2 ft., much branched: lvs. to 1½ in. long and ⅙ in. wide, punctate: fls. in 3's or 5's, pale rose, 1 in. across.

réptans (*M. reptans*). Sts. prostrate, to 1 ft. long: lvs. to 1 in. long and ¼ in. wide, 3-angled, grayish-green with pellucid dots: fls. yellow, ½ in. long, on stalks to 2 in. long.

ròseus (*M. roseum*). Perhaps referable to *L. glomeratus* but kept distinct by some authorities: fls. rose-color.

spectábilis (*M. spectabile*). Somewhat woody per., with long prostrate flowering sts.: lvs. crowded, 3-angled, pointed, glaucous, incurved, to 3 in. long: fls. purplish with white filaments; also var. **álbus** and var. **ròseus.**

stènus (*M. stenum*). Much branched shrub to 1½ ft.: lvs. cylindrical, to 1¼ in. long and 1/12 in. wide: fls. 3 or sometimes solitary, pale rose, 1 in. across.

tenuifòlius (*M. tenuifolium*). Shrub to 2 ft.: lvs. to 1½ in. long and 1/12 in. thick, with pellucid dots: fls. solitary, bright red, 1½ in. across.

Wátermeyeri (*M. Watermeyeri*). To 10 in. or more, shrubby: lvs. erect or spreading, to 1½ in. long and ⅕ in. wide and thick: fls. usually 3, white, 1 in. long.

Zèyheri (*M. Zeyheri*). Erect, to 1½ ft.: lvs. much crowded, terete, incurved, smooth and green, to 1½ in. long: fls. solitary, purplish-violet, petals nearly 1 in. long.

LAMPWICK PLANT: *Phlomis Lychnitis.*

LANCEOLATE: lance-shaped; much longer than broad, widening above the base and tapering to the apex.

LANCE-POD: *Lonchocarpus.*

LANDSCAPE-GARDENING, in its original definition, was the making of landscapes to please the imagination by means of gardening designs, practices and materials.

With the development of the profession of the high art of landscape subdivision and design the term landscape architecture has come into use, the word architecture being taken in its larger sense of plan or undertaking, and the tendency is to restrict the term landscape-gardening to the horticultural applications; some persons, however, prefer the latter older term to landscape architecture, the word gardening being taken also in its larger sense as the art associated with buildings and the utilization of the personal or domestic property. In this signification landscape-gardening is no more technical gardening than landscape architecture is technical or professional architecture.

In its restricted sense landscape-gardening is the growing and the adapting of plants in the making of grounds, the application of horticultural materials, forms and methods to the development or improvement of landscapes. It may be practiced independently, complete in itself for certain limited areas or purposes, and may also be considered one of the practical means or subordinates in the interpretation of landscape architecture.

The landscape-gardener, in whatever sense the term is taken, may or may not be a practiced propagator and grower of plants, but he must certainly know their artistic values and their adaptations to soils, climates, seasons and settings, and the extent to which they may be associated for the making of pleasing and significant harmonies throughout the year.

Every parcel of land under the control of man may derive character and dignity from the proper employment of plant materials. The utilization of such materials to these ends is much more than ornament or than the planting of flowers and showy colored foliage and the making of display: it must have close relation to the essential merits of the area and to the nature of the construction and the setting. The plants are grown not so much for their separate individual merits as for the ways in which they may be adjusted and combined. The landscape-gardener is possessed of an artistic quality, and his appreciation of nature should be as pronounced as is his reaction to garden objects and forms.

The arrangement and design of landscapes constitutes one of the noblest of the arts, deserving keener recognition; and the utilization of plant materials is one of the essential factors in the execution of it.

LANGUAS: *Alpinia speciosa.*

LANTÀNA. *Verbenaceæ.* Many shrubs native in warm regions, having opposite or whorled toothed lvs., small red, orange or white or changeable fls. in dense spikes or heads, and little drupaceous frs.

One (*L. Camara*) is a common florists subject and others may be grown in the South. Plant in a moderate greenhouse and out-of-doors in summer. Propagated by cuttings or soft wood, and also by seeds.

aculeàta. To 6 ft., armed with hooked prickles: lvs. ovate to ovate-lanceolate, to 3 in. long: fls. yellow or orange changing to pink or rose. Trop. Amer.

Càmara. To 4 ft., sometimes prickly: lvs. ovate, to 5 in. long, rough above: fls. orange-yellow or orange changing to red or white, in flat-topped heads to 2 in. across. Trop. Amer.—Grown under glass and far S., and a bad weed in Hawaii. Several color forms are recognized.

Cràigii: orange-scarlet, probably form of *L. Camara.*

delicatíssima: *L. montevidensis.*

flàva of lists is probably a yellow-fld. race of *L. Camara.*

fucàta (*L. lilacina*). Erect, with 4-angled branches: lvs. ovate to oblong, to 3 in. long, rough above and tomentose beneath: fls. rose-lilac with yellow throat. Brazil.

hýbrida: a garden name for the dwarf forms of *L. Camara.*

involucràta. To 6 ft.: lvs. ovate, to 1½ in. long, rough above: fls. lilac or white, in small heads subtended by bracts. Trop. Amer.

lilácina: *L. fucata.*

montevidénsis (*L. Sellowiana. L. delicatissima*). WEEPING or TRAILING L. Shrub with weak vine-like sts. about 3 ft. long: lvs. ovate, 1 in. long: fls. rosy-lilac, in heads 1 in. or more across. S. Amer.—Useful also as a ground-cover far S.

Sellowiàna: *L. montevidensis.*

LANTERN-PLANT, CHINESE: *Physalis Alkekengi.*

LANÙGIA. *Apocynaceæ.* Trop. African trees separated from Mascarenhasia by corolla-lobes pubescent on inside, very narrow terete pods, and other technical characters, and from Funtumia by sessile tuft of hairs at apex of seeds as well as the pubescent inner surface of corolla. **L. latifòlia** is a tree to 20 ft., intro. in warmest parts as a rubber plant: lvs. long-elliptic, very abruptly acuminate, entire, to 6 in. long: fls. in axillary cymes; corolla-lobes recurving at tip, pubescent on inner face: pods to 4 in. long.

LAOTHOE: *Chlorogalum.*

LAPAGÈRIA. *Liliaceæ.* One showy vine from Chile sometimes grown in greenhouses, and out-of-doors in mild climates. **L. ròsea.** CHILEAN BELLFLOWER. CHILE-BELLS. Lvs. alternate, ovate, long-pointed, leathery: fls. rose, to 4 in. long, solitary or few together, the perianth-segms. distinct. Var. **albiflòra** (var. *alba*) has white fls.—Good drainage and loose soil are necessary and shade from the direct sun. Propagated by layering, cuttings and seeds.

LAPEIROÙSIA. *Iridaceæ.* African cormous plants with mostly basal narrow lvs. and red or blue fls. with long or short perianth-tube, blooming in summer.

These plants are hardy in the North with winter protection and grown also under glass for spring bloom. Corms should be lifted and divided every few years.

aculeàta: *L. anceps* var.

ánceps (*L. compressa*). To 14 in.: lf. linear, to 6 in. long: fls. lilac or white, limb ½ in. long or less, 2–5 in lax spike whose st. is much compressed. Var. **aculeàta** has a longer perianth-limb and broader segms.; keel of outer spathe-valve finely toothed.

compréssa: *L. anceps.*

corymbòsa. To 1 ft.: lf. linear, to 6 in.: fls. blue-violet with large black-margined white spot in tube.

cruénta (*Anomatheca cruenta*). To 1 ft.: lvs. to 1 ft. long and ½ in. wide: fls. red, the very slender tube to 1½ in. long, in a one-sided spike or raceme. Var. **álba** is listed.

divaricàta. To 14 in.: lf. linear, to 9 in. long, strongly ribbed: fls. reddish, to ¼ in. long, 6–10 in short dense spike, elongating in fr.

fissifòlia. Sts. very short: basal lf. 1, lanceolate, to 4 in. long: fls. violet or whitish, the slender tube to 1½ in. long, in erect spikes 2–3 in. long.

júncea. To 2 ft.: lvs. to 8 in. long and ¾ in. wide: fls. pale red, the slender tube to ¾ in. long, in loose spikes.

purpùreo-lùtea (*L. purpurea*). Differs from *L. corymbosa* in having pale yellow perianth with violet spot on inner side of lower segms.

LAPIDÀRIA. *Aizoaceæ.* A monotypic genus allied to Mesembryanthemum. **L. Márgaretiæ** (*M.* and *Dinteranthus Margaretiæ*). Lvs. 3–4 pairs, to ¾ in. long, 1 in. broad and ½ in. thick, firm and smooth, brownish or cream tinged rose, the edges and keel darker or yellowish: fls. bright yellow, paler beneath, to 2 in. across; stigmas 6–7. S. Afr.

LAPPA: *Arctium.*

LÁPPULA (*Echinospermum*). *Boraginaceæ.* Rough-pubescent herbs of the north temp. zone, most of them weedy, with alternate entire lvs., small blue or white fls. in terminal racemes, and fr. of 4 prickly nutlets; scarcely hort. subjects but one listed as a rock-garden plant and a taller one as a general garden subject.

consanguínea. Ann. to 9 in.: lvs. linear-lanceolate: fls. scarcely longer than calyx. Siberia.

diffùsa. Per. to 3½ ft., softly hairy: lvs. narrowly oblanceolate, to 6 in. long, pilose: fls. blue, to ⅜ in. across. Man. to B. C., south to New Mex. and Calif.

floribúnda. Bien. or per. to 2 ft. or more: lvs. lanceolate: fls. blue, ¼ in. across. B. C. to Calif. and Minn.

LARCH: *Larix.* **Golden-:** *Pseudolarix amabilis.*

LARDIZABÀLA. *Lardizabalaceæ.* Evergreen woody vines of Chile with ternately compound lvs., staminate fls. in drooping racemes, pistillate solitary, and fr. an oblong berry; sometimes grown in S. Calif. Propagated under glass by cuttings of half-ripened wood.

biternàta. Lvs. 1–2-ternate into ovate lfts. to 4 in. long, glossy dark green above: fls. purple-brown, about 1 in. across.

LARDIZABALÀCEÆ. Lardizabala Family. Woody climbers with compound lvs., unisexual or polygamous polypetalous fls. having mostly 6 petal-like sepals, 6 stamens, often nectaries but no petals, superior ovary of 3 free carpels, and fr. a berry; 8 genera in Asia and Chile. Only Akebia, Decaisnea, Lardizabala and Stauntonia are known in general cult., although *Holboellia grandiflora*, *Sargentodoxa cuneata*, and *Sinofranchetia chinensis* may be grown in botanic gardens.

LÀRIX. Larch. *Pinaceæ.* Attractive deciduous trees growing to 60 ft. and more, having short linear needle-like lvs. arranged spirally on young shoots and clustered on the short branches or spurs, and spruce-like cones with woody persistent scales, and solitary staminate fls.; native in colder parts of the northern hemisphere and all hardy in climates like the northeastern states. *L. laricina* and *L. Lyallii* become 50–60 ft. high, the others taller. With Pseudolarix and Taxodium, the larches comprise the deciduous members of the Pinaceæ. For cult. see *Conifers.*

americàna: *L. laricina.*

dahùrica: *L. Gmelinii.*

decídua (*L. europæa*). European L. Lvs. to 1½ in. long, obtuse: cones to 1½ in. long. Eu. Var. **péndula** has drooping branchlets. Var. **pyramidàlis,** habit narrow-pyramidal with ascending branches.

eurólepis. Dunkeld L. Hybrid between *L. decidua* and *L. leptolepis.*

europæa: *L. decidua.*

Gmélinii (*L. dahurica*). Dahurian L. Lvs. to 1½ in. long, bright green: cones 1½ in. long, with shiny scales. E. Siberia. Var. **japónica** has bluish-red young branchlets. Saghalin, Kurile Isls. Var. **Príncipis-Ruppréchtii** has larger cones. N. China, Korea.

Gríffithii. Branches drooping: lvs. obtuse: cones to 4 in. long. S. W. China.

Kaémpferi: *L. leptolepis.*

laricina (*L. americana*). American L. Tamarack. Hackmatack. Lvs. to 1½ in. long, obtuse, light bluish-green: cones to ¾ in. long, with shiny scales. N. Amer.

leptólepis (*L. Kaempferi*). Japanese L. Lvs. to 1½ in. long, obtuse, light or bluish-green: cones to 1½ in. long. Japan. Var. **mìnor** (var. *Murrayana*) is a dwarf form.

Lỳallii. Lvs. to 1½ in. long, 4-angled, acute, stiff: cones to 2 in. long, the bracts exserted. B. C. to Mont.

Mastersiàna. Lvs. to 1¼ in. long, bright green with 2 pale bands below: cones 1½ in. long, the purple bracts exserted. W. China.

occidentàlis. Lvs. to 1¾ in. long, sharp-pointed, stiff: cones to 1½ in. long, the bracts exserted. B. C. to Mont.—Becomes very tall, to 180 ft.

péndula. Hybrid between *L. laricina* and *L. decidua.*

Potanìnii (*L. thibetica*). Chinese L. Branchlets drooping: lvs. to 1¼ in. long, 4-angled, acute, grayish-green: cones to 1¾ in. long, the purple bracts exserted. W. China.

sibírica. Lvs. to 2 in. long: cones 1½ in. long. Russia, Siberia.

sudética: listed name.

thibética: *L. Potaninii.*

LARKSPUR: *Delphinium.*

LÁRREA (*Covillea*). Creosote Bush. *Zygophyllaceæ.* Evergreen balsamiferous shrubs of dry regions, with opposite lvs. usually of 2 sessile lfts., yellow solitary terminal fls., and globose white-tomentose frs.

tridentàta. To 10 ft., much branched, resinous: lfts. obliquely ovate, ⅓ in. long, 4–5-nerved: fls. ¼ in. long. Mex., Tex. Var. **glutinòsa** has lanceolate 3-nerved lfts. Utah to N. Mex.

LASERPÍTIUM. *Umbelliferæ.* European per. herbs with compound lvs., small white or reddish fls. in large umbels, and cylindrical winged frs.; one species is sometimes grown for ornament.

latifòlium. To 5 ft.: lvs. 2-pinnate into oval segms.: fls. white, polygamous, the umbels subtended by short involucral lvs. Cent. Eu.

LASIAGROSTIS: *Stipa.*

LASIANDRA: *Tibouchina.*

LASTHÈNIA. *Compositæ.* Slightly succulent annuals, native from Ore. to Chile, having opposite entire lvs. and long-stalked heads of yellow ray- and disk-fls.; bracts of involucre united into cup; pappus of scales or none. Sometimes grown in the flower-garden.

califórnica: *L. glabrata* var.

glabràta. To 1½ ft.: lvs. linear or lanceolate, to 2 in. long, connate at base: heads 1 in. across. June–July. Calif. Var. **califórnica** (*L. californica*) has lvs. scarcely connate.

LASTREA: *Dryopteris, Polystichum.*

LATÀNIA. *Palmaceæ.* Stout diœcious fan-palms of the Mascarene Isls., Indian Ocean, sometimes grown in the open in S. Fla., and frequently planted in the tropics, unarmed except that petioles and lf.-margins are more or less spiny in young plants: lvs. large, heavy and stiff, long-petioled, strongly many-lobed: spadices among the lvs., several ft. long, the staminate bearing many finger-like dense spikes with 15–30 stamens sunken in pits under scales, these ultimate spikes less than 1 ft. long in the first two species and considerably longer in the third; pistillate spadix with many looser-fld. branches or spikes: fr. a hard somewhat drupe-like body 1–2½ in. long, globose, oblong or ovoid and sometimes angled. They are trees, mostly remaining small in cult. For cult. see *Palm.*

aùrea: *L. Verschaffeltii.*

borbónica of botanists: *L. Commersonii;* of hort., *Livistona chinensis.*

Cómmersonii (*L. rubra*). To 40 ft., the petioles and ribs of lvs. crimson, the color striking in young plants in which the petioles and lf.-margins are often spiny: petiole 4–6 ft.; blade 5 ft. or more, slightly or not at all glaucous, larger segms. 3 in. or more broad at base on mature lvs.: fr. globose, usually less than 2 in. long, ribbed as also the nut.—A striking plant from the red color.

glaucophýlla: *L. Loddigesii.*

Lóddigesii (*L. glaucophylla*). Strong grower: petiole 3–5 ft.; blade glaucous-blue, young plants sometimes with reddish tinge, larger segms. under 2 or 3 in. broad: fr. more than 2 in. long, obovoid or pear-shaped, angled; nut with central ridge and smaller ribs above.

rùbra: *L. Commersonii.*

Verschafféltii (*L. aurea*). To 40 ft.: petiole 5–8 ft., orange-margined; blade green, segms. usually exceeding 2 in. broad at middle: staminate spikes becoming 1½–2 ft. long: fr. 2 in. long, obovoid, obscurely angled; nut ridged.

LATERAL: on or at the side.

LÁTHYRUS (incl. *Orobus*). *Leguminosæ*. Important genus of vines and erect herbs with pinnate lvs., showy papilionaceous fls. which are solitary or in axillary racemes and usually flat pods; grown for ornament, and *L. sativus* for the edible seeds; some of them have fragrant fls.

The perennial species are propagated by seeds or cuttings and are of easy cultivation in any soil. The annuals require a deep moist soil and plenty of sunlight. Propagated by seeds in spring. In the South or under glass seed may be sown in the fall for late winter bloom. Ample support should be provided and the seed-pods picked often to lengthen the blooming season.

álbo-ròseus: hort. name.

Álefeldii: *L. strictus.*

Aphàca. Climbing to 1 ft.: true lvs. reduced to tendrils, subtended by ovate leaf-like stipules to 1 in. long which are hastate at base: fls. yellow, 1–2 on a peduncle: pod about ¾ in. long. Eu.

articulàtus. Ann. to 3 ft., climbing: lfts. linear-lanceolate: fls. rich purple with white or rose-lilac wings, usually solitary. Medit. region.—By some considered a var. of *L. Clymenum.*

aurantìacus: trade name.

azùreus: *L. sativus* var. *cæruleus.*

canéscens: *L. filiformis.*

Cìcera. Ann. to 2 ft.: lfts. linear-oblong: fls. red, 1–2 on a peduncle which is shorter than lvs.: pod glabrous. Eu.

Clymènum. Climbing ann. to 3 ft.: lower lvs. not producing lfts., petioles winged, to ⅓ in. wide; lfts. linear-lanceolate, to ½ in. wide: fls. purple-red with blue wings, 2–5 on a peduncle. Medit. region.

cyàneus. Lfts. oblong-linear to awl-shaped, stipules sagittate: fls. blue, calyx-teeth unequal. Russia.

ensifòlius: *L. membranaceus.*

filifórmis (*L. canescens. Orobus canescens*). Per. to 2 ft., glabrous, not climbing: lfts. linear-lanceolate, usually 2–3 pairs: fls. blue, or blue and white, to ¾ in. long, usually 4–10 in raceme: pod to 2½ in. long. Cent. Eu. to Asia Minor and Caucasia.

Górgonii. Climbing ann.: lfts. lanceolate: fls. reddish-brown, solitary, peduncle about as long as lvs.: pod glabrous, upper margin 2-winged. Sicily.

grandiflòrus. Two-flowered or Everlasting Pea. Per. to 6 ft., climbing: lfts. ovate: fls. rose-purple, large, 2–3 on a peduncle: pod cylindrical. S. Eu.

hirsùtus. Ann. to 4 ft., climbing, sts. narrowly winged: lfts. linear-lanceolate: fls. red with paler wings, 1–3 on a peduncle: pod linear, hairy. S. Eu., W. Asia, N. Afr.

incànus. Erect, to 1 ft., densely hairy: stipules smaller than linear or linear-oblong lfts.: fls. purple, 1 in. long, in 3–5-fld. racemes. Neb., Colo., Wyo.

japónicus: for very technical reasons this name has been adopted by some for *L. maritimus.*

lætiflòrus. Per. to 8 ft.: lfts. elliptic-lanceolate: fls. nearly white veined with purple, many on a peduncle. S. Calif.

lathyroìdes: *Vicia oroboides*, but some of the material so listed is *L. niger.*

latifòlius. Perennial or Everlasting Pea. Per., climbing to 9 ft., sts. winged: lfts. ovate-lanceolate: fls. rose-color, large, several to many on a peduncle. Eu. Var. **álbus** and **grandiflòrus álbus** have white fls. Var. **ròseus** may not differ from the type. Var. **spléndens** has dark purple and red fls.—Common in gardens.

littoràlis. Beach Pea. Sts. decumbent: stipules larger than cuneate-oblong densely silky-hairy lfts.: fls. purple with white wings and keel, 2–6 on a peduncle. Seashore, Wash. to Calif.

lùteus (*Orobus luteus*). Per. to 3 ft.: lfts. oblong: fls. bright yellow, in 5–15-fld. racemes. Eu.

magellánicus. Lord Anson Pea. Per. to 5 ft., climbing: lfts. ovate to oblong-linear: fls. violet-blue, 3–4 on a peduncle. Straits of Magellan.

marítimus (*L. japonicus*). Beach Pea. Per. with decumbent wingless sts. to 2 ft. long: stipules broadly ovate; lfts. oblong or ovate: fls. purple, in 6–10-fld. racemes. Sea and lake shores, N. Amer., Eu., Asia.—The species runs into many forms in the wild.

mauritánicus: hort. name.

membranàceus (*L. ensifolius*). Glabrous climbing per. allied to *L. sylvestris*, differing in the stipules as wide as the winged st. or nearly so, and pod 3–4 in. long. Cent. Eu.

montànus. Per. with prostrate or upright winged sts. to 1 ft. long, no tendrils present: lfts. oblong to lanceolate: fls. purple, greenish at base, in 2–5-fld. racemes, calyx glabrous or glabrescent. Eu. Var. **aurantìacus** is listed.

nìger (*Orobus niger*). Black Vetchling. Per. to 2 ft.: lfts. oval, turning black when dried: fls. purple, in racemes. Eu.

ochroleùcus. Per. with trailing or climbing sts. to 2½ ft. long: lfts. ovate: fls. yellowish-white, in 5–10-fld. racemes. Que. to B. C.

Óchrus. Ann., climbing: petioles broadly winged, lfts. oval: fls. yellowish-white, solitary. S. Eu.

odoràtus. Sweet Pea. Ann., climbing to 6 ft.: lfts. oval or oblong: fls. of many colors, fragrant, large, 1–4 on a peduncle: pod pubescent or hirsute. Italy. Var. **nanéllus,** Dwarf Sweet Pea, is a compact non-climbing form, known in the Cupid. See *Sweet Pea.*

ornàtus (*L. stipulaceus*). Erect per. to 1 ft. or more: lfts. linear: fls. purple, 1 in. long, in 3–5-fld. racemes. S. D. to Wyo. and Okla.

palústris. Marsh Pea. Per. with trailing winged sts. to 3 ft. long: lfts. lanceolate to linear: fls. purple, 2–8 on a peduncle. Moist ground, N. N. Amer., Eu., Asia.

pannónicus. Per. to 2 ft.: lfts. linear-lanceolate: fls. 4–8 in a raceme, ochroleucous often suffused red. S. Eu. Var. **vàrius** is small, erect, with narrow pointed lfts., fls. yellow and rose.

praténsis. Per. to 3 ft., pubescent, prostrate: lfts. 2, lanceolate; stipules nearly as long as lfts., sagittate: fls. yellow, to ⅝ in. long, usually 4–9 in raceme: pod black at maturity. Eu., W. Asia and N. Afr.

pubéscens. Climbing to 6 ft.: lfts. oblong-lanceolate: fls. pale blue, in racemes of 6–14; calyx and pod densely villous-pubescent. Chile.

ròseus (*Orobus roseus*). Per. to 4 ft.: lfts. 2, oval, tendrils absent: fls. rose, 2 on a peduncle. Asia Minor. Var. **pállidus** has pink fls.

rotundifòlius. Per. to 5 ft., climbing: lfts. ovate to nearly round: fls. rose-pink, many on a peduncle, in racemes shorter than or equalling the lvs. Russia, Asia Minor.

satìvus. Grass Pea. Ann., 2 ft. and more, nearly erect: lfts. linear: fls. white tinged with blue, solitary. S. Eu. Var. **cærùleus** (*L. azureus*) has blue or blue and white fls.

setifòlius. Ann., climbing: lfts. linear to ovate-lanceolate, tendrils branched: fls. purple or dark red, solitary, small. S. Eu.

spathulàta. Sts. ascending: lfts. narrow linear-lanceolate: fls. blue, 5–8 together. Asia Minor.

spléndens. Pride-of-California. Per., somewhat shrubby: lfts. ovate-oblong: fls. rose, violet or magenta-red, 6–12 on a peduncle. S. Calif.

stipulàceus: *L. ornatus.*

stríctus (*L. Alefeldii*). Clambering per. vine to 10 ft.: lfts. 6–11, linear-lanceolate to ovate-elliptic, about 1 in. long, puberulent: fls. rose to purplish, to 1 in. long, in racemes of 6–15, pedicels about ⅓ in. long. Calif. Var. **bárbaræ** (*L. violaceus*) has fls. to ¾ in. long on pedicels to ¼ in. long.

sylvéstris. Flat Pea. Per. to 6 ft., climbing: lfts. lanceolate to linear-lanceolate: fls. rose variegated with purple and green, 4–10 on a peduncle. Eu. Var. **Wágneri** has dark red fls.

tingitànus. Tangier Pea. Ann., climbing to 6 ft.: lfts. linear-lanceolate: fls. purple with red wings and keel, 2–3 on a peduncle. Medit. region. Var. **ròseus** is a color variation.—Resembles some forms of *L. odoratus*, differing in its glabrous sts. and pods.

tomentòsus. Somewhat shrubby climber: lfts. 2, linear-lanceolate, densely tomentose: fls. blue or violet, 3–4 on a peduncle. Argentina, Brazil.

tuberòsus. Per., climbing or trailing to 4 ft., tuber-bearing: lfts. oblong to broadly lanceolate: fls. rose, 3–5 on a peduncle. Eu., W. Asia.—Parts of root tubers are edible.

undulàtus. Per. to 3 ft., climbing: lfts. 2, oblong, margins undulate or crisped: fls. magenta-red, 5–6 on a peduncle. Turkey.—Similar to *L. latifolius*, differing in lft. margin and styles strongly dilated at apex.

vàrius: *L. pannonicus* var.

vérnus (*Orobus vernus*). Spring Vetchling. Per. to 2 ft.: lfts. ovate: fls. blue-violet, 5–8 on a peduncle. Eu. Var. **álbus** has white fls. Var. **ròseus** has rose-pink fls.—Differs from *L. montanus* in pilose calyx and fewer-fld. racemes.

violàceus: *L. strictus* var. *barbaræ.*

LATTICE-LEAF: *Aponogeton fenestralis.*

LAURÀCEÆ. LAUREL FAMILY. Aromatic trees and shrubs of about 45 genera mostly in warm climates, with commonly alternate simple lvs., small unisexual or bisexual fls. having 6-parted perianth, 12 stamens in series, superior 1-celled ovary, and fr. a drupe or berry. The family yields many ornamental genera and others grown for the edible fr. and spices, as Benzoin, Cinnamomum, Cryptocarya, Hufelandia, Laurus, Litsea, Persea, Phœbe, Sassafras, Umbellularia.

LAUREL: *Laurus.* **Alexandrian-:** *Danaë racemosa.* **California-:** *Umbellularia californica.* **Cherry-:** *Prunus.* **Mountain-:** *Kalmia latifolia.* **Oak:** *Quercus laurifolia.* **Portugal-:** *Prunus lusitanica.* **Sheep-:** *Kalmia angustifolia.* **Spurge-:** *Daphne Laureola.*

LAURÈLIA. *Monimiaceæ.* Tall aromatic trees with opposite leathery lvs. and diœcious or polygamous fls. without petals, borne in axillary cymes or racemes; native in Chile and New Zeal., one planted in Calif.

nòvæ-zealándiæ. To 120 ft., with buttresses at base: lvs. oblong or obovate, to 3 in. long, coarsely toothed, glossy above: fls. ¼ in. across, in racemes to 1 in. long. New Zeal.

LAURESTINUS: *Viburnum Tinus.*

LAUROCERASUS: *Prunus.*

LAÙRUS. LAUREL. SWEET BAY. *Lauraceæ.* Medium-sized trees in the Medit.-Canary region, with alternate simple lvs., small bisexual or unisexual fls. in axillary umbels, and fr. a berry; one species is a common tub-plant, pruned and trained to various shapes.

Laurel withstands several degrees of frost and thrives in spite of neglect. It thrives in rich peaty soil with plenty of moisture. Propagated mostly by cuttings of ripened wood under glass, and sometimes by seeds.

Camphòra: *Cinnamomum Camphora.*

glandulífera: *Cinnamomum glanduliferum.*

índica: *Persea indica.*

nóbilis. Evergreen tree to 40 ft.: lvs. lanceolate to oval, to 4 in. long, dark glossy green: fls. yellow: fr. black or dark purple. Medit. region; the true laurel of florists.—Variable in stature and leafage; various Latin names are applied as var. **angustifòlia, latifòlia, salicifòlia.**

regàlis: a crisped-lvd. form of *L. nobilis.*

LAVÁNDULA. LAVENDER. *Labiatæ.* Per. aromatic herbs or shrubs with entire, toothed or dissected lvs. and 2–10-fld. whorls crowded into long-stemmed cylindrical spikes, the fls. blue, violet or lilac; native from Canary Isls. to India.

Lavender is propagated by seeds or division, but preferably from cuttings made in late fall or early spring, of the seasons growth but with a heel of older wood. In the North winter protection is desirable. The plants are grown for ornament and for the pleasant scent; commonly included among the sweet herbs.

alpìna: garden name, apparently *L. officinalis.*

atropurpùrea: probably *L. officinalis* var.

delphinénsis: a listed name of doubtful botanical position.

dentàta. Sts. somewhat woody: lvs. linear, to 1½ in. long, pinnately toothed, pubescent: fls. deep purple, ½ in. long. Medit. region.

latifòlia. Similar to *L. Spica* and often so called, but with broader flat lvs. and linear herbaceous bracts subtending the whorls. Medit. region.

multífida (*L. pinnatifida*). Bien. to 2 ft., evergreen: lvs. pinnately divided, hoary: fls. lilac. Canary Isls.

nàna: *L. officinalis* var. *compacta.*

officinàlis (*L. Spica. L. vera*). Subshrub to 3 ft.: lvs. linear to lanceolate, to 2 in. long, entire, the margins revolute, white-tomentose when young: fls. lavender, to ½ in. long, with ovate-pointed bracts at the whorls. Medit. region. Var. **álba** has white fls. Var. **atropurpùrea** is listed as having dark lavender-purple fls. Var. **compácta** (var. *nana compacta*), low and compact, blooming earlier.

pedemontàna: hort. name for form listed as having silvery foliage and dark purple fls.

pedunculàta. Shrub to 3 ft., gray-tomentose: lvs. lanceolate, to ½ in. long, margins revolute, entire: fls. dark purple, long-peduncled, calyx about as long as corolla, spike short, thick and lax. Madeira, Canary Isls.

pinnàta. To 1½ ft.: lvs. pinnate into wedge-shaped lfts.: fls. purple, fragrant, in imbricated whorls. Madeira, Canary Isls.

pinnatífida: *L. multifida.*

Spìca: *L. officinalis.*

Stœchas. Shrub to 3 ft., gray-tomentose: lvs. linear, ½ in. long, entire: fls. dark purple, short-pedicelled, in dense spikes with tuft of large purple bracts. Medit. region.

vèra: *L. officinalis.*

LAVÁNGA (or *Luvunga*). *Rutaceæ.* A few species of climbing spiny shrubs, India and Malaya to Cochin-China. **L. scándens** is an evergreen sometimes grown for ornament in the citrus belt: lvs. of 3 lfts., petiole not winged: fls. white and fragrant, in axillary clusters: fr. oval or oblong, resinous, yellowish, about 1 in. thick, with lemon-like rind.

LAVÁTERA. TREE-MALLOW. *Malvaceæ.* Various herbs and shrubs widely spread in warm countries, with alternate angled or lobed lvs., often maple-like, and showy fls. solitary in the axils or in terminal racemes.

Lavateras are flower-garden subjects or the shrubby species planted for windbreaks. Of easy cultivation. Seeds should be sown where plants are to stand; perennial kinds are also propagated by cuttings.

álba: *L. trimestris* var.

Álcea: the plant listed under this name is probably *Malva Alcea.*

arbòrea. Bien., becoming tree-like shrub to 10 ft.: lvs. orbicular, 5–9-lobed: fls. pale purple-red veined with dark purple at base, 2 in. across, in racemes or clusters. S. Eu.; planted in Calif. Var. **variegàta** has mottled lvs.

assurgentiflòra. Shrub to 10 ft.: lvs. with 5 coarsely toothed lobes: fls. rose-purple with darker veins, to 2¼ in. across, 1–4 in the axils. Isls. of S. Calif., and planted in that state for windbreaks and ornament.

cachemiriàna. Per.: upper lvs. 3–5-lobed, the middle lobe longest: fls. pink, to 1½ in. long, solitary. Himalayas.

Dàvaei. Ann. or bien. to 4 ft., tomentose: lvs. cordate-ovate, 7-lobed: fls. rose-violet, 2–5 together. Portugal.

insulàris. Low shrub: lvs. with 7 coarsely toothed lobes: fls. yellowish striped with purple, 1½ in. long, solitary. Coronado Isls., Lower Calif.

mauritánica. Ann. to 2 ft., densely tomentose: lvs. orbicular-cordate, 5–7-lobed: fls. violet, darker at base. N. Afr.

Ólbia. Shrub to 6 ft.: lvs. 3-lobed, the middle lobe longest, or lower lvs. 5-lobed: fls. reddish-purple, 1 in. long, solitary, sessile. S. Eu.

ròsea: *L. trimestris.*

spléndens: *L. trimestris* var.

thuringìaca. Per.: lvs. ovate-lanceolate, to 3 in. long or more, 3-lobed, acuminate to acute, base subcordate, margins obtusely serrate: fls. rose-pink, to 2½ in. across, petals retuse. Thuringia.

triméstris (*L. rosea*). Flower-garden ann. to 6 ft.: lower lvs. nearly round, upper ones angled, toothed: fls. rose or red, 4 in. across, solitary. Medit. region. Var. **álba** has white fls. Var. **grandiflòra** is said to have larger rose-pink fls. Var. **spléndens** is an improved garden strain.

LAVAUXIA: *Œnothera.*

LAVENDER: *Lavandula:* see also *Chrysanthemum Balsamita.* **Sea-:** *Limonium.*

LAWN. In horticulture a lawn may be defined as an area of the landscape carpeted with a greensward designed as a foundation setting for buildings, for border planting or for pleasure grounds. The term is usually sufficiently broad to include both grasses and other plants which require clipping and such low-growing carpeters as vinca, moneywort and others. Generally speaking the lawn is a permanent feature and as such is usually composed of perennial plants.

Many types and kinds of plant materials are available for lawns. These must be selected with careful consideration for the nature of the environment into which they are to be introduced.

Kentucky blue-grass is probably the most commonly used lawn grass in northeastern United States and is one of the most desirable when the soil is not too acid (i. e. not below a pH of 6). Contrary to general belief, blue-grasses may be grown on more acid soils than indicated here, provided a high degree of fertility is maintained, but this adds unnecessary costs to maintenance.

Bent-grasses, including redtop, are of the genus Agrostis. They form carpets of very fine texture and are bright green in color. The plants do best in the more acid soils and when grown on neutral or sweet soil they require more food materials for optimum growth than do such grasses as Kentucky blue-grass and hence are often crowded out. Frequent clipping appears to be partly responsible for the fine texture often obtained with these grasses. Redtop (*Agrostis alba*) is the coarsest foliaged of the group and seed is occasionally represented to be that of some of the more costly and more desirable kinds. Like the blue-grasses, the bents do best in the cool rather humid regions of northeastern United States and Pacific coast.

Fescues represent several species of the grass genus Festuca and all are characterized by their fine wire-like leaves and by the fact that the individual plants of all but the red fescue form dense tufts or hummocks which become somewhat undesirable with age. Because of their tough wiry leaves the fescues sometimes present difficulties in clipping. Their chief merit is their ability to compete with tree roots for food and thus they are better able to survive in the shade beneath lawn trees than are many other grasses. Red fescue forms a continuous turf and does well on sandy soils, being used sometimes for putting-greens of golf courses. All the fescues do best in the cooler regions and are best adapted for use in northern United States and Canada.

Bermuda-grass is valuable for pastures and to a lesser extent for lawns, in the southern United States, but is sometimes avoided because of its noxious nature in cultivated areas. In the South it is a coarse perennial turf-forming grass usually spreading readily by underground stems. In these regions it does particularly well in heavy clay soils and responds to moderate applications of lime.

Korean lawn-grass (*Zoysia japonica*), sometimes known as Palm Beach grass, has been introduced from Korea and is adapted to the sandy soils of the warmer regions in the Atlantic and Gulf states. It is said to be hardy as far north as Connecticut. The plant forms a dense uniform turf and spreads by stolons.

The most beautiful lawns, from the point of view of uniformity of texture and color, are those comprised of a single kind of grass. However, when lawns are established from seed, the seed sown usually represents a mixture of several kinds of grasses. There are two reasons for this; one, the sower may be unaware of the kind of grass best suited to the particular environment and trusts that the commercial mixture will contain seed of at least one grass adapted to the environment; or secondly, a particular kind of grass may be selected for the location but seeds of other grasses are purposely mixed to provide short-lived plants to serve as nurse crops to shade and protect the usually more delicate and ultimate turf grass. Both reasons are legitimate, but sowings made because of the latter are likely to be more successful. Four important points should be considered in the selection of a lawn grass or the seeds to be used in a lawn mixture. They are: (1) the region, i. e. the North, where low temperatures are encountered, or the South with its warmer conditions; (2) the alkalinity of the soil; (3) degree of exposure to sunlight; and (4) the more unusual situations, such as exposure to salt ocean-spray or fogs. Lawn mixtures for use in the South may include Bermuda-grass, carpet-grass, St. Augustine-grass or Korean lawn-grass as the main turf crop with about 10 per cent of the weight of the mixture comprised of perennial rye-grass (*Lolium perenne*) as a nurse crop. Mixtures for very acid soils should not contain blue-grass or clover, but are best comprised of the bents or red fescue as the principal ingredient. Here also redtop or perennial rye-grass may be used as a nurse crop. Redtop usually makes a coarser and shorter-lived lawn than do the bents, and either require more care in maintenance than do most blue-grass turfs. Kentucky blue-grass is one of the most widely used grasses in lawn mixtures and is recommended for neutral or alkaline soils. It may be sown alone or any of the usual nurse crops such as redtop or perennial rye-grass may be mixed with it. The incorporation of a light coating of lime into the top soil prior to sowing blue-grass is beneficial unless it is over a limestone substratum. Many lawn grasses do not survive in partial or light shade. The reason for this is more often the inability of the roots to compete for food and water with surface-feeding tree roots than the lack of sunlight for the plants. The production of the lawn turf in partial shade involves three practices: (1) selection of a grass whose sunlight requirements are less, and whose roots are deeper, than most kinds; (2) adequate fertilization of the shade-producing trees or shrubs; and (3) proper thinning and pruning when trees are responsible for the shade. Grasses which do best in shaded situations are red fescue (*Festuca rubra*), wood meadow-grass (*Poa nemoralis*) and rough-stalked meadow-grass (*Poa trivialis*). Many grasses will not survive more or less constant exposure to ocean spray or fogs. However, the creeping and colonial bents may be expected to survive such conditions in the cooler regions.

Plants other than grasses may be used for lawns. Some of these are distinctly superior under situations where the maintenance of a grass lawn becomes difficult, such as dense shade, steep terraces, sandy soils where water is not available and flagstone interstices. Among those plants suitable for dense shade are periwinkle or ground-myrtle (*Vinca minor*), a hardy perennial with glossy dark green persistent leaves and lavender-blue flowers in spring. Japanese spurge (*Pachysandra terminalis*) is excellent when once established. Plants are set at intervals of about 8 inches and the soil is best prepared by adding a liberal mixture of equal parts of leaf-mold, granulated peat and sand plus a quart of bonemeal to every bushel of compost. This mixture should be incorporated into the soil to a depth of at least 10 inches. A peat moss mulch may be used if the basic soil is exceedingly sandy.

English ivy (*Hedera Helix*) is an evergreen runner available in a large assortment of leaf variants. It is excellent where hardy and in its northern limits is best in a northern exposure where not subject to burning from the winter sun. Lily-of-the-valley (Convallaria) thrives in shade and holds its foliage until autumn. Moneywort (*Lysimachia Nummularia*) makes a dense cover flat on the ground and produces yellow flowers during the summer; unfortunately it is likely to escape from the shaded regions and actually become a weed in the remainder of the lawn or in the garden.

Of the plants for steep terraces, periwinkle and English ivy described above are very satisfactory, and for terraces not to be much travelled over, some of the sedums are admirably adapted, particularly *S. dasyphyllum*, *S. hispanicum*, *S. sexangulare*, *S. stoloniferum*, *S. monregalense*, *S. acre* and *S. sarmentosum*. The last two species are likely to escape from the terrace and become weeds in the adjoining lawn or garden. Of the above kinds, *S. stoloniferum* seems best adapted to shady situations. On very sandy and dry terraces the bearberry (*Arctostaphylos Uva-ursi*) does very well, forming a dense glossy evergreen carpet about 4 inches deep. It may be planted in partial shade or full sun.

For dry sandy areas where water is not available for the maintenance of a grass lawn several substitutes have been proposed. The two most satisfactory are the turfing daisy (*Matricaria Tchihatchewii*) and the common yarrow or milfoil (*Achillea Millefolium*). These are spreading fern-like-leaved perennials which form a close tight turf capable of resisting wear and drought. The lawn of the turfing daisy is started by setting out young plants at about 6–8-inch intervals and mowing the tops off after they have become established. A yarrow lawn is often started from seed and in general forms a closer turf than the matricaria. Another substitute for lawn grasses and frequently added to mixtures is Dutch white clover (*Trifolium repens*). This clover aids in preserving a green color throughout the turf during dry periods, but has the drawback of being the chief source of grass-green stains on clothing.

There are many species adapted to planting among the interstices of flagstones. Where the walk or court is not surrounded by a grass turf, such plants may be used as the sandwort (*Arenaria verna*), mazus (*M. japonicus* and *M. reptans*), thyme (Thymus), dwarf and prostrate veronicas, thrifts (*Armeria maritima* and *A. juniperifolia*), sedums (especially *S. dasyphyllum* and *S. hispanicum*), and saxifragas (particularly members of the *S. decipiens* group).

The lawn should be made with the idea of permanence. Therefore, it is essential that time be taken to grade the land properly and to prepare the ground thoroughly before seeds are sown or plants are set. Earth thrown out from a cellar does not grow a good lawn. Care should be taken to make the land deep and loose, so that the grass roots may run far into the soil and not suffer from lack of moisture in a dry time. If the land has not had applications of manure in recent years, it is well to plow in, or to spade in, a liberal quantity of well-rotted litter or similar material. Work this into the ground as deeply as possible. If the hardpan is rather high, it is well to subsoil the area or to trench it (that is, to spade it up two or three spades deep). If the land is apparently not rich in plant-food, it is well to add a dressing of commercial fertilizer to the surface when the grass seed is sown; the fertilizer should provide nitrogen, phosphoric acid, potash, in approximately the proportions 10-6-4, and 15–20 pounds to 1,000 square feet is a good application.

The lawn may be established by following any one of four practices: (1) seeding, (2) setting turf, (3) planting stolons when a stolon-producing grass is selected, or (4) setting out plants where a non-grass type of lawn is desired.

Grass seed should be sown in the cool of the year. The lawn may be seeded in September and the plants thereby become established before winter; or seed may be sown very early in the spring. In newly made lawns, it is a good plan to grade the area thoroughly in autumn, allowing it to settle in the winter in the North; and then, if the surface remains even, to sow the grass seed on one of the late snows in spring. By sowing it on the snow, one can see that it is distributed evenly; and when the snow melts, the seed is carried into the land and does not need covering. In sowing seed it is well to use a mixture of two or more kinds. This may be a commercial mixture of unknown kinds or a self-mixed one consisting of seed of the desired kind of grass plus seed of one or more nurse crops. A nurse crop is a quick germinating perennial grass which serves to shade the more tender turf grass and also as a temporary covering, indicating where the borders are and thereby outlining the area for the lawn-mower to cut. When the seed of the nurse crop is considerably larger and bulkier than that of the turf grass, it should be sown separately to make even distribution. The more commonly used grasses for nurse crops are redtop (*Agrostis alba*) and perennial rye-grass (*Lolium perenne*). The former is sown at the rate of one quart to the acre and about ten times that quantity for the latter. Oats and rye are sometimes used as nurse crops but they are not recommended because of their coarseness and tendency to overshade the turf grass. On hard lands it is well to sow 2 or 3 quarts to the acre of crimson clover seed. The long roots of this plant tend to improve the physical conditions of the soil; and when they decay they leave nitrogen for the grass to use. As crimson clover is annual, it will not do any permanent mischief in the lawn unless it is allowed to go to seed and become weedy.

Sodding rather than seeding is sometimes employed for the making of a lawn, particularly when quick results are desired. This is also a good means of securing the margins of walks and drives and of outlining small subdivisions. Unless the sod is of the right kind, however, and very carefully laid, the results are not good. Sod adapted to the work is that which comes from an old closely grazed pasture. Sod from a sheep pasture is supposed to be specially good. Such sod has been so closely grazed that it has made a dense close mat, and all the weeds have been destroyed. The droppings of the animals also make the ground fertile. The sod should be cut in thin strips, not more than 1½ or 2 inches in thickness. If it is thicker than that it is heavy and bulky to handle, and is not so easily laid. Ordinarily, the sod is cut in strips 10 inches or a foot wide. A board is laid on the sod and the strip is cut along either side of it with a sod-cutter or a sharp spade. Two men then roll up the sod. One stands on the strip of sod with his face toward the man who, with the spade, cuts it loose beneath. As it is cut loose, the man on the strip rolls the sod toward him so that the upper surface is on the inside of the roll. Strips longer than 6 or 7 feet make rolls too heavy to handle with ease.

The sod should be pounded down firmly and evenly, and the ground on which it is laid should, therefore, be freshly worked and loose. A heavy pounder should be used, as a block of wood. It is usually impossible to pound down sod with the back of a spade sufficiently firm unless the earth is very mellow. The sod should be pounded until the top is about level with the surrounding surface. This insures contact with the soil beneath, so that there are no air spaces and no likelihood of drying out. Sod pounded down as firmly as this should grow readily. Water the area before and after sodding. If a sod edging is laid along walks and drives, it should be pounded down an inch or more lower than the surrounding loose land which is seeded, because the loose land will finally settle; otherwise the sod border is likely to be higher than adjacent land after a year or two. If there are uneven shallow places on the sodded area, the depressions may be filled with very loose fine earth, and the grass will grow through it. In dry weather, a newly sodded area may be mulched with a half inch or less of fine loam to protect it from drying.

A modification of sodding is the establishing of a new lawn with stolons. In this case a good sod that has been grown and properly maintained as a lawn turf is removed when the ground is dry. All loose soil is shaken from the pieces which are then cut or shredded into small pieces. These may be stored in a cool place for many days when packed into baskets lined with moist sphagnum moss or burlap. They are planted by sowing or broadcasting them on the graded area. The pieces soon establish themselves, spread, and grow together, covering the area as if it were seeded. It is usually more desirable than seeding because it permits the establishment of a uniform turf taken from selected strains of grass and the resulting turf is acquired in a shorter period of time. Any turf used for stolon production must be maintained absolutely weed-free or the weeds will be spread throughout the new lawn from the start. Grasses suited to this method of propagation are the creeping bents, Bermuda-grass and carpet-grass.

Almost all other ground-covers than grass are established by setting out young plants at rather close intervals.

The maintenance of a grass lawn may be divided into four operations: (1) clipping, (2) watering, (3) fertilizing and (4) weed control.

The lawn should be mown frequently when it is growing rapidly—in spring and early summer. In dry weather and autumn mow less frequently, and let it go into the winter with a good coat of grass. If the lawn is mown as often as is needed, it will not be necessary to rake off the clippings. The clippings should not be collected in a catcher attached to the mower nor raked off the lawn for they serve as a mulch to the grass crowns, aiding considerably to conserve soil moisture during dry periods and eventually decomposing to add humus or organic matter to the soil—an enrichment particularly valuable in sandy and clay soils. In the case of bent-grass lawns the more frequent the mowing the finer the texture of the grass and professional grasskeepers practice daily clipping of such turfs.

In dry times the lawn may be watered; but the common practice of sprinkling lawns is usually injudicious, since the water is not supplied in sufficient amount to wet down very far, and the grass tends to make surface roots; then when the watering is omitted the plants suffer. The more a lawn is sprinkled, the more the grass depends on the sprinkling. If it is necessary to wet the lawn, the water should be allowed to run directly from the hose until the surface area is completely soaked, or merely break its force so that it will not wash away the surface or compact the area. It is best to do this at nightfall. When the water is applied by means of a sprinkler, a large part of it may evaporate. The fundamental treatment of the lawn is to have the land so deep and porous that the grass roots strike deep into the soil and do not need the surface water. A well-made lawn needs watering only in unusually dry times, unless there are many trees.

Many persons take for granted that once a good lawn turf is established the only care required is to keep it clipped and to water it after it browns. The lawn represents a vast collection of living plants established with a view toward permanence. These plants are competing with each other, with other and less desirable kinds of grasses, and with weeds for their very existence and in order to meet such competition successfully they require regular and adequate feeding. Particularly is this true of turfs on sandy or clay soils where leeching occurs or where root growth is more difficult. It is not probable that a permanent, uniform and weedless turf will exist unless systematic feeding or fertilizing practices are followed.

Fertilizing the lawn may be accomplished in two ways: applications of well-rotted stable dressing (preferably cow or sheep manure) in the fall or early spring; or of commercial fertilizers.

The use of stable dressing is no more economical, when it has to be purchased, than a commercial fertilizer of equivalent food value. It has little to recommend it over the commercial fertilizer, provided the lawn clippings are not removed, and has several disadvantages not found with commercial mixtures. Stable dressing is a primary source for the introduction of weed seeds, it is unsightly and often malodorous for an extended period, its use entails a labor expenditure not only for application but also for removal and its food value is highly variable and too often insufficient to meet the demands of the plants.

The use of commercial fertilizers for feeding lawns has increased considerably in recent years. The time for applying fertilizers depends largely on the region: fall fertilization is advisable in southern and moderately temperate localities and spring fertilization in the North where the ground is usually frozen during the winter. Nitrogen is the fertilizer ingredient largely responsible for vegetative plant growth; inasmuch as this is the kind of growth required of lawns, nitrogen is the element most needed. For this reason a high nitrogen fertilizer, as a

10–8–6, is suggested for lawn use. In the South, this may be applied in the fall at a rate of about 400 pounds to the acre. In the North the practice now is to fertilize in early spring. It is suggested that an early application of a 10–8–6 or 10–6–4 fertilizer be given, while the ground is still frozen, at the rate of 300 pounds to the acre. A second application of 200 pounds to the acre may be made in early to mid-May. The mechanics of spreading this smaller quantity may be facilitated by mixing the fertilizer with an equal part of fine sand and distributing this mixture at the rate of 400 pounds to the acre. On large areas a mechanical spreader will give more uniform results than broadcasting by hand. When an added stimulus is desired for the lawn in early summer, an application of nitrate of soda at the rate of 100 pounds to the acre may be advisable. It will be necessary to mix this with twice its volume of fine sand to insure a more uniform distribution; it should be applied just before a rain or followed by a thorough watering in order to prevent burning to the grass.

Bonemeal has long been used as a top dressing for lawns. It is not a complete fertilizer and its use must be supplemented by other materials which are higher in nitrogen. The earlier it is applied in the spring the more quickly available will be its active ingredients. Late spring applications are of little value to the grass plants that season and much is lost by leeching before the next spring arrives. Ground bonemeal should be applied at a rate of about 800 pounds to the acre or 20 pounds to 1,000 square feet. Bonemeal is not recommended for a bent-grass turf as its protracted use may increase the alkalinity of the soil and be deleterious to the turf.

Weeds will probably come up thickly the first season. This is due more to presence of their seeds in the soil than in the lawn mixture. These weeds should not be pulled, for whenever one is pulled out of the ground many grass plants are rooted up and the surface is made uneven. Such weeds should be mown frequently. If prevented from producing seed, they will not appear in any great numbers the second year unless they are perennials or biennials such as dandelion, docks, plantains or winter mustard. One of the best control methods for lawn weeds is to maintain a vigorous turf.

Many kinds of chemicals are advocated for use in lawn weed sprays of which perhaps one of the better and more effective is sodium chlorate. This is a selective spray with the object of eradicating the weeds without causing serious injury to the turf. According to Muenscher's "Weeds," "a dilute solution of 1½ ounces of sodium chlorate in a gallon of water is sprayed on the lawn at the rate of 1 gallon to 100 square feet. This treatment will kill chickweeds, ground ivy, speedwell and other broad-leaved shallow-rooted weeds without permanent injury to the grass. The grass will discolor temporarily, but it will recover after a week or two. If the treatment is made in early spring or late autumn, the injury to the grass will be less evident. This treatment will also kill crab-grass in the seedling stage." Sodium chlorate may become highly inflammable when in contact with organic matter and all equipment for this spray should be thoroughly rinsed after using. It is suggested that the operator wear rubber boots when using the solution, wash them when finished and avoid spilling on the clothes. This spray is not particularly effective on dandelions. The latter have a deep penetrating tap-root and when the leafy rosette is cut off near the surface the cut end of the root produces several new rosettes for the one removed. Dandelions may be eradicated by cutting or spudding the crown at a depth of two inches or more and a drop or two of kerosene or concentrated sulfuric acid on the cut end will insure killing the plant. On large areas a kerosene emulsion spray may be used, or pure kerosene at the rate of 300 gallons to the acre may be applied. Such applications may be made in late summer with several weeks elapsing before positive results are apparent.

The presence of moss in the lawn is not so much an indication of soil acidity as a lack of soil fertility. The inauguration of an adequate fertilizing program as outlined above will correct the moss problem. When the moss is very extensive it may be necessary to renovate the entire lawn.

Seldom does one secure a perfectly good and uniform sod from one sowing; particularly is this true if the soil varies in different parts of the area. If the surface contour is satisfactory, it is unwise to dig up the areas on which the seed has not caught. It is best to rake them over with a steel rake in autumn or spring, applying a little chemical fertilizer rather rich in nitrogen, and sow more seed. Nearly every lawn will need patching in this way from year to year. If the lawn is attended to in fall and spring by sowing grass seed, the weeds will rarely do serious mischief. When weeds are troublesome on the lawn, it means that there is not sufficient grass.

LAWN-LEAF: *Dichondra carolinensis.*

LAWSÒNIA. *Lythraceæ.* One shrub, native probably in Afr. and Asia, now widely distributed in warm countries, grown for ornament and also yielding henna dye. **L. inérmis.** Henna. Mignonette-Tree. To 20 ft.: lvs. opposite, elliptic, to 1½ in. long: fls. small, very fragrant, in many-fld. terminal panicles, from white to rose and cinnabar-red as indicated by the varietal names **álba** and **rùbra**: fr. a small caps.—Propagated by seeds and cuttings.

LAYERS: see *Propagation.*

LÀYIA. *Compositæ.* Early blooming low annuals with alternate entire or pinnately lobed lvs. and solitary terminal heads of yellow or white ray- and disk-fls. in spring or early summer; pappus of scales or bristles or none; native in W. N. Amer. Of easy cult. in the flower-garden. Propagated by seeds sown in the open or started indoors.

Callіglóssa (*Calliglossa* and *Callichroa Douglasii*). To 1 ft., nearly glabrous: lvs. to 3 in. long: rays yellow tipped white; pappus of awns. Calif.

chrysanthemoìdes (*Oxyura chrysanthemoides*). To 14 in., slightly pubescent: lvs. oblong, to 2 in. long: rays yellow tipped white; pappus none. Calif.

élegans. Tidy Tips. To 2 ft., diffusely branching, hairy: lvs. linear, to 3 in. long: rays to ¾ in. long, yellow often white tipped; pappus of hairs and bristles. Calif. Var. **álba** has all white rays.

glandulòsa. White Daisy. To 1½ ft., simple or diffusely branched, hairy and glandular: lvs. lanceolate or linear, 1¼ in. long: heads 1½ in. across, rays white or sometimes tinged rose; pappus of white hairs and scales. B. C. to Ida. and Mex. Var. **heterótricha** (*L. heterotricha*), to 2 ft., rough-hairy.

heterótricha: *L. glandulosa* var.

platyglóssa (*Callichroa platyglossa*). To 16 in., hairy and glandular: lvs. linear: heads to 1¾ in. across, rays yellow tipped white; pappus of bristles. Calif.

LEAD-PLANT: *Amorpha canescens.*

LEADWORT: *Plumbago.*

LEAFLET: one part of a compound leaf; secondary leaf.

LEAF-STALK: the stem of a leaf; petiole; foot-stalk.

LEATHER-JACKET: *Eucalyptus punctata.* **-Leaf:** *Chamædaphne calyculata.* **-Root:** *Psoralea macrostachya.*

LEATHERWOOD: *Dirca.* **Southern:** *Cyrilla racemiflora.*

LEBBEK-TREE: *Albizzia Lebbek.*

LECHENAULTIA: see *Leschenaultia.*

LECYTHIDÀCEÆ. Lecythis Family. Trop. trees or shrubs in both hemispheres, of 18 genera with large alternate simple lvs., regular bisexual polypetalous fls. of striking appearance, having 4–6 sepals and petals, numerous stamens and often a large disk, inferior 2- or more-celled ovary: fr. various, often a large woody caps. or body opening by a lid and known as "monkey pot." Known to hort. chiefly in the Brazil-nut, Bertholletia, and in Barringtonia and Couroupita. Allied to Myrtaceæ. The fruits of *Lecythis Ollaria* and *L. Zabucajo*, known as Paradise and Monkey-Pot nuts, are sold in N. Amer. as novelties after having their fatty meat injected with a perfume such as the attar of roses.

LÈDUM. *Ericaceæ.* Several evergreen low shrubs with alternate entire lvs., small white fls. in terminal clusters in spring, and capsular frs.; petals separate; native in cold parts of the northern hemisphere in sphagnum bogs and damp places, suitable for evergreen borders.

They succeed in sandy peaty moist soil. Propagated by seeds in spring, by layers and division. Plants may also be transplanted from the wild.

columbiànum. To 3 ft.: lvs. oblong, to 2½ in. long, whitish and glandular beneath, slightly revolute. Wash., Ore.

decúmbens: *L. palustre* var.

glandulòsum. To 6 ft.: lvs. ovate to oblong, to 2 in. long, glaucous and glandular-lepidote beneath. Alta. to Calif.

grœnlándicum (*L. latifolium*). Labrador-Tea. To 3 ft.: lvs. oblong, to 2 in. long, rusty-tomentose beneath. N. N. Amer. Var. **compáctum** is a dwarf form.

latifòlium: *L. grœnlandicum.*

palústre. Crystal-Tea. Wild Rosemary. To 3 ft.: lvs. linear or linear-oblong, to 1½ in. long, rusty-tomentose beneath. N. Eu., N. Asia. Var. **decúmbens** (*L. decumbens*) is a decumbent form with small linear lvs. N. Amer., N. Asia.

LEÈA. *Vitaceæ.* Shrubs or small trees, not climbing, native in trop. Asia and Afr., with alternate pinnate lvs., fls. in cymes, and fr. a berry; grown as foliage plants in the greenhouse. They succeed in light loam or peaty soil. Propagated by cuttings. Although allied to grapes (*Vitis*) these plants bear little superficial resemblance to them.

amábilis. Lvs. of 5–7 lanceolate toothed lfts., bronzy-green with white veins and broad white stripe. Borneo. Var. **spléndens,** st. red, lvs. variegated with bright red.

sambucìna. Lvs. 2–3-pinnate, lfts. toothed, tinged with bronze and with rosy veins. Trop. Asia and Australia.

LEECHEE: *Litchi chinensis.*

LEEK (*Allium Porrum*). Onion-like plant, very hardy, grown in the vegetable-garden for eating. The leek is used in cookery, the soft bulb and leaves being employed. It is milder than the onion, and the flavor is distinct. The plant is not known truly wild, and is supposed to be a development from another species of Europe and western Asia. For relationships, see *Allium* and *Onion.*

Leek is a long-season plant. Seeds sown in spring give edible plants for late autumn, winter and spring. Usually the rows or drills are hilled up somewhat to blanch the lower part of the plant. Leeks may stand 4–6 inches apart in the row; for the best results, they should be transplanted to this distance from a seed-bed. Plants may be lifted before hard weather and stored in the cellar like celery, and in many parts of the country they are left in the ground all winter.

LEGUME. Technically, the fruit or pod characteristic of the Leguminosæ, well represented in the garden pea. It is a simple pistil, dehiscent or splitting on both edges or sutures. Many of the pods in the Leguminosæ do not conform in all things to the ideal or pattern structure; some of them are indehiscent. As a general agricultural term, a legume is a plant of the Leguminosæ, as clover, vetch, beans, peas, locust. In French horticultural writing it is a garden vegetable or pot-herb.

LEGUMINÒSÆ. Pea or Pulse Family. A very large family, of about 500 widely distributed genera and several thousand species, furnishing many economic, food and forage plants and numerous ornamental subjects; the family characters are varied but all genera produce a leguminous fr. or true pod; the most familiar section of the family in northern regions is that with papilionaceous or butterfly-like (pea-like) fls. and stamens 10 of which 9 are more or less united into a tube: this section is sometimes separated as Fabaceæ, other sections of the general family being segregated as Cæsalpiniaceæ and Mimosaceæ.

Genera entered here are Abrus, Acacia, Adenanthera, Adenocarpus, Agati, Albizzia, Alysicarpus, Amherstia, Amicia, Amorpha, Amphicarpa, Andira, Anthyllis, Apios, Arachis, Astragalus, Baphia, Baptisia, Barklya, Bauhinia, Bolusanthus, Bossiæa, Brachysema, Brownea, Butea, Cæsalpinia, Cailliea, Cajanus, Calliandra, Calophaca, Calpurnia, Calycotome, Camoensia, Campylotropis, Canavalia , Caragana, Carmichælia, Cassia, Castanospermum, Centrosema, Ceratonia, Cercidium, Cercis, Chorizema, Cicer, Cladrastis, Clianthus, Clitoria, Colutea, Colvillea, Coronilla, Crotalaria, Cytisus, Dalbergia, Dalea, Daubentonia, Daviesia, Delonix, Derris, Desmanthus, Desmodium, Detarium, Dillwynia, Dioclea, Dolichos, Dorycnium, Ebenopsis, Ebenus, Enterolobium, Erinacea, Erythrina, Eutaxia, Flemingia, Galega, Genista, Gleditsia, Gliricidia, Glycine, Glycyrrhiza, Gompholobium, Goodia, Gourliea, Gymnocladus, Hæmatoxylon, Halimodendron, Hardenbergia, Hedysarum, Hippocrepis, Hovea, Hymenæa, Indigofera, Inga, Kennedia, Krameria, Laburnocytisus, Laburnum, Lathyrus, Lens, Lespedeza, Leucæna, Lonchocarpus, Lotus, Lupinus, Lysiloma, Maackia, Medicago, Melilotus, Millettia, Mimosa, Mucuna, Myrospermum, Myroxylon, Neptunia, Notospartium, Olneya, Onobrychis, Ononis, Ormosia, Ornithopus, Oxylobium, Oxytropis, Pachyrhizus, Parkinsonia, Parochetus, Peltophorum, Petalostemon, Petteria, Phaseolus, Phyllocarpus, Pickeringia, Piptadenia, Piptanthus, Pisum ,Pithecellobium, Platymiscium, Podalyria, Poinciana, Pongamia, Prosopis, Psophocarpus, Psoralea, Pueraria, Pultenæa, Rhynchosia, Robinia, Sabinea, Samanea, Saraca, Schizolobium, Schotia, Schrankia, Scorpiurus, Securigera, Sesbania, Sophora, Spartium, Stizolobium, Strombocarpa, Strophostyles, Sutherlandia, Swainsona, Tamarindus, Templetonia, Tephrosia, Thermopsis, Tipuana, Trifolium, Trigonella, Ulex, Vicia, Vigna, Virgilia, Wisteria.

LEIOPHÝLLUM (*Dendrium*). Sand-Myrtle. *Ericaceæ.* N. American low compact evergreen shrubs with small entire lvs., small white or pink fls. in terminal corymbs in spring, and capsular frs.

Suitable for borders and rock-gardens where they should be given a peaty or sandy loam soil. Propagated by seeds in a coldframe and by layers.

buxifòlium. Box S. To 2 ft., much branched: lvs. mostly alternate, ⅛ in. long: pedicels glabrous. N. J. to Fla. in sandy soil; hardy N. Var. **prostràtum** is *L. Lyonii.*

Hùgeri. To 3 ft., much branched: lvs. alternate, ½ in. long: pedicels pubescent. N. C., S. C.

Lỳonii (*L. buxifolium* var. *prostratum*). Allegheny S. Prostrate, densely branched: lvs. mostly opposite, ¼ in. long: pedicels pubescent. Mts., N. C. and Tenn.

LEITNÈRIA. *Leitneriaceæ.* One interesting deciduous shrub or tree to 20 ft., sometimes planted. **L. floridàna.** Corkwood. Lvs. elliptic-lanceolate or lanceolate, to 6 in. long, silky-pubescent beneath: staminate catkins to 1½ in. long. Mo. to Tex. and Fla.

LEITNERIÀCEÆ. Corkwood Family. Only one monotypic genus, Leitneria, comprises this family: lvs. alternate, entire: fls. diœcious, in axillary catkins before the lvs., without perianth; stamens 8–12; ovary of 1 cell containing 1 ovule: fr. a drupe. The systematic position of the family is near the willows and poplars.

LEMAIREOCÈREUS. *Cactaceæ.* Large and tree-like or shrub-like mostly columnar and branching cacti of the Cereus group, rarely low or nearly prostrate, spines commonly many and stout: fls. mostly diurnal, of medium size, bell-shaped or somewhat funnelform and not widely expanded, white to pink: fr. at first covered with spines: Ariz. and Cuba to Venezuela and Peru. Many of the species are planted in the tropics for the edible fr., but are little known in the U. S. outside collections of institutions and fanciers. See *Cacti.*

bavòsus: *L. Hollianus.*

Benéckei (*Cereus Beneckei*). Cylindrical, erect, to 10 ft. tall and 4 in. diam., usually unbranched; ribs 5–9, notched, obtuse; spines red becoming gray, radials 4–6, to 1½ in. long, pointing downwards, central 1: fls. white within, to 1½ in. long. Cent. Mex.—Usually grafted on *Harrisia Jusbertii.*

Cartwrightiànus (*Cereus Cartwrightianus*). To 15 ft., with woody trunk, branches to 2 ft. long and 6 in. diam.; ribs 7–8; spines about 20 and ½ in. long, to 5 in. long on old trunks: fls. white, reddish outside, to 3 in. long. Ecuador.

Chénde (*Cereus Chende* and *del Moralii*). To 20 ft., with short trunk and much branched above; ribs 7–9; radial spines usually 5 and brown or yellow: fls. rose, 1½ in. long. Mex.

Chíchipe (*L. mixtecensis. Cereus Chicipe*). To 15 ft., tree-like with trunk 3 ft. diam.; ribs 9–12; radial spines 6–7 and to 4 in. long; central 1: fls. yellowish-green, small. Mex.

defíciens (*Cereus deficiens*). Tree-like with trunk and many glaucous branches; ribs 7–8; spines about 8 and ½ in. long, grayish tipped black, appressed: fls. 2 in. long. Venezuela.

dél Moràlii: *L. Chende.*

demíxta: listed name.

Dumortièri (*Cereus Dumortieri*). Mostly tree-like, to about 50 ft., but trunk not much exceeding 3 ft. and 1 ft. diam., branches erect and with many constrictions, bluish; ribs usually 6; radial spines 10–20; centrals 1 or more: fls. 2 in. long, white. Cent. Mex.

ebúrneus: *L. griseus.*

Erùca: *Machærocereus Eruca.*

gládiger: a form not known botanically.

gríseus (*Cereus eburneus* and *griseus*). To 20 or 25 ft., sometimes branching from base and sometimes with trunk 1 ft. diam.; ribs 8–10; spines needle-like: fls. nearly 3 in. long, pinkish. Trinidad and other isls., Venezuela.

gummòsus: *Machærocereus gummosus.*

Holliànus (*Cereus Hollianus* and *bavosus*). To 15 ft., simple or branching only at base; ribs 8–12; radial spines about 12; centrals 3–5, to 4 in. long and deflexed: fls. white, 4 in. long. Mex.

Hýstrix (*Cereus Hystrix*). To 30 ft., with short trunk and branches 4 in. diam.; ribs 9–10; radial spines about 10; centrals 3 and to 1½ in. long: fls. white, to 3½ in. long. W. Indies.

lætus (*Cereus lætus*). To 20 ft., much branched; ribs 4–8; spines to 1 in. or rarely 3 in. long: fls. white, 3 in. long. Peru, Ecuador.

marginàtus (*Cereus gemmatus* and *marginatus. Pachycereus marginatus*). Organ-Pipe Cactus. Sts. branching from base, erect, to 25 ft. tall and 6 in. diam.; ribs 5–6, wide and high; spines stout, subulate, radials 7, to ⅛ in. long or less, centrals 1–2, to ⅝ in. long: fls. greenish-white within and reddish outside, campanulate, to 2 in. long. Mex.

mixtecénsis: *L. Chichipe.*

montànus. Tree-like, to 25 ft. tall, trunk to 5 ft. long, without ribs, ultimate branches nearly erect; sts. with about 8 ribs; spines stiff, radials 2–5, central 1, to 1¼ in. long: fls. greenish-white within and reddish outside, to 3 in. long. Mex.

Pitahàya: see *Cereus variabilis.*

pruinòsus (*Cereus pruinosus*). Tall with a trunk, glaucous when young; ribs 5–6; radial spines 5–7; central 1 and 1 in. long: fls. 3½ in. long. Mex. Var. **monstròsus** is listed.

queretaroénsis (*Cereus queretaroensis*). To 15 ft., with short trunk and many branches; ribs 6–8, areoles brown-woolly; spines 6–10 and to 2 in. long: fls. 3 in. long. Mex.

stellàtus (*Cereus stellatus*). To 6 or 10 ft., branching mostly at base, bluish-green; ribs 8–12; radials 10–12; centrals several and mostly longer: fls. about 1½ in. long, narrowly bell-shaped, red. S. Mex.

Tetétzo: probably *Pachycereus Tetetzo.*

Thúrberi (*Cereus Thurberi*). Commonly branching from base, branches often many and to 20 ft. or more and 8 in. diam.; ribs 12–17, areoles becoming waxy; spines many and needle-like to awl-like: fls. to 3 in. long, diurnal, light purple with white margins. S. Ariz., Mex.

Trelèasei (*Cereus* and *Cephalocereus Treleasei*). To 20 ft., simple or slightly branched; ribs about 20; spines short and yellowish: fls. pinkish, 2 in. long. Mex.

Wéberi (*Cereus Weberi. C. candelabrum*). To 30 ft. or more and often with hundreds of erect branches; ribs mostly 10; radials usually 6–12; central long and solitary: fls. to 4 in. long, white. Mex.

LÉMNA. Duckweed. *Lemnaceæ.* Minute floating per. or over-wintering herbs with a disk-shaped green leaf-like thallus that bears 1 rootlet and minute monœcious fls. consisting of only a stamen or a pistil; grown in ponds as a food for fishes. Plants fall to the bottom of the pond in autumn but rise again in the spring.

mìnor. Thallus to ¼ in. long, ovate or orbicular. Cosmopolitan.—Sometimes grown on the surface of aquaria and pools, and more than one species or genus may be involved in such collections, as Spirodela in which the roots are several.

LEMNÀCEÆ. Duckweed Family. Represented in hort. only by the genus Lemna.

LEMON: *Citrus Limonia:* see *Citrus Fruits* (page 184). **-Verbena:** *Lippia citriodora.* **-Vine:** *Pereskia aculeata.* **Water-:** *Passiflora laurifolia.*

LENOPHÝLLUM. *Crassulaceæ.* Succulent per. herbs of S. N. Amer., with opposite fleshy lvs. and yellow fls., drying reddish, in terminal racemes or spikes, or solitary.

elongàtum: *Villadia elongata.*

texànum. Branching near base, to 8 in. high: lvs. very fleshy, obovate to ovate-lanceolate: fls. about ¼ in. across, subsessile, in a spike-like raceme. Tex.

LÉNS. *Leguminosæ.* Herbs with pinnate lvs., the terminal lft. modified into a tendril or short bristle, small whitish papilionaceous fls. solitary or few together in the axils, and flattened pods.

One species is widely cultivated abroad as a cheap and nutritious source of food and the vines are sometimes utilized as forage. Propagated by seeds sown in drills in early spring.

esculénta. Lentil. Ann. to 1½ ft.: lvs. with small lfts. and ending in a tendril: pods broad, to ¾ in. long. S. Eu.

LENTIBULARIÀCEÆ. Bladderwort Family. Aquatic or marsh herbs of wide distribution, of 5 genera or as recently subdivided of about 16 genera: lvs. very diverse: fls. bisexual and irregular, with 2–5-lobed calyx, gamopetalous 2-lipped corolla often spurred, 2 stamens, superior 1-celled ovary: fr. a dehiscent caps. A few genera are grown in moist places and water-gardens, as Pinguicula and Utricularia.

LENTIL: *Lens esculenta.*

LEONÒTIS. Lions-Ear. *Labiatæ.* Ann. and per. herbs or shrubs of Afr., with white, yellow or orange 2-lipped fls. in dense axillary whorls; grown outdoors in S. Fla. and Calif. and in the greenhouse for winter bloom.

In the North cuttings should be made in early spring, the young plants grown in the open during the summer but frequently pinched to secure a symmetrical growth. If the plants do not bloom before frost, they may be cut back when they are lifted, placed in a cool greenhouse and will flower in November or December. They may also be grown from seed.

dùbia. Per. to 3 ft.: lvs. cordate-ovate, to 2½ in. long, toothed, pubescent beneath: fls. orange-yellow, 1½ in. long.

dysophýlla. To 2 ft., shrubby: lvs. ovate-lanceolate, to 3 in. long, toothed, densely yellow-hairy: fls. orange-yellow, to 1½ in. long.

laxifòlia. Per.: lvs. broad-ovate, to 4 in. long, toothed, slightly pubescent: fls. orange-yellow, 1⅓ in. long, the whorls loosely fld.

Leonùrus. Per. to 6 ft.: lvs. lanceolate, 2 in. long, toothed, pubescent: fls. showy, red-yellow or orange-red, in one form white, to 2 in. long, densely hairy.

LEÓNTODON. *Compositæ.* A rather small genus of per. rosette-forming herbs of Eu. and N. W. Asia, closely allied to Taraxacum from which it differs in the pappus being feathery and not simple. One species, **L. autumnàlis,** may be cult. although, like its relative the common dandelion, it may become noxious in the garden, and it is nat. in this country. To 2 ft.: lvs. all in basal rosettes, narrowly oblong, pinnatifid, to 8 in. long, lobes few and narrow, glabrous or nearly so: heads yellow, scapes naked or with 1–2 lvs. at base, often forked into 2 single-headed branches.—For other names listed here see *Taraxacum.*

LEONTOPÒDIUM. *Compositæ.* Several low herbaceous tufted and woolly perennials with entire basal or alternate lvs. and small discoid heads crowded into terminal dense cymes, the subtending bracts often conspicuous and corolla-like; pappus of bristles; native in the mts. of Eu., Asia and S. Amer.

One species, the edelweiss, is grown in the rock-garden or sometimes indoors in pots. It requires deep gritty or sandy loam as the roots travel far. Propagated by division of the old plants, wintering them in a coldframe. When seeds are sown about the first of February, by late spring the plants are large enough to be set in their permanent quarters.

alpìnum (*L. himalayanum. Gnaphalium Leontopodium*). Edelweiss. To 1 ft., white-woolly, creeping by rootstocks: lvs. oblong-lanceolate: heads surpassed by very woolly narrow floral lvs. or bracts. High mts., Pyrenees, Alps, Cent. Asia.

Ámrheinii: hybrid.

himalayànum: *L. alpinum.*

japónicum. Erect to 1 ft. or more, sts. not stoloniferous, simple or somewhat branched toward apex: lvs. elliptic, to ⅜ in. wide at middle, acuminate: heads subtended by elliptic leafy bracts much longer than heads are wide. Japan.

lindávicum. Hybrid between *L. alpinum* and *L. japonicum,* with longer flowering season.

præcox: listed name.

sibíricum. Differs from *L. alpinum* in the oblong-linear often webby lvs. and heads nearly twice as large. Russia.

transylvánicum: hybrid.

LEONÙRUS. Motherwort. *Labiatæ.* Herbs native in Eu. and Asia, usually more or less weedy, with opposite toothed or divided lvs. and small white or pink fls. in dense axillary whorls; sometimes grown in the flower-border. Easily raised from seeds.

Cardìaca. Per. to 5 ft.: lower lvs. to 4 in. across, palmately 3–5-parted, upper oblong-lanceolate, divided or toothed: fls. ⅓ in. long, white-woolly outside. Eu., Asia.; nat. in N. Amer.

glaucéscens. Similar to *L. Cardiaca* but glaucous and with more deeply cut narrower floral lvs. Siberia.

sibíricus. Ann. or bien. to 6 ft.: lvs. to 4 in. long, deeply 3-parted into ovate or lanceolate toothed segms.: fls. red or purple, to ½ in. long, pubescent outside. E. Asia; nat. in N. Amer.

LEOPARD-PLANT: *Ligularia Kaempferi* var. *aureo-maculata.*

LEOPARDS-BANE: *Doronicum, Senecio Doronicum.*

LÉPACHYS (*Ratibida*). Coneflower. *Compositæ.* N. American mostly per. herbs with alternate pinnately divided lvs. and solitary heads of yellow, brownish or purplish ray-fls. and brown globose or cylindric disks; pappus of teeth or none. Grown in the flower-garden or sometimes as ann. bedding plants. Propagated by seed.

columnàris: *L. columnifera.*

columnífera (*L.* and *Rudbeckia columnaris*). To 2½ ft., rough-hairy: lf.-segms. linear: rays yellow, 1 in. or more long, disk columnar. Minn. to Mex. Var. **pulchérrima** (*Obeliscaria pulcherrima*), rays partly or wholly brown-purple.—There is a double-fld. form, making an attractive oblong or nearly globular head.

pinnàta. To 5 ft., rough-hairy: lf.-segms. lanceolate: rays yellow, to 3 in. long, disk oblong. Ont. to Fla. and La.

LEPADENIA: *Euphorbia marginata.*

LEPARGYREA: *Shepherdia.*

LEPÍDIUM. Pepper-Grass. *Cruciferæ.* Ann., bien., per. herbs of widespread distribution largely in temp. regions, some of them sub-shrubby, many of them weedy, one (*L. sativum*) long known as a piquant salad plant: erect more or less branching, glabrous or pubescent: lvs. various, mostly long rather than broad and dentate to pinnatifid: fls. very small, white or greenish, in terminal racemes: fr. a short broad pod or silicle.

alyssoìdes. Per. to 20 in.: lower lvs. pinnatifid, segms. linear, glabrous, upper ones entire, linear: fls. whitish. Utah to Tex. and Ariz.

satìvum. Garden Cress. Glabrous ann., more or less glaucous, to 2 ft.: basal lvs. pinnatifid and toothed, on st. becoming linear and entire. W. Asia; somewhat escaped in N. Amer.—Some cult. forms have curled and crispate lvs. Sometimes called "Upland Cress" in distinction from water-cress, but that name belongs rather with Barbarea. See *Cress.*

LEPÍSMIUM. *Cactaceæ.* One species, **L. crucifórme** (*Rhipsalis cavernosa*), occurring on the rocks along the east coast of Brazil; sts. usually much branched, flat or angled, linear-lanceolate, characterized in part by the presence of a long tuft of white hairs from each areole, and by the white to pinkish short-tubular fls., the latter usually in clusters of 2–5 and about ½ in. long. See *Rhipsalis* for *L. commune.*

LEPTÁLOE. *Liliaceæ.* S. African herbs allied to Aloe, differing in lvs. long, linear and arching, margins minutely spinose-dentate, and smaller fls. in short condensed corymbiform racemes, consisting of 6 free white or rose segms. forming a false tube whose mouth is more or less bilabiate. Cult. as for Aloe except they may require more moisture.

atróvirens. Garden hybrid of which the pollen parent is *Aloe striatula:* to 6 ft. or more high, with yellowish-green fls. tipped dull red.

LEPTANDRA: *Veronicastrum virginicum.*

LEPTARRHÈNA. *Saxifragaceæ.* One per. herb native in wet places, Kamtschatka, Alaska to Wash.; sometimes included in Saxifraga. **L. pyrolifòlia** (*L. amplexifolia*). Sts. leafy: lvs. alternate, leathery, oblong, to 4 in. long, toothed: fls. white, small, in cymes on scape-like sts. to 1½ ft. high.

LEPTASEA: *Saxifraga.*

LEPTINELLA: *Cotula. L. squarrosa* is a listed name.

LEPTOCÈREUS. *Cactaceæ.* W. Indian cacti of varied habit, having prominent ribbed joints, slender spines, and small campanulate fls. with short tube. See *Cacti.*

Leònii (*Cereus Leonii*). Much branched shrub- or tree-like plant to 18 ft. high, the main st. to 1¼ in. diam.; ribs 6–8, crenate, with areoles to ⅝ in. apart; spines 6–12, to 3¾ in. long, yellowish to gray: fls. pink, to 1½ in. long. Cuba.

quadricostàtus (*Cereus quadricostatus*). To 12 ft., with many lateral branches; ribs usually 4, low; spines to 1½ in. long: fls. greenish- or yellowish-white, 1½ in. long. Puerto Rico.

Weingartiànus (*Cereus Weingartianus*). Branches creeping or climbing to 30 ft.; ribs 4–7, areoles ½ in. apart; radial spines 10–12, ½ in. long: fls. 1½ in. long. Hispaniola.

LEPTÓCHLOA. *Gramineæ.* Grasses, ann. or per., with flat lvs. and spikelets in slender racemes forming a long panicle; native in warm and temp. parts of the world; one sometimes raised for ornament. See *Grasses.*

fasciculàris (*Diplachne fascicularis*). Spike-Grass. Tufted ann. to 2½ ft.: lvs. to 8 in. long and 1/12 in. wide, rough: panicles to 1 ft. long, branches erect or ascending. Fla. to Tex. and Mo., W. Indies, Mex., S. Amer.

LEPTODACTYLON: *Gilia.*

LEPTODÉRMIS. *Rubiaceæ.* Deciduous shrubs from Asia, with opposite entire lvs., tubular 5-lobed fls. in axillary head-like clusters, and capsular frs.; one species is fairly hardy in the N. Propagated by cuttings of green wood in summer and by seeds.

oblónga. To 4 ft.: lvs. oval to oblong, to ¾ in. long: fls. violet-purple, ½ in. long. July–Oct. China.

LEPTOGLOTTIS: *Schrankia.*

LEPTÓPTERIS. *Osmundaceæ.* Ferns with dark green very thin fronds clustered at top of stout rhizome, 2–3-pinnate into small linear segms.; sori on under surface of frond; native Australia, New Zeal. and Pacific Isls., and sometimes planted in warm countries.

hymenophylloìdes (*Todea hymenophylloides*). Fronds to 2½ ft. long and 1 ft. broad, on stipes to 1 ft. long. New Zeal.

supérba (*Todea superba*). Fronds to 4 ft. long and 10 in. broad, on stipes to 4 in. long, the lower pinnæ gradually reduced in size. New Zeal.

LEPTOPỲRUM. *Ranunculaceæ.* Ann. herb native in Cent. Asia and sometimes planted in the garden for its fine foliage and fls. **L. fumarioìdes** (*Isopyrum fumarioides*). Erect or much spreading, to 6 or 8 in. high, smooth: lvs. whorled on st., also radical, decompound: fls. white, with 4–5 petal-like sepals and many nectaries, about ⅛ in. across.

LEPTOSIPHON: *Gilia.*

LEPTOSPÉRMUM (*Fabricia*). *Myrtaceæ.* Attractive shrubs or small trees native in Australia, New Zeal. and Malaya, having alternate simple lvs., white or pink or red fls. solitary or 2–3 together, and fr. a leathery caps.

Leptospermums are planted out-of-doors in the South, particularly in California, and sometimes in the greenhouse. *L. lævigatum* is extensively employed for the reclamation of moving sands. In the greenhouse plants should be kept cool till February or March and then given a temperature of 55–60°. Propagated by seeds in spring, cuttings under glass in May, or mature cuttings in autumn. They make excellent shrubbery in regions where hardy.

Chápmannii: *L. scoparium* var.

ericoìdes. To 60 ft.: lvs. to ½ in. long, acute: fls. to ¼ in. across, borne profusely. New Zeal.

flavéscens. Tall shrub: lvs. usually ½ in. or less long, obtuse: fls. white, about ½ in. across. Australia.

flexuòsum: *Agonis flexuosa.*

grandiflòrum: *L. scoparium* var.

lævigàtum. Australian Tea-Tree. To 30 ft.: lvs. to 1 in. long and ½ in. broad, obtuse: fls. white, to ¾ in. across. Australia. Vars. **compáctum** and **variegàtum** are listed.

lanígerum: *L. pubescens.*

Níchollsii: *L. scoparium* var.

pubéscens (*L. lanigerum*). Tall shrub or tree, often woolly or silky: lvs. usually ½ in. and less long, obtuse: fls. white, to ¾ in. across. Australia.

Reèvesii: listed name.

scopàrium. To 18 ft. or sometimes 25 ft., or in dwarf forms only a ft. or two, young parts silky: lvs. ½ in. or less long, acute: fls. white, to ½ in. across, among the foliage. Australia, New Zeal. Very variable. Var. **bullàtum** has larger lvs. and fls. Var. **Chápmannii** has bright rose fls. and brownish lvs. Var. **grandiflòrum** (*L. grandiflorum*) has large pink or nearly white fls. Var. **juniperìnum** has narrow lvs. and drooping branchlets. Var. **Níchollsii** has bronzy lvs. and carmine fls. (name first published *Nichollii* but subsequently corrected). Var. **ròseum** has rose-pink fls. Var. **rùbrum** has dark red fls.

spinéscens. Stiff shrub with spiny branchlets: lvs. to ½ in. long, obtuse: fls. solitary. W. Australia.

LEPTOSÝNE. *Compositæ.* Ann. and per. glabrous herbs or subshrubs, some of them very fleshy, with mostly alternate lvs. divided into narrow segms., and bright yellow long-stalked heads of ray- and disk-fls.; native to S. W. U. S. Although still kept distinct by horticulturists, largely because of the succulent nature of some of the kinds, Leptosyne is by botanists included in Coreopsis, where the consultant may look for the names. The succulent feature does not hold uniformly and the technical characters do not really separate the group from Coreopsis.

LEPTOTÆNIA. *Umbelliferæ.* W. American per. herbs with fusiform roots, compound lvs., and small yellow or purple fls. in compound umbels: allied to Ferula and Peucedanum, differing in the fr. not winged. Propagated by seed or division and adapted to rockery or hardy border.

purpùreum. To 14 in.: lvs. pinnatisect, the segms. linear to filiform, glabrous: fls. purple, in 8–20-rayed umbels to 6 in. across: fr. to 1 in. long and ½ in. wide. Columbia River region of Ore. and Wash.

LÉPTOTES. *Orchidaceæ.* A genus of small epiphytic orchids native of Brazil, with short monophyllous sts., thick lvs., and 1- to few-fld.

terminal infl. with sepals and petals similar and lip 3-lobed. For cult. see *Orchids*.

bícolor (*Tetramicra bicolor*). Lvs. to 4 in. long, recurved, channelled: peduncle short, 1–3-fld.; sepals and petals white; lip with side lobes white or green and mid-lobe purple with white tip. Mar.–May, Nov.

LESCHENAÙLTIA (or *Lechenaultia*). *Goodeniaceæ*. Australian heath-like herbs or shrubs with linear entire lvs. and yellow, red or violet fls. solitary or in corymbs; may be grown out-of-doors in Calif.

bíloba. Shrub to 3 ft.: lvs. to ½ in. long: fls. blue, to 1 in. long, the lobes spreading and dark blue veined wings.

floribúnda. Shrub to 3 ft.: lvs. to ⅓ in. long: fls. white or blue, rarely violet or yellow, to ⅔ in. long, the lobes spreading and wings not veined.

linarioìdes. Prostrate shrub to 4 ft., sts. usually incurved at ends: lvs. slender, to ⅝ in. long, acute: fls. greenish-yellow and reddish, to 2 in. across, terminating short twigs or sessile in upper axils and forming a terminal leafy corymb: caps. curved, to 1½ in. long.

LESPEDÈZA. Bush Clover. *Leguminosæ*. Many herbs or subshrubs with trifoliolate lvs., papilionaceous fls. or sometimes the fertile fls. without petals, and flat pods consisting of only 1 fertile joint; native in N. Amer., Asia and Australia.

The ornamental species are hardy North and thrive in any upland soil. Propagated by division or *L. formosa* by greenwood cuttings under glass. *L. striata* is grown as a hay and green-manure crop in the South. Seed of it should be sown early in spring.

albiflòra: *L. Thunbergii* var.

bícolor (*Desmodium bicolor*). Shrub to 10 ft.: lfts. oval: fls. purple, the calyx-lobes blunt, in racemes. July–Oct. Japan. Var. **álba,** fls. white.

Buérgeri. Similar to *L. Thunbergii* but with elliptic-ovate more pubescent lfts. and purple to white fls. in shorter racemes. July–Sept. Japan. Var. **prǽcox** is *L. Maximowiczii*.

capitàta. Per. to 5½ ft., silvery-pubescent: lfts. oblong: fls. yellowish-white with purple spot on standard, in dense heads. Ont. to Fla. and La.

chinénsis: *Campylotropis macrocarpa*.

ciliàta: *Campylotropis macrocarpa*.

cuneàta (*L. sericea*). Subshrub to 3 ft.: lfts. linear-oblong to linear, obtuse, to ¾ in. long, pubescent beneath: fls. white, to ¼ in. long, in dense axillary clusters to 1 in. long: pod rarely to ⅛ in. long. China and Japan.—Cult. as forage plant.

Dàvidii. Shrub to 7 ft., stout, sts. villous: lfts. obovate to elliptic, to 3 in. long, obtuse, entire, villous beneath: fls. reddish-purple, in axillary racemes: calyx and pod villous. China.

formòsa: *L. Thunbergii*.

japónica (*Desmodium japonicum*). Similar to *L. Thunbergii* but fls. pure white. Japan.

macrocárpa: *Campylotropis macrocarpa*.

Maximowíczii (*L. Buergeri* var. *præcox*). Shrub to 12 ft.: lfts. elliptic-ovate, to 2 in. long, silky-pubescent beneath: fls. purple, in racemes to 3 in. long. Korea.

penduliflòra: *L. Thunbergii*.

rèpens. Creeping Bush C. Trailing per. with sts. to 2 ft. long: lfts. oval to obovate, to ¾ in. long: fls. violet-purple, to ¼ in. long, few in loose open infl., Aug.–Sept.: pod orbiculate, to ⅛ in. long, finely pubescent. Conn. to Minn. south to Fla. and Tex.

ròsea: listed name.

serícea: *L. cuneata*.

Sièboldii: *L. Thunbergii*.

stipulàcea: *L. striata*.

striàta (*L. stipulacea*). Japan Clover. Ann. to 1½ ft.: lfts. small and numerous: fls. pink or purple, small, axillary. China, Japan; nat. in N. Amer.

Thúnbergii (*L. formosa. L. penduliflora. L. Sieboldii. Desmodium penduliflorum*). Per. herb or subshrub to 10 ft.: lfts. elliptic: fls. rose-purple, the calyx-lobes long-pointed, in long drooping racemes. Sept.–Oct. Japan. Var. **albiflòra** has smaller lfts. and smaller white fls. with violet markings.

violàcea. Per. to 3 ft.: lfts. oval ar oblong: fls. violet-purple, small, in few-fld. clusters. N. H. to Fla. and Mex.

LESQUERÉLLA. *Cruciferæ*. Small ann. and per. grayish herbs, mostly in W. N. Amer., with the look of Alyssum: lvs. simple, in per. species usually in rosettes as well as on the st.: fls. small but often showy because of numbers, commonly yellow: fr. a short more or less inflated pod.

argéntea. Silvery Bladder-Pod. Bien. or per. to 1½ ft., stellate-pubescent, not much branched: lvs. linear to oblanceolate, to 3 in. long, usually entire: fls. yellow, to ⅓ in. across: pods globose to ovoid, to nearly ¼ in. long. Minn. to Wyo. and Ariz.

condensàta. To 2 in. tall, many-stemmed: lvs. spatulate, to ¾ in. long: fls. on erect pedicels: pods ovoid, somewhat compressed. Mont. to Wyo.

Éngelmannii. Per., cespitose, to 1½ ft.: lower lvs. oblanceolate, upper ones narrow: fls. yellow, in corymbose clusters. Tex., New Mex., Colo.

globòsa. Ann. to 1½ ft.: lvs. obovate to linear, to 1½ in. long, entire or wavy-toothed: fls. yellow, ¼ in. long: pods globose. Ky. to Kans.

spatulàta. To 4 in.: basal lvs. oblanceolate-spatulate, st.-lvs. linear, to 1 in. long, few: fls. yellow with spatulate petals, on curved pedicels. Neb. to Mont. and Man.

stenophýlla. Per. to 8 in.: lvs. oblanceolate or linear: fls. in short racemes: pods globose. Colo. to Tex. and N. Mex.

LESSÍNGIA. *Compositæ*. W. American ann. herbs with small yellow, purple or white heads composed of both ray- and disk-fls., the former often inconspicuous and marginal disk-fls. much enlarged: fr. an achene with scabrous bristly pappus. Propagated by seed.

leptóclada. To 2 ft., tomentose, branched above, branchlets very slender: lvs. ovate to lanceolate, acute to mucronate, lowest ones usually dentate: heads purple to white, in paniculate infl. Open mountainous slopes, Calif.

LETTSÒMIA. *Convolvulaceæ*. A good number of climbing shrubs of trop. E. Asia and trop. Afr., allied to Argyreia, one of which has been intro. in S. Fla. **L. capitàta** (*L. strigosa*) is a tall hairy twiner: lvs. nearly orbicular, cordate, 5 in. long: fls. purple, 2 in. long. India.

LETTUCE (*Lactuca sativa* and vars.). Leading salad vegetable, grown for its developed thin radical leaves and in one odd race for the thick edible stem. See *Lactuca*.

Lettuce is a hardy annual of simple culture, but the best results are obtainable only with well-selected strains and on suitable open moisture-holding soil. The plant must grow rapidly and continuously to produce a good crop of tender leaves, but heading is usually better if the growth rate is not too rapid. In the highly developed varieties the leaves form a dense rosette or clump, known as the head or cabbage lettuces in contradistinction to the leaf or loose lettuces in which the basal leaves are hardly consolidated into a ball or head; sometimes the leaf lettuces are crisped and curled. The Cos lettuces, known in Romaine salad, are summer varieties with leaves aggregated into an erect oblong head or column, the leaves being mostly long-oblong rather than the usual broad type. A kind little known in this country and which would hardly pass as a lettuce is the so-called Asparagus lettuce, grown for its long thick main stem before the plant goes to seed; the leaves are long and narrow and tapering to the point; it may be grown to some extent in this country by the Chinese and perhaps by Europeans.

Large areas are now devoted to lettuce for the general market, under intensive methods both as to growing and handling. Muck lands are well adapted to the crop. This large-area growing requires special experience, and is not covered in the present entry.

Lettuce seed is commonly sown in a seed-bed, either under glass or in the open ground. From this bed the little plants are transferred to their permanent positions 6–12 inches apart in rows far enough asunder to allow of hand tillage; or they may be set closer and thinned as they grow. Lettuce plants that are crowded do not produce the firm rosettes of good substance that the best markets or the best tastes demand.

As lettuce soon runs to seed, particularly in warm weather, only a small space should be grown at each sowing for home use, and the sowings may be made every week or two until summer approaches; and some varieties do well in warm weather. The Cos lettuces are summer varieties but do not thrive in the hot suns and soils in most parts of North America. As a rule, 5 to 8 feet of row supplies sufficient lettuce to each person for each sowing. Head lettuces are more difficult to bring to perfection than the ordinary loose lettuces, unless one has soils and conditions specially adapted. Soils for lettuce should be fertile and well-drained, of the kind known as "quick." The crop is better if cut in the morning before the plants have become soft, and care should be taken not to expose it to the sun. Lettuce is soon ruined by careless cutting and handling.

Lettuce is usually followed by a succession-crop, as cabbages, celery, late beets, snap beans; and sometimes it is grown as a companion-crop along with early cabbages, cauliflowers or other longer-season plants. Good lettuce should be had for the table in six to eight weeks from the sowing, and the thinnings may be used still sooner.

Lettuce does well in hotbeds and in forcing-houses. The forcing of lettuce has come to be a special industry, for the understanding of which the reader should go to treatises written for the purpose.

LETTUCE, WATER-: *Pistia Stratiotes.*

LEUCADÉNDRON. *Proteaceæ.* Trees and shrubs of many species in S. Afr., with entire coriaceous lvs., staminate fls. in terminal sessile heads, pistillate in terminal cone-like heads and subtended by woody bracts, and fr. a nut; grown out-of-doors in Calif. and rarely under glass in the N. Propagated by seeds.

argénteum. Silver-Tree. Tree to 30 ft.: lvs. lanceolate, to 6 in. long, sessile, densely covered with silvery silky pubescence: staminate heads to 2½ in. across, the fruiting heads large and heavy.

plumòsum. Shrub to 7 ft.: lvs. linear or linear-lanceolate, to 2½ in. long, pubescent: staminate heads ½ in. long, the pistillate to 1¾ in. long.

Stokœi. Lvs. oblong or oblong-lanceolate, to 3½ in. long, glabrous: staminate heads surrounded by brown bracts, 1 in. across.

venòsum. Shrub to 4 ft.: lvs. oblanceolate, to 3¼ in. long, glabrous: staminate heads 1 in. across.

LEUCÆNA. *Leguminosæ.* Trees and shrubs with 2-pinnate lvs., white fls. in globose heads, and flattened broadly linear pods; one species grown in warm countries for ornament, the edible pods and seeds, and for timber. Native in warm parts of Amer. and Pacific Isls.

glaùca. White Popinac. Tree to 30 ft. with acacia-like foliage: fl.-heads 1 in. or more across: pods to 6 in. long. Tropics, but nat. in Fla. and elsewhere.

LEUCANTHEMUM: *Chrysanthemum.*

LEUCERIA: *Leucheria.*

LEUCHÈRIA (*Leuceria*). *Compositæ.* Ann. and per. more or less white-woolly herbs of S. Amer., one sometimes grown in the flower-garden: lvs. entire, lobed or dissected: heads small, with rays, paniculate or long-stalked: pappus mostly plumose, united at base. **L. senecioìdes** is a gray diffuse ann. to 1½ ft.: lvs. small and narrow, irregularly sinuate-pinnatifid with sharp points, sessile and clasping: heads many, ¼–½ in. across, rays white. Chile.

LEUCHTENBÉRGIA. *Cactaceæ.* One small simple or tufted cactus native in Mex. **L. príncipis.** To 8 in. high and 2½ in. diam., with large tap-root; tubercles to 5 in. long and somewhat 3-angled and very woolly in axils, areoles on ends of tubercles; radial spines 8–14 and papery; central spines 1–2 and to 4 in. long: fls. near center of plant, yellow, fragrant, to 4 in. across.

LEUCOCASIA: *Colocasia.*

LEUCOCORỲNE. *Liliaceæ.* Bulbous herbs native in Chile, with basal lvs. and fls. in bracted umbels terminating the scape; cult. as for *Ixia.*

ixioìdes (*L. odorata*). To 1 ft.: lvs. 1 ft. long: fls. white or pale blue, in 4–6-fld. umbels.

odoràta: *L. ixioides.*

uniflòra: *Brodiæa uniflora.*

LEUCOCRASPEDIUM: *Frasera.*

LEUCÓCRINUM. *Liliaceæ.* One rhizomatous herb native from Neb. to Calif. and Ore., without true st., grown for its spring bloom. **L. montànum.** Sand- or Star-Lily. Fls. pure white, fragrant, with a tube 1 to 4 in. long, borne near surface of ground in clusters.—Sometimes transferred to gardens.

LEUCÓGENES. *Compositæ.* About 3 species of New Zeal. per. herbs resembling Leontopodium, but differing in the fl.-heads.

grándiceps. To 8 in., sts. woody at base, branched, decumbent: lvs. in rosettes, oblong-spatulate, to ⅛ in. long, silvery-tomentose, obtuse, tips recurved: heads silvery-white, congested into dense glomerule which is subtended by broadly ovate bracts.

Leontopòdium. Differs from above in lvs. linear-oblong, to ¾ in. long, tips erect, and glomerule subtended by lanceolate bracts.

LEUCÒJUM. Snowflake. *Amaryllidaceæ.* Several small bulbous herbs with basal lvs. and white fls. tinged with red or green, solitary or in umbels at top of hollow scape, the perianth-segms. distinct. Hardy and should remain undisturbed for a number of years. Plant 3 in. deep in well-drained soil.

æstìvum. To 1 ft.: lvs. to 1½ ft. long and ½ in. wide: fls. white tipped with green, ¾ in. long, on long drooping pedicels, 2–8 together, in late spring. Cent. and S. Eu.

autumnàle. To 9 in.: lvs. thread-like, after fls.: fls. white tinged with red, ½ in. long, on long drooping pedicels, 1–3 together, in autumn. Medit. region.

vérnum. To 1 ft.: lvs. to 9 in. long and ½ in. wide: fls. white tipped with green, ¾ in. long, on short somewhat drooping pedicels, solitary, in early spring. Cent. Eu. Var. **carpáthicum,** fls. tipped with yellow. Var. **Vágneri,** fls. in 2's, early.

LEUCOPHÝLLUM. *Scrophulariaceæ.* Shrubs native in Tex. and Mex., with alternate entire silvery-tomentose lvs., solitary axillary fls. with tube and 5-lobed limb, and capsular frs.; one is grown as a low ornamental hedge plant in its native region and sometimes as a lawn plant.

texànum. To 8 ft.: lvs. obovate, to 1 in. long: fls. bell-shaped, violet-purple, 1 in. across. Var. **glaùcum** is listed.

LEUCOPHYTA: *Calocephalus Brownii.*

LEUCOPÒGON. *Epacridaceæ.* Shrubs or small trees, mostly Australian but some occurring from Malasia to New Zeal., nearly 150 species: lvs. alternate, scattered or imbricate: fls. small, white to pink, usually in axillary or terminal spikes, corolla funnelform to campanulate: fr. a drupe.

Fràseri. Low spreading shrub to 6 in., branches decumbent, erect or ascending: lvs. obovate- to linear-oblong, to ⅓ in. long, closely imbricated and erect, pungently pointed, glossy above. fls. pinkish, to ½ in. long, axillary solitary, fragrant: fr. yellowish-orange, to ⅓ in. long, broadly oblong, edible. Australia, Tasmania and New Zeal.

LEUCOSPÉRMUM. *Proteaceæ.* Erect or procumbent S. African shrubs with crowded, entire, leathery, hairy lvs. and yellow or reddish fls. in solitary or clustered bracteate heads; perianth tubular, with 2–4 lobes, stamens 4, inserted at base of limb, ovary sessile, 1-ovuled: fr. a whitish nutlet. A few species may be grown in the warmer parts of Calif.

incìsum. Lvs. oblong, to 2½ in. long, deeply 6–7-toothed toward apex, densely crowded and concealing the st.: fls. in heads, sessile, 2½ in. long and nearly as wide.

refléxum. Lvs. oblong, to 1½ in. long, 3-toothed or entire, crowded but st. partially exposed: heads on stout peduncle, 2½ in. long.

LEUCÓTHOË. *Ericaceæ.* Interesting deciduous and evergreen shrubs of wide distribution in N. Amer., Asia, S. Amer., Madagascar, with alternate short-stalked finely toothed lvs., small fls. in terminal and axillary racemes or panicles in spring, and capsular frs.

The species require protection in the North. They thrive in a moist soil of peat and sand Propagated by seeds under glass in sphagnum and sand and seedlings set out-of-doors, by division, by cuttings and underground runners. Plants may be readily transplanted from the wild.

acuminàta: *L. populifolia.*

axillàris. Closely resembling *L. Catesbæi* but with abruptly acuminate shorter stalked and more remotely serrulate lvs. Va. to Fla. and Miss.

Cátesbæi (*Andromeda Catesbæi*). DROOPING L. To 6 ft., evergreen: lvs. ovate-lanceolate to lanceolate, to 7 in. long, shining: fls. white, in racemes to 3 in. long. Apr.–May. Va. to Ga. and Tenn.

Dàvisiæ. To 3½ ft., erect, evergreen: lvs. ovate to ovate-oblong, to 3 in. long, glossy dark green, glabrous, short-petioled, margins usually serrulate at least toward apex: fls. white, urn-shaped, nodding, to ⅓ in. long, short-pedicelled, in showy erect terminal panicles 2-4 in. long. Ore. to Calif.

Grayàna. To 3 ft., partially evergreen: lvs. elliptic to obovate, to 3 in. long., ciliate: fls. whitish or pinkish, in racemes to 4 in. long. July–Sept. Japan.

Keìskei. Erect evergreen shrub to 3½ ft.: lvs. ovate to ovate-oblong, to 3 in. long, glabrous, somewhat crenate-serrate: fls. white, small, in pendulous terminal axillary racemes to 1½ in. long. Japan.

populifòlia (*L. acuminata*). To 12 ft., evergreen: lvs. lanceolate or ovate-lanceolate, to 4 in. long: fls. ⅓ in. long, in few-fld. racemes. S. C. to Fla.

racemòsa (*Eubotrys racemosa. Andromeda racemosa*). SWEETBELLS. Six–12 ft., deciduous: lvs. oblong to ovate or elliptic, to 3 in. long, pubescent beneath at least on veins: fls. white or light pink, cylindric, to ⅓ in. long. Moist places and swamps, Mass. to Fla. and La.

recúrva (*Eubotrys recurva*). REDTWIG L. To 12 ft., deciduous: lvs. oval or elliptic, to 4 in. long: fls. white, in curved racemes to 4 in. long. Apr.–June. Va. to Ga. and Ala.

LEÙZEA. *Compositæ.* Per. or bien. herbs with basal or alternate lvs. and purple heads of disk-fls.; pappus plumose; native in Eu., Afr., Australia. Sometimes grown for ornament.

conífera (*Centaurea conifera*). Per. to 1 ft.: lvs. lanceolate, entire or pinnatifid, white-tomentose beneath: heads solitary, cone-like, to 2 in. long, with showy blunt splitting scales. S. Eu.

LEVÍSTICUM. *Umbelliferæ.* One per. herb grown for the aromatic frs. which are used in confectionery and also for its striking ornamental character. **L. officinàle** (*Hipposelinum Levisticum*). LOVAGE. To 6 ft.: lvs. ternately compound, the segms. coarsely toothed above the middle: fls. greenish-yellow, in compound umbels subtended by narrow deflexed bracts. S. Eu.; nat. Va. to Pa.—Propagated by seeds and division of the root.

LEWÍSIA. *Portulacaceæ.* Fleshy per. herbs with thick starchy roots which are sometimes eaten, basal lvs. in rosettes, white, rose or red fls. borne on scapes, and capsular frs.; native in W. N. Amer.

Lewisias are planted in rock-gardens and succeed in a deep loose gritty soil made up of about 1 part earth, 2 parts peat moss and 3 parts very coarse sand. The plants do best in situations which are moist during the spring when foliage and flowers are produced, and dry in the summer. Deciduous species (*L. brachycalyx, nevadensis, oppositifolia, rediviva*) thrive in the sun. The flowers are produced early in spring. During the summer leaves mature and roots lie dormant. Evergreen species (*L. columbiana, Cotyledon, Howellii, Tweedyi*) have rosettes of fleshy persistent leaves and perhaps are more hardy. They require good drainage, and a collar of chipped stone to a depth of 1 inch about the crown is desirable. Plant in partial shade, except in damp regions where full sun is desirable. Best effects are obtained when several of a kind are planted in a group rather than singly. Propagated by seeds or division of roots in spring. Storage of seeds at low temperature for three to four weeks before sowing improves and hastens germination.

bernardìna is considered distinct from *L. nevadensis* in the trade because of its somewhat diminutive habit, but by most authorities is treated as synonymous with *L. nevadensis*.

brachýcalyx (*Oreobroma brachycalyx*). Lvs. deciduous, spatulate or oblanceolate, to 3 in. long, in rosettes, somewhat fleshy: fls. white, to 2 in. across, solitary on scapes to 2 in. high, usually 2 ovate bracts on scape next to calyx. Utah, N. Mex., Ariz., S. Calif.

columbiàna. Lvs. linear-spatulate, to 2 in. long, persistent: fls. white or pink veined with red, ⅓ in. long, in panicles on scapes to 1 ft. high. Mts., Ore., Wash. Var. **aurantìaca,** listed as having pale orange fls. Var. **insulàris,** said to be a dwarf form. Var. **ròsea,** fls. rose. Var. **strícta** is listed.

Cotylèdon. Lvs. spatulate, to 3 in. long, persistent: fls. white veined with pink, ½ in. long, in panicles on scapes to 10 in. high. Calif. Var. **shastaénsis** is listed as having narrower lvs. in smaller rosettes, fls. very pale pink, striped with rose.

Eastwoodiàna. Lvs. spatulate, to 3 in. long, bright green: fls. white with rose anthers, ¼ in. long, in many-fld. branching panicles on scapes to 8 in. high. Ore.—Plants develop a somewhat thickened aerial st. with age.

Fínchii. Lvs. to 4 in. long and 1½ in. wide, persistent: fls. pink margined with white, in many-fld. cymes on scapes to 1 ft. high. Calif.

Héckneri (*Oreobroma Heckneri*). Lvs. spatulate, to 3 in. long, very fleshy and with fleshy teeth, keeled at base, purplish beneath, persistent: fls. rose-red, ¾ in. long, in panicles on scapes about 4 in. high. N. Calif. Var. **élegans** has larger lvs., fls. more abundant and larger. Var. **mìnus** is listed.

Howellii. Lvs. oblong to ovate, persistent: fls. deep rose, ½ in. long, in cymes on scapes to 6 in. high. Ore. Var. **crenulàta** is listed as having lf. margins strongly wavy. Var. **Íngramii** is listed. Var. **longifòlia** has narrower lvs. with fls. lemon-yellow to pale pink on longer scapes. Var. **mariàna** is listed as having dark green lvs. and yellow and white fls. tinged pink. Var. **Míllardii** is said to have fls. of *L. Finchii.* Var. **mìnus** is listed.

Leàna. Lvs. narrow-linear, to 2½ in. long, persistent: fls. red, ¼ in. long, in panicles on scapes to 9 in. high. Ore., Calif.

mariàna: *L. Howellii* var.

mínima. Lvs. to 2 in. long, narrow-linear: fls. white, on a 2-bracted scape usually not exceeding the foliage. Yellowstone.

nevadénsis. To 4 in., the scape with pair of bracts near middle, from a fleshy tuber-like root: lvs. linear, to 2½ in. long, surpassing the scapes, deciduous: fls. white, solitary. Utah, Calif. to Wash.

oppositifòlia. Lvs. linear, to 3 in. long, deciduous: fls. white or pink, ½ in. long, in 2–4-fld. umbels on scapes to 8 in. high. Calif. Var. **Rícheyi** is listed as being dwarf and more floriferous.

Púrdyi: listed name.

pygmæa. Lvs. linear, to 2 in. long: fls. white, ¼ in. long, on scapes to 2 in. high. Sierra Nevada and Rocky Mts.

redivìva. Bitter-Root. Lvs. fleshy, linear, 1 in. long, deciduous: fls. rose or white, to 1 in. long, on scapes to 2 in. high. B. C. to Rocky Mts.

ròsea: *L. columbiana* var.

rupícola: plants under this name may be *L. columbiana* var. *rosea.*

triphýlla. To 4 in. high, from a globular corm, the scape partly underground: fls. white, in an umbel subtended by 2 or 3 narrowly linear lvs. Ida., Wash. to Calif.

Tweèdyi. To 4 in. or more, from a very thick root: lvs. fleshy, obovate, to 4 in. long, persistent: fls. salmon-pink, nearly 2 in. across, 1–3 on scapes that more or less surpass the lvs. Wash.

Whìteæ. To 1 ft.: lvs. spatulate, to 3 in. long, deep green, glabrous: fls. salmon-rose with darker veins. Ore.

LEYCESTÈRIA. *Caprifoliaceæ.* Himalayan deciduous shrubs with opposite lvs., funnelform 5-lobed fls. in leafy-bracted spikes, and fr. a berry; one species grown out-of-doors in S. U. S. and in protected places N. Propagated by seeds and cuttings.

formòsa. Himalaya-Honeysuckle. To 6 ft.: lvs. cordate-ovate to ovate-lanceolate, to 7 in. long: fls. purplish, ¾ in. long, the bracts purple, in drooping spikes to 4 in. long. Aug.–Sept.

LIÀTRIS (*Lacinaria*). Blazing Star. Gay-feather. Button Snakeroot. *Compositæ.* Per. herbs of strikingly strict habit, although sometimes sparingly branched, usually tuberous at base, with alternate narrow entire lvs. and rose-purple or white heads of disk-fls. borne in spikes or racemes, in late summer and in autumn; pappus of bristles; native in N. Amer. and often transplanted to the wild-garden and border. Propagated by seeds, division of the clumps, and some species by offsets.

acidòta. To 2 ft.: lvs. linear-filiform, punctate, glabrous: heads of 4–6 purple fls. in dense spikes to 6 in. long. Mo. to Kans. and Tex.

callílepis: plants bearing this name are referable to *L. spicata* or to *L. scariosa.*

Chápmanii. To 2 ft.: lvs. linear, to 4 in. long: heads ½ in. long, of about 3 purple fls., in dense spikes. Ga. south.

cylindràcea. To 1½ ft.: lvs. linear, to 8 in. long: heads to 1 in. long, of 15–60 purple fls., in loose spikes. Ont. to Mo.

dùbia: *L. graminifolia* var.

élegans (*Eupatorium speciosum*). To 4 ft.: lvs. linear, to 6 in. long: heads ½ in. long, of 4–5 white fls. and rose-tipped petal-like inner bracts, in dense spikes to 1½ ft. long. Va. to Fla. and Tex.

fruticòsa: *Garberia fruticosa.*

grácilis. To 3 ft., sts. pubescent: lvs. lanceolate, upper reduced to bracts: heads ¼ in. long, of 5–15 purple fls., in racemes. Ga., Fla., Ala.

graminifòlia. To 3 ft.: lvs. linear, to 1 ft. long: heads ½ in. long, of 5–15 purple fls., in long spikes, racemes or sometimes panicles. N. J. to Fla. Var. **dùbia** has narrower involucral bracts.

grandiflòra: hort. name, probably for improved form of *L. scariosa.*

Hélleri. To 1½ ft.: lvs. linear: heads of 8–12 purple fls. N. C., Va.

intermèdia: *L. squarrosa* var.

ligulístylis. To 1½ ft., sts. pubescent: lvs. linear-lanceolate, to 5 in. long: heads ¾ in. long, of 50–70 purple fls., the bracts rose-tipped, in corymb-like racemes. Man. to Colo.

macrostàchya: *L. spicata.*

montàna: *L. spicata* var.

odoratíssima: *Trilisa odoratissima.*

paniculàta: *Trilisa paniculata.*

pauciflòra. To 3 ft.: lvs. linear, to 4 in. long: heads ¾ in. long, of 3–5 purple fls., in one-sided racemes. S. C. to Fla.

pectinàta: hort. name for purple-fld. form to 1 ft. high.

pilòsa. To 3 ft.: lvs. linear, basal 1 ft. or more long: heads to ¾ in. long, of 5–15 purple fls., the bracts purple, in loose racemes. Va. to Ga. and Ala.

punctàta. To 2½ ft.: lvs. linear, to 6 in. long, very punctate: heads to ¾ in. long, of 3–6 purple fls., in dense spikes. Minn. to New Mex.

pycnostàchya. To 5 ft., hairy above: lvs. linear-lanceolate, lower to 1 ft. long: heads ½ in. long, of 3–6 purple fls., in dense spikes to 1½ ft. long. Minn. to La. and Tex. Var. **magnífica** is an improved form.

scariòsa. To 6 ft., pubescent: lvs. oblong-lanceolate, lower to 1 ft. long: heads to 1 in. long, of 15–45 bluish-purple fls., bracts often purple-tipped, in interrupted racemes. Me. to Fla. and Tex. Var. **álba** is listed. Vars. **magnífica** and **supérba** are improved forms. The form known as September Glory belongs here.

spicàta (*L. macrostachya*). To 6 ft.: lvs. linear-lanceolate, lower to 1 ft. long: heads ½ in. long, of 5–13 blue-purple or white fls., in dense spikes to 15 in. long. Mass. to Fla. and La. Var. **álba** has white fls. Var. **montàna,** stout and dwarfer, lvs. broader, spike shorter; mts., Va. south. Var. **pùmila** is listed.

squarròsa. To 2 ft., pubescent: lvs. linear, to 6 in. long: heads to 1½ in. long, of 15–60 purple fls., solitary or few, subtended by leaf-like bracts. Ont. to Fla. and Tex. Var. **álba** is listed. Var. **intermèdia** (*L. intermedia*) has narrower heads and less spreading bracts.

tenuifòlia. To 4 ft.: lvs. thread-like, to 10 in. long: heads ½ in. long, of about 5 purple fls., in racemes 1 ft. or more long. N. C. to Fla.

Wèaveri: listed as a large-fld. hybrid.

LIBÉRTIA. *Iridaceæ.* Per. herbs with fibrous roots, native in Australia, New Zeal. and S. Amer.: lvs. mostly crowded at base of st., linear: fls. clustered in axils of sheathing bracts, without tube, the inner segms. longer. Grown out-of-doors in S. U. S. Propagated by division and seeds.

formòsa. To 3 ft.: lvs. to 1½ ft. long, stiff: fls. white, to ¾ in. long, the outer segms. greenish-brown, the pedicels shorter than bracts. Chile.

grandiflòra. To 3 ft.: lvs. to 2½ ft. long, stiff: fls. white, 1 in. or more across, the outer segms. greenish outside, the pedicels longer than bracts. New Zeal.

ixioìdes. To 2 ft.: lvs. to 1 ft. or more long, with pale midrib: fls. white, to 1 in. across, the outer segms. greenish outside, pedicels longer than bracts. New Zeal.

pulchélla. To 10 in. or more: lvs. grass-like, to 6 in. long, tufted: fls. small, in clusters of 3–8, on pedicels to 1 in. long, segms. white, to ¼ in. long. S. Australia, Tasmania, New Zeal., Guinea.

LIBIDIA: *Cæsalpinia coriaria.*

LIBOCÉDRUS. Incense-Cedar. *Cupressaceæ.* Several species of evergreen trees, allied to Thuja, with frond-like branchlets, scale-like lvs. and oblong cones of usually 4 woody scales; of wide distribution and only *L. decurrens* adapted to the climate of the northeastern states. For cult. see *Conifers.*

Bídwillii. To 50 ft.: lvs. all alike: cones to ½ in. long. New Zeal.

chilénsis. To 60 ft.: lateral lvs. larger than facial, with silvery line beneath: cones ½ in. long. Chile.

cupressoìdes: *L. uvifera.*

decúrrens. To 100 ft. or more: lateral lvs. larger than facial: cones to 1 in. long. Ore. to Lower Calif.; hardy in S. New England in sheltered positions near coast. Var. **compácta,** dwarf and compact.

Doniàna: *L. plumosa.*

macrólepis. To 100 ft.: lvs. all alike: cones ¾ in. long, of 6 scales. China, Formosa.

plumòsa (*L. Doniana*). To 100 ft.: lateral lvs. larger than facial, with white band below: cones ½ in. long. New Zeal.

uvífera (*L. cupressoides*). To 100 ft.: lvs. all alike: cones ovate. Chile to Patagonia.

LIBONIA: *Jacobinia pauciflora.*

LICORICE: *Glycyrrhiza.*

LICUÀLA. *Palmaceæ.* Mostly small hermaphrodite fan-palms with solitary or clustered somewhat ringed sts., more than 70 species in trop. Asia, Pacific Isls. to Australia: lvs. more or less orbicular in outline, stiffish and plicate, petiole commonly spiny, blade deeply parted or undivided, edges dentate or erose: spadices among the lvs., simple or branched, often greatly elongated and with many side branches; stamens 6: fr. small, mostly size of pea with terminal stigmatic point and 1 seed. Good tub palms in the juvenile state, but probably do not thrive planted in the open in the continental U. S. See *Palm*.

grándis (*Pritchardia grandis*). St. solitary, to about 6 ft., when young leaf-bearing nearly half its length: lf.-blade nearly orbicular or broader (to 3 ft.) than long, plaited, lobed only an in. or so along the continuous margin and each lobe 2-toothed, petiole long and slender and spiny. New Britain Isl.—A good greenhouse and tub palm.

hórrida: *L. spinosa.*

Jeanénceyi. Hort. name for a palm said to come from New Guinea: dwarf, uniform in shape: lvs. deep shining green; segms. 5–8, blunt.

peltàta. Sts. usually several, to 15 ft.: lvs. orbicular, 3–5 ft. across, appearing as if peltate; segms. 20–30, extending nearly or quite to center, many-toothed at apex and teeth bifid; petiole long, armed with dark colored thick-based long stout spines: branches of spadix (as also outside of fls.) brown-tomentose; fls. ½ in. or more long, very conspicuous; filaments not united above throat of corolla: fr. ½ in. long, ellipsoid. India.

spinòsa (*L. horrida*). Sts. several, tufted, to 10 ft., the plant making a mass of foliage from top to bottom: lf.-blade nearly orbicular to somewhat reniform, 3–4 ft. across, parted to the center into about 18 lobes which are variously toothed at the apex and which become declined or hanging; petiole very long and with rather small separated spines: spadix branches more or less scurfy-pubescent; fls. about ⅕ in. long; filaments united above throat of corolla: fr. obovoid, about ¼ in. long. Malaya.—Sometimes grown as *L. peltata*.

LIFE-PLANT: *Kalanchoë* (*Bryophyllum*) *pinnata.*

LIGNUM-VITÆ: *Guaiacum.*

LIGULÀRIA. *Compositæ.* Showy herbaceous perennials with broad alternate or basal lvs. and large reflexed or nodding heads in racemes or corymbs, of long yellow ray-fls.; differs from Senecio chiefly in the bracts of the involucre which are of two forms; native in Eu. and Asia, a few grown in the open or indoors. Of easy cult. and usually propagated by cuttings or division.

clivòrum (*Senecio clivorum*). To 4 ft.: basal lvs. reniform or nearly orbicular, sometimes 20 in. across, sharply toothed: fl.-sts. branched; heads to 4 in. across, rays orange-yellow, disk dark brown. Japan, China.

Dòria: *Senecio Doria.*

Dorónicum: *Senecio Doronicum.*

Farfùgium: *L. Kaempferi.*

japónica (*Senecio japonicus. Erythrochæte palmatifida*). To 5 ft. or more: lvs. 1 ft. or more across, deeply palmately cut into 7–11 narrow-lobed divisions: fl.-sts. branched; heads 3 in. across, orange. Japan.

Kaémpferi (*L. Farfugium. Farfugium* and *Senecio Kaempferi*). To 2 ft., rhizomatous: lvs. to 10 in. across, cordate-orbicular, wavy-toothed: fl.-sts. branched; heads to 2 in. across, light yellow. Japan. Var. **aùreo-maculàta** (*Farfugium grande. F. maculatum*). LEOPARD-PLANT. Lvs. blotched with yellow, white or sometimes light rose. Var. **argéntea.** Lvs. glaucous-green marked with creamy-white.

macrophýlla (*Senecio Ledebouri*). To 6 ft.: lvs. to 2 ft. long, elliptic or oval-oblong, toothed: heads yellow, in long dense terminal spikes. Caucasus.

púlcher: *Senecio pulcher.*

sibírica (*Senecio sibiricus*). To 4 ft.: lvs. reniform or triangular, to 1 ft. across, coarsely toothed: heads in terminal racemes, the yellow rays to ¾ in. long. Eu., Asia.

stenocéphala (*Senecio stenocephalus*). Lvs. reniform, to 16 in. across, deeply cordate, coarsely toothed: heads in racemes 1 ft. or more long, yellow. China.

tyrolénsis: listed name.

Veitchiàna (*Senecio Veitchianus*). To 6 ft., unbranched: lvs. to 16 in. long, sharply toothed: heads very numerous, 2½ in. across, yellow. China.

Wilsoniàna (*Senecio Wilsonianus*). GIANT GROUNDSEL. To 5 ft.: lvs. reniform-cordate, to 20 in. long, sharply toothed: heads in elongated columnar spikes, 1 in. across, yellow. China.

LIGÚSTICUM. *Umbelliferæ.* Per. herbs with ternately compound lvs., white fls. in large compound umbels, and scarcely flattened frs.; native in the northern hemisphere; sometimes planted for ornament in borders.

latifòlium: *Anisotome latifolia.*

pyrenæum. To 4 ft.: lvs. 3–4-pinnate into linear segms. Pyrenees.

LIGÙSTRUM. PRIVET. *Oleaceæ.* Ornamental and popular shrubs or rarely trees, deciduous or evergreen, native in Asia, Australia and Medit. region, having opposite entire often thick lvs. mostly oblong or ovate, small white funnelform bisexual fls. in terminal panicles, and fr. a black berry-like drupe with 1–4 seeds.

Privets are commonly planted for hedges and in shrubberies for ornament, and sometimes as single specimens. They are not particular as to soil. Propagated by cuttings of young or mature wood under glass, by division, by seeds, and varieties by grafting on *L. vulgare* or *L. ovalifolium.* Many of them are very hardy and durable, and well adapted to mass plantings.

acuminàtum (*L. ciliatum* of some authors). To 6 ft., deciduous: lvs. to 3 in. long, pubescent on midrib beneath: fls. with corolla-tube much longer than lobes, in panicles 2 in. long, anthers exserted. June. Japan. Var. **macrocárpum** has larger lvs. and fr.

amurénse. To 15 ft., deciduous or half-evergreen: lvs. to 2½ in. long, pubescent on midrib beneath: fls. with corolla-tube much longer than lobes, in panicles 2 in. long. June–July. China. Var. **péndulum** is listed.

atróvirens: *L. vulgare* var.

buxifòlium: *L. vulgare* var.

califórnicum: *L. ovalifolium.*

ciliàtum: *L. acuminatum, L. Ibota.*

cordifórmis: probably a form of *L. lucidum.*

coriàceum: *L. japonicum* var. *rotundifolium.*

Delavayànum (*L. Prattii*). To 6 ft., evergreen: lvs. to 1 in. long, shining above, glabrous: fls. with corolla-tube twice longer than lobes, in panicles to 2 in. long. June. China; not hardy N.

excélsum supérbum: probably *L. lucidum* var.

grácile. To 10 ft., deciduous, the branches gracefully spreading: lvs. 1½ in. long, glabrous: fls. with corolla-tube about length of lobes, in panicles to 3 in. long and broad. China.

Hénryi. To 12 ft., evergreen: lvs. to 2 in. long, shining above, glabrous: fls. with corolla-tube twice longer than lobes, in panicles to 5 in. long. Aug. China; to be planted far S.

Ibòlium. Hybrid between *L. oválifolium* and *L. obtusifolium;* hardy N.

Ibòta (*L. ciliatum* of some). To 6 ft., deciduous: lvs. to 2 in. long, pubescent on midrib beneath: fls. with corolla-tube much longer than lobes, in head-like panicles ½ in. long. June. Japan.—Not ornamental. The plant heretofore known as *L. Ibota* and in common cult. now becomes *L. obtusifolium.*

índicum (*L. nepalense*). Evergreen: lvs. to 5 in. long, pubescent beneath: fls. with corolla-tube about length of lobes, in broad panicles. July–Aug. Himalayas; adapted only to warm regions. Var. **variegàtum** is listed.

ionándrum. To 10 ft., evergreen: lvs. ½–1 in. long: fls. with corolla-tube longer than lobes, in dense panicles to 1 in. long. China; adapted far S.

Ìwata: probably a form of *L. japonicum;* listed as a low compact evergreen plant with small rounded lvs. mottled yellow.

japónicum (*L. Kellermannii*). To 10 ft. or more, evergreen: lvs. to 3 or 4 in. long, glabrous, leathery, short-pointed or nearly obtuse: fls. with corolla-tube slightly longer than lobes, in panicles to 6 in. long. July–Sept. Japan, Korea; grown in southern states. Var. **rotundifòlium** (*L. coriaceum*). Lvs. nearly orbicular, to 2½ in. long, obtuse or emarginate at tip. Var. **variegàtum.** Lvs. variegated and edged with white. For varieties listed as **aùreum** see *L. ovalifolium,* **excélsum supérbum,** see *L. lucidum,* **macrocárpum** see *L. acuminatum.*

Kéllermannii: *L. japonicum.*

lodénse: hort. name for dwarf compact form of *L. vulgare.*

lùcidum (*L. japonicum macrophyllum*). GLOSSY P. To 30 ft., evergreen: lvs. to 4 or 6 in. long, shining, glabrous, acuminate: fls. with corolla-tube as long as lobes, in panicles to 10 in. long. Aug.–Sept. China, Korea, Japan; stands only far S. The following forms are listed in the trade as vars. of *L. lucidum*, but may be referable to *L. japonicum:* **aùreo-marginàtum,** lvs. yellow margined; **ciliàtum,** small lvs.; **compáctum,** dense growth with dark waxy green lvs.; **excélsum supérbum,** lvs. variegated creamy-white; **grácile** and **nóbile** are fastigiate forms; **macrophýllum** has larger lvs.; **microphýllum** is said to have smaller lvs.; **nigrifòlium,** lvs. very dark green; **pyramidàle,** of narrow conical habit; **recurvifòlium,** lf. margin recurved; **repándum,** lvs. narrower and crisped; **trícolor,** lvs. variegated with yellow, pink when young.

Massalongiànum (*L. myrtifolium*). To 3 ft., evergreen: lvs. linear-lanceolate, to 3 in. long, glabrous: fls. with corolla-tube much longer than lobes, in panicles to 3½ in. long. July–Aug. Himalayas; may be planted far S.

mèdium: *L. ovalifolium.*

myrtifòlium: *L. Massalongianum.*

nànum compáctum: hort. name.

nepalénse: *L. indicum.*

nóbile: possibly an upright form of *L. lucidum.*

obtusifòlium. To 10 ft., deciduous: lvs. to 2½ in. long, pubescent beneath: fls. with corolla-tube about 3 times length of lobes, in nodding panicles to 1½ in. long. July. Japan. This is the plant commonly known as *L. Ibota.* Var. **Regeliànum** (*L. Regelianum*). Regels P. Low, branches spreading horizontally.

ovalifòlium (*L. californicum. L. medium*). California P. To 15 ft., half-evergreen: lvs. to 2½ in. long, shining above, glabrous: fls. with corolla-tube much longer than lobes, in panicles to 4 in. long. July. Japan; not reliable in northern states. Forms are: **álbo-marginàtum,** edged with creamy-white; **aùreo-marginàtum** (var. *aureum*), edged with yellow; **compáctum,** of denser growth; **globòsum;** **nànum,** dwarf; **Regeliànum** is *L. obtusifolium* var.; **variegàtum,** marbled with pale yellow.

pekinénse: see *Syringa pekinensis.*

péndulum: listed species name; presumably a pendulous form of *L. vulgare, L. amurense, L. Quihoui* or *L. sinense.*

Práttii: *L. Delavayanum.*

Quihòui. To 6 ft., deciduous: lvs. to 2 in. long, glabrous: fls. with corolla-tube as long as lobes, sessile, in panicles to 8 in. long, Aug.–Sept., stamens exserted. China; not hardy N. Var. **péndulum** has drooping branches.

Reèvesii: hort. name.

Regeliànum: *L. obtusifolium* var.

repándum is probably a crinkled-lvd. form of *L. japonicum* or *L. lucidum.*

sinénse. To 12 ft. or more, deciduous: lvs. to 3 in. long, pubescent on midrib beneath: fls. with corolla-tube shorter than lobes, in pubescent panicles to 4 in. long. July. China; not hardy N. Var. **péndulum** has drooping branches. Var. **Staùntonii** (*L. Stauntonii. L. chinense* var. *nanum*). Lower with broader panicles.

Staùntonii: *L. sinense* var.

strongylophýllum. Evergreen shrub or tree: lvs. rounded to nearly ovate, to 1 in. long, smooth: fls. nearly ¼ in. long, in loose panicles to 4 in. long. Cent. China; not hardy N.

vulgàre. Common P. or Prim. To 15 ft., deciduous: lvs. to 2½ in. long, glabrous: fls. with corolla-tube about length of lobes, in dense panicles to 1½ in. long. June–July. Medit. region; nat. in E. U. S. Some of the hort. vars. are: **argénteo-variegàtum,** lvs. variegated white; **atróvirens,** small-lvd.; **aùreum,** lvs. yellow; **aùreo-variegàtum,** lvs. variegated yellow; **buxifòlium,** shrub half-evergreen, lvs. to 1 in. long; **foliolòsum,** an improved more vigorous type; **glaùcum** (var. *albo-variegatum*), lvs. glaucous edged with white; **leucocárpum,** fr. white; **pyramidàle,** habit pyramidal; **xanthocárpum,** fr. yellow.

Wálkeri. Shrub or small tree, twigs conspicuously white-speckled: lvs. ovate to lanceolate, to 3 in. long, apex and base acute, glabrous, entire: fls. in erect terminal panicles 4–6 in. long, the branches hairy: fr. purple, about ¼ in. long. Ceylon; not hardy N.

LILAC: *Syringa.* **Indian:** *Melia Azedarach.* **Summer:** *Buddleja Davidii.*

LILIÀCEÆ. Lily Family. More than 200 genera of monocotyledonous per. herbs, many of them having bulbs, corms or a crown of fleshy rootstocks, sometimes woody and tree-like, of wide distribution. The family is characterized by regular fls. with 6-parted or -lobed perianth or 6 separate segms., usually all the parts petal-like, 6 or sometimes 3 stamens, commonly superior 3-celled ovary, and fr. a berry or dehiscent caps. Species probably upwards of 2,000, many of them (as the lilies) with very showy fls., and some (as the onions) with edible bulbs. Some of the plants known as lilies belong to other families, particularly the Amaryllidaceæ.

The Liliaceæ yields medicinal plants, edible parts, and a wide range of beautiful ornamental subjects. The genera known to hort. are: Agapanthus, Albuca, Aletris, Allium, Aloe, Amianthium, Androstephium, Anemarrhena, Anthericum, Aphyllanthes, Apicra, Arthropodium, Asparagus, Asphodeline, Asphodelus, Aspidistra, Astelia, Beaucarnea, Bessera, Blandfordia, Bloomeria, Bottionea, Brevoortia, Brodiæa, Bulbine, Bulbinella, Bulbocodium, Calochortus, Camassia, Chamælirium, Chionodoxa, Chionographis, Chlorogalum, Chlorophytum, Clintonia, Colchicum, Convallaria, Cordyline, Danaë, Dasylirion, Dianella, Disporum, Dracæna, Drimia, Drymophila, Eremurus, Erythronium, Eucomis, Eustrephus, Fritillaria, Gagea, Galtonia, Gasteria, Gastrolea, Geitonoplesium, Gloriosa, Haworthia, Helonias, Heloniopsis, Hemerocallis, Hesperaloe, Hesperocallis, Hesperuyucca, Hosta, Hyacinthus, Kniphofia, Lachenalia, Lapageria, Leptaloe, Leucocoryne, Leucocrinum, Lilium, Liriope, Littonia, Lloydia, Maianthemum, Medeola, Melanthium, Milla, Muilla, Muscari, Narthecium, Nolina, Notholirion, Nothoscordum, Ophiopogon, Ornithogalum, Paradisea, Paris, Pasithea, Philesia, Phormium, Pleea, Polygonatum, Puschkinia, Reineckia, Rhipogonum, Rohdea, Ruscus, Samuela, Sandersonia, Sansevieria, Schizobasopsis, Scilla, Semele, Smilacina, Smilax, Stenanthium, Streptopus, Stypandra, Thysanotus, Tolfieldia, Tricyrtis, Trillium, Tulbaghia, Tulipa, Urginea, Uvularia, Veltheimia, Veratrum, Xanthorrhœa, Xerophyllum, Yucca, Zigadenus.

LÍLIUM. Lily. *Liliaceæ.* Well known per. leafy-stemmed erect herbs bearing terminal fls. or fl.-clusters, native in the northern hemisphere, having scaly bulbs, scattered or whorled usually narrow lvs. and fls. in a wide range of colors but never true blue, prevailingly white, orange or orange-red, the perianth-segms. distinct; often fragrant. Many of them are among the most stately of garden plants. They are late spring and summer subjects.

Lilies are usually of easy cultivation and hardy in the North, although sometimes needing winter protection and always profiting by it. In well-prepared ground and a suitable location, the plants may be allowed to stand year after year. Remove the seed-pods immediately after flowering, and allow the foliage to mature naturally. A light fertile sandy or loamy soil is suitable, with some leaf-mold added. As a rule, lilies do better in partial shade or not fully exposed to heat and winds. A handful of sand or gravel may be placed under each bulb and the top of the bulb should be at least 4 inches below the surface in those kinds that make roots above the bulb, or deeper with *L. auratum* and others with very large bulbs, but shallow planting is the rule with those that make roots only at bottom. Propagated by division of the offsets as soon as the tops die or early in autumn; also by bulb scales or by aerial bulblets, which will produce flowering plants in two or three years. Seeds yield variations.

They may be forced in the greenhouse. The bulbs should be potted and placed in a coldframe and covered with sphagnum, coal ashes or other porous material, until they are well rooted in the pots. They may then be taken to the greenhouse and kept in a temperature of about 50° for ten days, and then when growth begins raised to 60° night temperature. The plants should be in flower in about thirteen weeks.

The lilies are subject to serious diseases, for the nature and treatment of which consult the most recent literature of the specialists in the subject. Perhaps the most serious is the lily mosaic, a virus disease transmitted from plant to plant by aphids. It infects all parts of the plant except the seed; thus, plants grown from seed are free from the disease until infected. Certain cultivated species are more resistant than others, as *L. Martagon* and its varieties, *L. Hansonii,* *L. pardalinum, L. Brownii, L. Henryi, L. Davidii, L. Willmottiæ, L. regale, L. pumilum, L. amabile, L. monadelphum.* The most susceptible species include *L. auratum, L. canadense, L. concolor, L. dauricum, L. formosanum, L. superbum, L. elegans* and *L. tigrinum.*

Many lilies produce annual fibrous roots from the underground stem above the bulb in addition to those from the base of the bulb. Lilies developing these stem-roots usually bloom well the first summer after planting whereas those which are non-stem-rooting rarely flower until the second summer. Stem-rooting species include the following (names in parenthesis are invalid names placed here because of wide horticultural usage, see enumeration below for correct name in each case): *L. amabile, L. auratum, L. Bakerianum, L. Batemanniæ, L. Brownii, L. bulbiferum, L. callosum, L. carniolicum,* (*L. carolinianum*), *L. concolor,* (*L. croceum*), *L. Dalhansonii, L. dauricum, L. distichum, L. Duchartrei, L. elegans, L. formosanum, L. Hansonii, L. Henryi, L. Humboldtii, L. leucanthum, L. medeoloides, L. Michauxii, L. myriophyllum, L. neilgherrense, L. nepalense, L. ochraceum, L. philippinense, L. pumilum, L. regale, L. Sargentiæ, L. speciosum, L. superbum,* (*L. tenuifolium*), *L. tigrinum,* (*L. Wallacei*), *L. Wallichianum, L. Wardii,* and *L. Willmottiæ.* Those producing few or no stem-roots include: (*L. Bolanderi*), *L. callosum, L. canadense, L. candidum, L. chalcedonicum, L. columbianum, L. giganteum, L. Grayi, L. Humboldtii, L. Kelloggii, L. maritimum, L. Martagon, L. monadelphum, L. pardalinum, L. pomponium, L. pyrenaicum, L. Roezlii, L. superbum, L. testaceum* and *L. Washingtonianum.*

albánicum: a form of *L. carniolicum.*

álbum: probably a var. of *L. auratum, L. Martagon* or *L. speciosum.*

Alexándræ: *L. nobilissimum.*

amábile. To 3 ft., pubescent: fls. of the Martagon kind, racemose, red with dark spots, segms. to 2 in. long and strongly reflexed. Korea.

auràtum. GOLDBAND L. To 6 ft.: fls. white spotted with crimson, each segm. with central yellow stripe, to 12 in. across, fragrant, horizontal or drooping. Japan. Var. **álbum,** fls. unspotted. In var. **píctum** the tip of the band is crimson, and in **rùbrum** the band is crimson and very broad. Var. **platyphýllum** (*macranthum*) has broader lvs. and less spotted fls. Var. **rùbro-vittàtum,** fls. with numerous spots and wide crimson band through each segm.; by some said to be possible hybrid between *L. auratum* and *L. speciosum.* Var. **virginàle,** fls. with yellow spots. Var. **Wíttei** has fls. spotted yellow.

Báckhousei: catalogue name for group of hybrids.

Bakeriànum (*L. Lowii*). To 3 ft.: fls. greenish-yellow changing to creamy-white, spotted with red-brown inside, fragrant, to 2½ in. across. Burma, W. China.

Bàtemanniæ: an improved form of *L. dauricum* var. *venustum.*

Bloomeriànum: *L. Humboldtii* var.

Bolánderi: a confused name, incorrectly applied to three plants, two of which are *L. Kelloggii* and *L. occidentale;* the third, *L. Howellii,* is the plant usually in cult. as *L. Bolanderi.*

Broẁnii. To 4 ft.: fls. pure white inside and rose-purple outside, to 9 in. long, slightly fragrant, horizontal. China. A very fragrant form is var. **Cólchesteri** (var. *odorum*).

bulbíferum. To 4 ft.: fls. orange-red spotted with purplish-black with yellow center, to 4 in. across. Eu.—The plant known as **L. cròceum,** ORANGE L., is a variant of this species, growing to 6 ft. tall and fls. spotted crimson.

califórnicum: *L. pardalinum* var.

callòsum. To 2 ft.: fls. bright scarlet dotted with purple-black, to 2 in. across. Japan.

camschatcénse: see *Fritillaria camschatcensis.*

canadénse. MEADOW L. To 5 ft.: fls. orange-yellow to red, spotted with purplish-brown, to 3 in. across, drooping. N. S. to Ga. and Ala. Var. **coccíneum** (var. *rubrum*) has orange-red fls. and var. **flàvum** lemon-yellow fls.

cándidum. MADONNA L. To 4 ft.: fls. clear waxy-white, to 3 in. long, horizontal. S. Eu., S. W. Asia. Var. **cérnuum** (var. *peregrinum*), slender plant, sts. tinged purple, lvs. narrower, segms. narrower and longer. In var. **maculàtum** the fls. are streaked on the outside with purple. Var. **salonìkæ** has narrower and wavy-margined basal lvs. with more widely spread perianth-segms. and shorter filaments, Turkey.

carniólicum. To 3 ft., with 1 to several nodding fragrant orange-red to scarlet fls. 2 in. or less diam., segms. wholly reflexed and usually dotted purplish-black. S. E. Eu.—A closely related form, **albánicum** (*L. albanicum*), differs in having yellow fls. Var. **Jánkæ** (*L. Jankæ*) has darker scarlet-red fls.

carolìniànum becomes *L. Michauxii,* as the name was formerly used for the plant now known as *L. Catesbæi.*

Cátesbæi. SOUTHERN RED L. To 2 ft.: fls. scarlet, yellow spotted purple at base, to 5 in. long, erect, the segms. with a claw. N. C. to Fla.

cathayànum. To 5 ft.: lvs. oblong-ovate, to 8 in. long and 4 in. wide, base cordate, petiole 2–6 in. long: fls. creamy-white, anterior segms. splashed reddish-brown within, to 4½ in. long, infl. a 3–5-fld. corymbose raceme. E. and Cent. China.—Does best in partial shade.

centifòlium: *L. leucanthum* var. *chloraster.*

cérnuum. To 2 ft.: fls. lilac spotted with purple, to 1½ in. long, fragrant, nodding. Korea, Manchuria.

chalcedónicum. SCARLET TURKS-CAP L. To 4 ft.: fls. vermilion-scarlet, rarely spotted, to 3 in. across, with rather disagreeable odor, hanging, the segms. strongly reflexed. Greece. Var. **maculàtum,** fls. spotted with purple.

Chinoòkii: hort. name for *L. pardalinum* var. *giganteum.*

cólchicum: *L. Szovitsianum.*

columbiànum (*L. parviflorum*). To 4 ft.: fls. bright reddish-orange thickly spotted with purple, 2 in. long, drooping, the segms. reflexed. B. C. to Calif. Var. **Ingramii** has larger brighter more numerous fls.

cóncolor. STAR L. To 4 ft.: fls. vermilion, unspotted, 1½ in. long, slightly fragrant, erect. China, Japan. Var. **pulchéllum** usually has spotted fls.

cordàtum (*L. cordifolium. L. Glehnii*). To 4 ft.: fls. white striped purple inside, greenish outside, to 6 in. long, fragrant, erect. Japan.

cordifòlium: a confused name, but most of the material so listed in the trade is referable to *L. cordatum.*

corídion: one of the forms of *L. concolor* var. *pulchellum.*

Creèlmannii. Listed as hybrid of *L. regale* and *L. Sargentiæ* with habit and fl. characters intermediate between the two, and much later flowering.

cròceum: a variant of *L. bulbiferum.*

dahùricum: *L. dauricum.*

Dalhánsonii. A hybrid between *L. Martagon* var. *Cattaniæ* and *L. Hansonii*: fls. of less intense coloration.

dalmáticum: *L. Martagon* var. *Cattaniæ.*

daùricum (*L. umbellatum*). CANDLESTICK L. To 3 ft.: fls. orange-red spotted with purplish-black, to 5 in. across, erect. Siberia. In many forms. Var. **venústum** (*L. venustum*) has apricot-colored fls. without spots. Var. **Wállacei** (*L. Wallacei*) has brown spotted fls. Other hort. forms, some of which are listed under *L. umbellatum,* are **eréctum, grandiflòrum, incomparábile, multiflòrum, rùbrum, spléndens.** For additional vars. see *L. elegans.*

Dàvidii (*L. Thayeræ*). To 6 ft.: fls. cinnabar-red or scarlet spotted with black, to 3 in. long, nodding. China.

Davmóttiæ. Hybrid between *L. Davidii* and *L. Willmottiæ:* to 6 ft.: fls. cinnabar-red spotted black.

davùricum: *L. dauricum.*

Duchártrei (*L. Farreri*). To 4 ft.: fls. marble-white spotted with purple, fragrant, nodding, to 3 in. long. W. China.

élegans (*L. Thunbergianum. L. dauricum* subsp. *Thunbergianum*). To 2 ft.: fls. orange-red slightly spotted with black-purple, to 6 in. across, erect. Japan.—Experimental evidence has confirmed the belief that this plant is a hybrid between *L. concolor* and *L. dauricum:* it is not known wild. *L. elegans* differs from *L. dauricum* (the seed parent) in its shorter habit and less acuminate lvs. The Latin-named forms of this hybrid include: **alutàceum,** to 9 in. with apricot-colored fls. spotted with purple; **atrosanguíneum** with dark crimson black-spotted fls.; **aurantìacum** with unspotted salmon fls.; **bícolor,** yellow fls. tipped bright red and spotted with black-purple; **biligulàtum** blooms earlier with deeper chestnut-red spotted fls.; **fúlgens** with deep red spotted fls.; **Hórsmannii,** with rich crimson fls.; **incomparábile** with bright crimson-scarlet fls.; **maculàtum,** orange fls. scarlet toward edge; **marmoràtum,** rich crimson fls. flaked and tipped orange-yellow, slightly spotted and earlier than type; **sanguíneum,** fls. blood-red slightly tinged orange and spotted purple-black.

Eràbu: a form of *L. longiflorum* var. *insulare.*

excélsum: see *L. testaceum.*

Fárreri: *L. Duchartrei.*

flàvum: the material in the trade under this name is probably *L. canadense* var. *flavum,* but the name is also a synonym of *L. pyrenaicum.*

formosànum (*L. philippinense* var.). To 7 ft., differs from *L. philippinense* in wider lvs. with 2–4 lateral veins prominent on back: fls. to 4 in. long and 6 in. across, filaments papillose toward base. Formosa. Var. **Prìcei** is of dwarfer habit with fewer fls. which are heavily suffused reddish-purple without, said to be hardier than type. Mt. Morrison, Formosa.

formòsum: *L. longiflorum* var. *insulare.*

gigantèum. To 12 ft.: fls. white tinged with green outside, striped with red-purple inside, to 6 in. long, fragrant, slightly drooping. Himalayas. Var. **himalàicum** is listed. Var. **yunnanénse,** smaller and with pure white fls.—Plants grown as *L. giganteum* are often *L. longiflorum* var.

Gléhnii: *L. cordatum.*

Gràyi. To 4 ft.: fls. red tinged with yellow, thickly spotted with purplish-brown, to 2 in. long, horizontal or slightly drooping. Va. and N. C.

Hánsonii. To 5 ft.: fls. orange-yellow spotted with purplish-brown, 1½ in. long, fragrant, drooping. Japan.

Hárrisii: *L. longiflorum* var. *eximium.*

Hénryi. To 9 ft.: fls. orange spotted with brown, 3 in. across, drooping, the segms. recurved. China.

Hórsfordii. Hybrid between *L. Leichtlinii* var. *Maximowiczii* and *L. Batemanniæ.*

Hórsmannii: a form of *L. elegans.*

Hoẁellii (*L. Bolanderi* of hort.). Thimble L. To 3 ft.: fls. reddish-purple spotted with dark purple, to 1¾ in. long, horizontal or somewhat drooping. Calif.

Húmboldtii. To 6 ft.: fls. reddish-orange spotted with purple-brown, 3½ in. long, drooping, the segms. strongly revolute. Calif. Var. **Bloomeriànum** (*L. Bloomerianum*) has the claws of inner perianth-segms. somewhat crested and bulb scales several-jointed. Var. **magníficum** is a larger form. Var. **ocellàtum** has the purple spots of fl. encircled with red.

Jánkæ: *L. carniolicum* var.

japónicum (*L. japonicum* var. *roseum. L. Krameri*). To 3 ft.: fls. rose or pale pink, to 6 in. long, fragrant, horizontal. Japan.

kamtschatcénse: see *Fritillaria camschatcensis.*

Kélloggii. To 4 ft.: fls. pink spotted with purplish-black, 2 in. long, erect, the segms. strongly reflexed. Calif.

Kràmeri: *L. japonicum.*

lancifòlium of hort. is *L. speciosum.*

lankongénse. To 4 ft.: fls. white tinged rose-purple, spotted with crimson, 2½ in. long, nodding, fragrant, segms. reflexed. China.

Leichtlínii. To 6 ft.: fls. lemon-yellow spotted with purplish-brown, 3 in. long, drooping, the segms. reflexed. Japan. Var. **Maximowíczii** (*L. Maximowiczii*) has salmon-red spotted fls.

leucánthum. Chinese White L. To 6 ft.: fls. greenish-white outside, yellow inside tipped with pure white, to 6 in. long, fragrant, slightly drooping. China. Var. **chloráster** (*L. centifolium*) has a greenish central mark on the inside of fls. which are sometimes tinged with rose-purple on the outside.

longiflòrum. White Trumpet L. To 3 ft.: fls. white, to 7 in. long, fragrant, trumpet-shaped, horizontal. Japan. Var. **Alexándræ** is *L. nobilissimum.* Var. **exímium** (*L. Harrisii*), Easter L., Bermuda L., is a taller larger-fld. form. Var. **gigantèum** of gardens has purple-brown sts. and fls. often tinted in bud. Var. **insulàre** (var. *formosum*) is an improved popular strain, of which **Eràbu** (*L. Erabu*) is a more floriferous form. Var. **multiflòrum** resembles var. *eximium.*—Other listed names applied to hort. forms used in forcing for the Easter trade include **nóbile, prǽcox** and **Vàughanii.**

Lòwii: *L. Bakerianum.*

macrophýllum: *Notholirion macrophyllum.*

maculàtum: material so-named in the trade is probably *L. medeoloides,* but the name has been applied also to *L. Hansonii* and *L. elegans.*

magníficum: plants in trade under this name are probably variants of *L. Humboldtii, L. speciosum* or *L. longiflorum.*

marítimum. Coast L. To 4 ft.: fls. reddish-orange spotted with purple inside, 1½ in. long, horizontal, slightly recurved. Calif.

Mártagon. Martagon or Turks-Cap L. To 6 ft.: fls. rose- or dark purple spotted with purplish-black, 2 in. long, drooping, the segms. strongly reflexed. Eu., W. Asia. Var. **álbum** has white fls. Var. **Cáttaniæ** (var. *dalmaticum, L. dalmaticum*), fls. very deep rich purple nearly black.

Maximowíczii: *L. Leichtlinii* var.

medeoloìdes (*L. maculatum*). Wheel L. To 2½ ft.: fls. apricot to scarlet spotted with black, 2 in. long, drooping, the segms. strongly recurved. Japan, China.

Michaùxii (*L. carolinianum*). To 4 ft.: fls. orange-scarlet spotted with purple-brown, to 4 in. long, slightly fragrant, drooping, the segms. strongly reflexed. Va. to Fla. and La.

michiganénse. The westward extension of the *L. canadense* type, Mich. to Minn. and Mo., differing in its recurved segms. that are mostly red.

monadélphum. Caucasian L. To 6 ft.: fls. golden-yellow sometimes tinged or spotted with purple, to 5 in. across, drooping, the segms. reflexed. Caucasus, Persia. Var. **Szovitsiànum** is *L. Szovitsianum.*

myriophýllum. To 4 ft.: fls. greenish-white, yellowish within, often red on keel outside, 1 in. long, fragrant, nodding. China. Var. **supérbum** (*L. sulphureum*) has sulfur-yellow fls. reddish outside.—The plants usually cult. as *L. myriophyllum* are *L. regale.*

neilgherrénse. To 4 ft.: fls. white flushed with yellow, fragrant, horizontal, to 10 in. long. S. India.

nepalénse. To 3 ft.: fls. yellow or greenish-yellow, stained purplish inside, to 6 in. long, fragrant, segms. spreading. Himalayas.—Differs from *L. ochraceum* in segms. recurved less than half of total length.

nevadénse: *L. pardalinum* var.

nóbile: a hort. form of *L. longiflorum.*

nobilíssimum (*L. Alexandræ. L. longiflorum* var. *Alexandræ*). Differs from *L. longiflorum* in its broader fls., more slender style whose stigma is smaller, not lobed and purplish-brown in color, not greenish-white. Japan.

occidentàle. Related to *L. pardalinum* but lower, 1½ ft. and upward: fls. nodding, orange or red within and mostly spotted, the narrow segms. 2 in. or less long and somewhat revolute to middle or somewhat below. Calif., Ore.

ochràceum. To 6 ft.: fls. yellow or greenish-yellow spotted red inside, to 5 in. long, fragrant, nodding. S. China, Burma.—Very similar to *L. nepalense,* from which it differs in perianth-segms. reflexed ½–⅔ total length.

párda-bóldtii: listed as a hybrid between *L. pardalinum* and *L. Humboldtii,* with recurved orange fls. with darker purple dots and the habit of the latter parent.

pardalìnum. Leopard L. To 8 ft.: lvs. to ¾ in. wide: fls. orange-red spotted with purple, yellow at base, 4 in. across, drooping, the segms. strongly reflexed. Ore. to Calif. Var. **califórnicum** has smaller lvs. and larger fls. Var. **gigantèum,** Sunset L., probably a hybrid of *L. pardalinum* and *L. Humboldtii,* having fls. yellow tipped bright red and spotted with brown. Var. **Jóhnsonii,** listed as having a large proportion of bright red in fls. Var. **nevadénse** is of smaller habit, with fewer fls., shorter anthers and broader lvs. Var. **pallidifòlium** is reported having paler and heavier foliage. Var. **Roézlii** is *L. Roezlii.*

Párryi. To 4 ft.: fls. pale lemon-yellow, spotted on inside, to 4 in. long, fragrant, horizontal. Calif. Var. **Késsleri** is said to have heavier foliage and to blossom two weeks later.

parviflòrum: *L. columbianum.*

párvum. Sierra L. To 5 ft.: fls. bright orange-scarlet, yellow at base, spotted with purplish-brown, 1¼ in. long, erect or horizontal. Ore. to Calif. Var. **lùteum** has bright yellow spotted fls.

philadélphicum. Orangecup L. Wood L. To 3 ft.: fls. orange-red spotted with purple, to 4 in. across, erect, the segms. with long claws. Me. to N. C. and Mo. Var. **andìnum** (*L. umbellatum,* not of hort.), Western Orangecup L., is smaller, fls. spotted at base of segms. only, and claw smaller. Ont. to Ohio west to B. C. and Ark.

phildaùricum. A hybrid between *L. philadelphicum* and *L. dauricum* growing to 18 in.: fls. bright red with dark spots.

philippinénse. To 1½ ft.: fls. white tinged with green, to 10 in. long, fragrant, horizontal. Philippines. Var. **formosànum** is *L. formosanum.*

polyphýllum. To 4 ft.: fls. yellowish outside, white inside spotted with purple, to 3 in. across, fragrant, segms. united about half way in tube, then reflexed. Himalayas.

pompònium. Lesser Turks-Cap L. To 3 ft.: fls. brilliant scarlet spotted with dark purple, to 2 in. across, having disagreeable odor, drooping, the segms. strongly reflexed. S. France, N. Italy.

prínceps. Hybrid between *L. regale* and *L. Sargentiæ.*

pùmilum (*L. tenuifolium*). Coral L. To 3 ft.: fls. bright scarlet, sometimes spotted, to 2 in. across, nodding, strongly reflexed. Siberia, China. Var. **cérnuum** is said to have pale pink fls.—The name *L. tenuifolium* was first applied to this plant in 1812 without any description and before being validated by such publication, the name *L. pumilum* was legitimately published for the same plant.

pyrenàicum. Yellow Turks-Cap L. To 4 ft.: fls. lemon-yellow spotted with purplish-black, 2 in. or more across, nodding. Pyrenees. Var. **aùreum** has deeper yellow fls. Var. **rùbrum** has fls. orange-scarlet with maroon spots.

regàle (*L. myriophyllum* of hort.). Royal L. To 5 ft.: fls. lilac or purple outside, white within but yellow at base, to 6 in. long, fragrant, horizontal. W. China.

Roézlii. Differs from *L. pardalinum* in its smaller habit, lvs. only to ⅓ in. wide, fls. typically clear yellow with dark spots and sometimes with clear red segm. tips, fls. usually fewer in infl. Calif.—By many authors not considered distinct from *L. pardalinum.*

rubéllum. To 2 ft.: fls. rose-pink, to 3 in. long, fragrant, horizontal. Japan.

rubéscens. Chaparral L. To 6 ft.: fls. pale lilac turning to rose-purple, to 2 in. long, erect. Ore. to Calif.

rùbrum: *L. pomponium*, but material so named in trade may be *L. canadense* var. *coccineum* or *L. auratum* var.

Sárgentiæ. To 6 ft.: fls. rose-purple outside, white within, to 6 in. long, fragrant, horizontal. W. China.

Scóttiæ. Hybrid of *L. Willmottiæ* and *L. elegans* var. Mahogany, growing to 3 ft.: fls. deep orange-red shading to orange. sparsely spotted, July.

sinénse: *L. tigrinum.*

speciòsum (*L. lancifolium*, in part). Showy Japanese L. To 4½ ft.: fls. white suffused with rose and spotted with rose-red, 4 in. long, fragrant, drooping, the segms. reflexed. Japan. Runs into numerous forms, as: **álbum,** fls. nearly white; **gloriosoìdes,** with narrower lvs. and much twisted crimson-spotted perianth-segms.; **Kraétzeri,** fls. white tinged green on outside; **magníficum,** fls. large, suffused with crimson and spotted with pink; **Melpómene,** fls. deeper colored; **ròseum,** fls. rose; **rùbrum,** fls. carmine-pink.

sulphùreum: *L. myriophyllum* var. *superbum.*

sulphur-gàle. Garden hybrid between *L. myriophyllum* var. *superbum* and *L. regale.*

supérbum. American Turks-Cap L. To 8 ft.: fls. orange-scarlet spotted with purplish-brown, to 4 in across, drooping, the segms. strongly reflexed. N. B. to Ga. and Mo.

sutchuénse. A confused name: the original description was based on two plants, one of which has since been identified as *L. Willmottiæ* and the other as *L. Davidii;* material in the trade under this name may be either of these two or occasionally *L. pumilum.*

Szovitsiànum (*L. monadelphum* var. *L. colchicum*). Differs from *L. monadelphum* in its broader less reflexed perianth-segms. which are lemon-yellow densely speckled purple, anthers reddish-brown not yellow and filaments free, not united at base. E. Caucasus Mts.

tenuifòlium: *L. pumilum.*

testàceum. Nankeen L. To 7 ft.: fls. apricot or nankeen-yellow often flushed with pink, rarely spotted, to 3 in. across, fragrant, drooping, the segms. strongly reflexed.—This plant, unknown in the wild and erroneously credited to Japan, is now believed to be a hort. hybrid between *L. candidum* and *L. chalcedonicum;* it has been listed as *L. excelsum.*

Thàyeræ: *L. Davidii.*

Thomsoniànum: *Notholirion Thomsonianum.*

Thunbergiànum: *L. elegans.*

tigrìnum (*L. sinense*). Tiger L. To 6 ft.: fls. orange- or salmon-red spotted with purple-black, to 5 in. across, drooping, the segms. reflexed. China, Japan; escaped in E. U. S. Var. **flòre-plèno** has double fls. Var. **Fórtunei** has a densely tomentose st. Var. **gigantèum** is said to be an improved form. Var. **nànum** is 15–18 in. tall. Var. **símplex** is listed, but may not be distinct. Var. **spléndens** has larger and more abundant fls.

umbellàtum: a confused name; the materials so listed in the trade represent forms of *L. dauricum* as well as hybrids of this latter species and of *L. bulbiferum;* the true *L. umbellatum* of W. U. S. is *L. philadelphicum* var. *andinum.*

Vàughanii: hort. name for form of *L. longiflorum.*

venústum: *L. dauricum* var.

Wállacei: *L. dauricum* var.

Wallichiànum. To 7 ft.: fls. creamy-white tinged with green outside, to 10 in. long, fragrant, horizontal, the segms. with long claw. Himalayas.

Wárdii. To 5 ft., stoloniferous: fls. white spotted with pink, drooping, segms. reflexed. Tibet.

warleyénse: *L. Willmottiæ.*

Washingtoniànum. To 6 ft.: fls. white often spotted with purple, to 4 in. long, fragrant, horizontal. Ore. and Calif. Var. **mìnor** is listed. Var. **purpùreum** is smaller and the fls. change to lilac-purple.

Willmottiæ (*L. warleyense*). To 5 ft.: fls. orange-red spotted with brown, to 3 in. across, drooping, the segms. strongly recurved. China. Var. **unícolor** is offered as a spotless form.

LILY: *Lilium.* **Adobe-:** *Fritillaria pluriflora.* **African-:** *Agapanthus africanus.* **Amazon-:** *Eucharis grandiflora.* **Atamasco-:** *Zephyranthes Atamasco.* **Belladonna-:** *Amaryllis Belladonna.* **Blackberry-:** *Belamcanda chinensis.* **Blood-:** *Hæmanthus.* **Checkered-:** *Fritillaria meleagris.* **Chinese Sacred-:** *Narcissus Tazetta* var. *orientalis.* **Cow-:** *Nuphar.* **Day-:** *Hemerocallis.* **Desert-:** *Hesperocallis undulata.* **Fawn-:** *Erythronium californicum.* **Fire-:** *Pyrolirion.* **Ginger-:** *Hedychium.* **Glory-:** *Gloriosa.* **Guernsey-:** *Nerine sarniensis.* **Jacobean-:** *Sprekelia formosissima.* **Josephines-:** *Brunsvigia Josephiniæ.* **Kafir-:** *Clivia, Schizostylis.* **Mariposa-:** *Calochortus.* **Mountain:** see *Ranunculus Lyallii.* **-of-the-Nile:** *Agapanthus africanus.* **-of-the-Palace:** *Hippeastrum aulicum.* **-of-the-Valley:** *Convallaria.* **Plantain-:** *Hosta.* **Pond-, Yellow:** *Nuphar.* **Prairie-:** *Cooperia.* **Rain-:** *Cooperia.* **St.-Bernard-:** *Anthericum Liliago.* **St.-Bruno-:** *Paradisea Liliastrum.* **St.-James-:** *Sprekelia formosissima.* **Sand-:** *Leucocrinum montanum.* **Scarborough-:** *Vallota speciosa.* **Sego-:** *Calochortus Nuttallii.* **Snake-:** *Brodiæa volubilis.* **Spear-:** *Doryanthes.* **Spider-:** *Hymenocallis.* **Star-:** *Leucocrinum montanum.* **Toad-:** *Tricyrtis.* **Torch-:** *Kniphofia.* **Triplet-:** *Brodiæa laxa.* **Trout-:** *Erythronium.* **-Turf:** *Liriope, Ophiopogon.* **Water-:** *Nymphæa, Victoria.* **Zephyr-:** *Zephyranthes.*

LIMB: the expanded flat part of an organ; in particular, the expanding part of a gamopetalous corolla.

LIME: *Citrus aurantifolia;* see *Citrus Fruits* (page 184); also *Tilia.* **-Berry:** *Triphasia trifolia.* **Finger-:** *Microcitrus australasica.* **Spanish-:** *Melicocca bijuga.*

LIMEQUAT: see *Citrus Fruits* (page 184).

LIMNANTHÀCEÆ. Limnanthes Family. Only 2 herbaceous genera native in N. Amer., having alternate dissected lvs., bisexual regular solitary fls. with 3–5 sepals and petals, twice as many stamens, superior ovary of mostly 5 carpels which separate into nutlets; allied to Geraniaceæ. Limnanthes only is cult.

LIMNANTHEMUM: *Nymphoides.*

LIMNÁNTHES. *Limnanthaceæ.* Small ann. herbs with characters of the family, the parts of the fl. 4 or 5. Of easy cult. and propagated by seeds as a flower-garden subject.

Doúglasii (*Floerkea Douglasii*). Meadow-Foam. To 1 ft.: lvs. finely 2-pinnatifid, yellowish-green: fls. white or pinkish and yellowish toward base, fragrant, sometimes white throughout, to 1 in. across. Calif. to Ore., in low ground, making great display in early spring.

LIMNIA: *Montia.*

LIMNOBOTRYS: *Ribes lacustre.*

LIMNÓCHARIS. *Butomaceæ.* Two trop American aquatic herbs with basal lvs. and yellow fls. having 3 persistent sepals and 3 fugacious petals.

The plants are grown in tubs or pots or in shallow water out-of-doors. Propagated by seeds or by offsets or suckers from the flower-stem. Usually reproduces itself naturally.

emarginàta: *L. flava.*

flàva (*L. emarginata. L. Plumieri*). Standing 2 ft. out of water: lvs. lanceolate or broadly ovate, velvety-green: fls. about 1 in. across, in 2–12-fld. umbels at tip of scape. W. Indies to Brazil: tender N.

Húmboldtii: *Hydrocleys nymphoides.*

Plumièri: *L. flava.*

LIMNORCHIS: *Habenaria.*

LIMODORUM TUBEROSUM: *Calopogon pulchellus.*

LIMÒNIUM (*Statice* of gardens). Sea-Lavender. *Plumbaginaceæ.* Many ann. and per. herbs: lvs. radical and tufted or alternate along st. in shrubby forms: fls. in many species in loose panicles, in others in branching spikes, white, yellow, rose, lavender, blue: widely distributed but mostly seacoast plants of the northern hemisphere.

The plants are grown in the border, rockery, greenhouse and for cut-flowers. The more dainty panicled kinds are as useful as gypsophila in mixed bouquets. The flowers may be dried for use with everlastings. They require the usual culture for perennials and annuals.

arboréscens. Shrub to 2 ft.: lvs. ovate-oblong, to 6 in. long: branches of panicles winged; calyx blue; corolla yellow. Teneriffe.

arbòreum: *L. fruticans.*

asiáticum: listed name.

auriculæfòlium: *L. binervosum.*

bellidifòlium (*L. reticulatum. Statice caspia*). Per. to 8 in.: lvs. obovate to lanceolate, to 1½ in. long: calyx white; corolla pale lilac. Eu., E. Asia. Var. **nànum** is offered as a dwarf form.

binervòsum (*S. auriculæfolia*). Tufted per. to 10 in.: lvs. lanceolate-spatulate, to 4 in. long: calyx white; corolla bluish-purple. Eu.

Bonduéllii. Ann. or bien. to 2 ft.: lvs. lyrate-pinnatifid, to 6 in. long: branches of panicles winged, forming linear appendages below the forks; calyx and corolla yellow. Algeria.

brassicæfòlium. Subshrub to 1½ ft.: lvs. lyrate-pinnatifid, with 2–4 small side lobes: branches of panicles with broad wavy wings; calyx purple; corolla yellowish-white. Canary Isls.

califórnicum (*L. commune* var. *californicum. S. Limonium* var. *californicum*). Per. to 2 ft.: lvs. obovate, to 10 in. long: fls. violet-purple. Calif.

Dícksonii: hort. name probably for form of *L. sinuatum.*

dumòsum: listed as having dense clusters of silvery-gray fls.—Some of the material in the trade is *L. vulgare.*

elegantíssimum: *L. latifolium* var.

exímium (*Goniolimon eximium*). Per. to 2 ft.: lvs. oblong to obovate, wavy-edged: calyx green tipped white; corolla lilac-rose. Cent. Asia. Var. **álbum** has white fls. and **supérbum** larger infl.

frùticans (*S. arborea*). Shrub: lvs. ovate, to 2 in. long: branches of panicles with narrow wings; calyx blue; corolla yellow. Teneriffe.

globulariæfòlium. Per. to 8 in. but sometimes growing to 2½ ft.: lvs. oboval or spatulate, in rosettes: corolla pale violet, small. Medit. region.

Gmélinii. Per. to 2 ft.: lvs. ovate or obovate: calyx dark purplish-blue; corolla rose. Caucasus, Siberia.—Differs from *L. vulgare* in fls. half as large, shorter petioled lvs., and the lower bracts all membranaceous.

Gougetiànum. Per. to 4 in.: lvs. evergreen, obovate, small and in dense rosettes: calyx reddish tipped white; corolla lavender. Italy.

hýbridum: a name of uncertain application.

imbricàtum. Subshrub to 1½ ft.: lvs. lyrate-pinnatifid, with 8–9 small side lobes: branches of panicles with broad wavy wings; calyx blue; corolla yellowish-white. Teneriffe.

incànum nànum: *L. tataricum* var. *nanum.*

latifòlium. Per. to 2 ft., hairy: lvs. oblong-elliptic, to 10 in. long: calyx white; corolla blue. E. Eu., W. Asia. Var. **álbum** has white fls. and **ròseum** rose. Var. **elegantíssimum** is an improved form with larger fls.

leptostàchyum. Ann., glaucescent: lvs. to ½ in. long, pinnate into linear segms.: fls. white. Persia.

lychnidifòlium. Per. to 2 ft.: lvs. obovate-lanceolate, large, leathery: corolla rose. S. W. Eu., Morocco.

macrophýllum. Shrub to 3 ft.: lvs. obovate-spatulate, large: branches of panicles broad-winged; calyx blue or purple; corolla yellow to white. Teneriffe. Var. **atrocærùleum** is listed.

macrópterum. To 2 ft.: lvs. lyrate-pinnatifid, large, leathery: branches of panicles broad-winged; fls. purple. Canary Isls.

mínimum: listed name.

minùtum. Per. to 9 in.: lvs. in rosettes, obovate: calyx white; corolla reddish. S. Eu.

oleifòlium (*L. virgatum*). Per. to 1½ ft.: lvs. spatulate, obtuse, crowded, glabrous, mostly cuneate: fls. violet, in loose cymose panicles. Medit. region.

Perèzii. Subshrub to 3 ft.: lvs. broadly triangular, to 6 in. long, with truncate base and long petioles; calyx purplish-blue; corolla pale yellow. Canary Isls. Var. **multiflòrum** is listed.

perfoliàtum. Per. to 2 ft.: lvs. oblong-spatulate, small: fls. white. Shores of Caspian Sea.

Preaùxii. Subshrub to 2 ft.: lvs. broadly triangular, to 4 in. long, with truncate base and long petioles: branches of panicles flattened; calyx lavender; corolla pale yellow. Canary Isls.

pubérulum. Subshrub to 8 in., white-papillose and pubescent: lvs. ovate-rhomboid, to ¾ in. long: calyx violet; corolla yellowish-white. Canary Isls.

reticulàtum: *L. bellidifolium.*

rupícolum. Per. to 1 ft.: lvs. densely imbricated, linear-lanceolate: corolla violet. Corsica, Sardinia.

sareptànum: *L. tomentellum.*

sérbicum: listed name.

sibíricum: *Armeria maritima* var.

Sièberi (*L. spathulatum*). Per. to 1½ ft.: lvs. oblong to obovate-spatulate, base wedge-shaped: fls. in secundly branched panicles; corolla violet, much longer than glabrous calyx. Medit. region.

sinénse. Per. to 1 ft.: lvs. obovate-lanceolate: calyx white or pale yellow; corolla yellow. China.

sinuàtum. Per. or bien. to 2 ft.: lvs. lyrate-pinnatifid, to 8 in. long: branches of panicles 3–5-winged, forming linear-lanceolate appendages below the forks: calyx blue; corolla yellowish-white. Medit. region. Color forms in the trade are **álbum, atrocærùleum, candidíssimum, carmíneum, ròseum.**

spathulàtum: *L. Sieberi.*

spicàtum. Ann. to 6 in.: lvs. oblong-lanceolate, pinnately lobed: fls. rose or white, in dense cylindrical spikes. W. Asia.

stœchifòlium: listed name.

supérbum. Hybrid between *L. Suworowii* and *L. leptostachyum:* ann. to 2½ ft.: fls. rose-red.

Suworòwii. Ann. to 1½ ft.: lvs. basal, oblong-lanceolate, to 8 in. long: fls. in dense cylindrical spikes; calyx green tipped with lavender; corolla lavender. Turkestan. Var. **álbum** has white fls.

tatáricum (*Goniolimon tataricum*). Per. to 1 ft.: lvs. obovate, to 6 in. long: branches of panicle with narrow wings; calyx white; corolla red. S. E. Eu. Var. **angustifòlium** (*S. incana*) has lanceolate lvs. Var. **álbum** is listed as having white corolla. Var. **nànum** (*S. incana* var. *nana*) is dwarf.

tomentéllum (*Statice sareptana*). Similar to *L. Gmelinii* from which it differs in the calyx wholly tomentose, larger fls. and longer outer bracts. Siberia.

virgàtum: *L. oleifolium.*

vulgàre (*S. Limonium*). Per. to 1 ft. or more: lvs. elliptic-oblong, to 6 in. long: calyx white or bluish; corolla bluish-lilac. Eu., N. Afr., Asia Minor.

LINÀCEÆ. FLAX FAMILY. Temp. and trop. herbs or shrubs of wide distribution, with usually alternate lvs., regular polypetalous fls. having an equal number of petals and stamens, superior 2–10-celled ovary, and fr. a caps. or drupe; 14 genera of which only Linum and Reinwardtia are cult. Aside from flax (*Linum usitatissimum*), the plants are of minor importance in cult., the others being grown for ornament in the open or under glass; the fls. are blue, red, or yellow, brilliant but mostly of short duration.

LINANTHUS: *Gilia.*

LINÀRIA. TOADFLAX. *Scrophulariaceæ.* Ann. and per. herbs of north temp. zone: lvs. opposite, in whorls or the upper ones alternate, entire, toothed or lobed: fl.-racemes or spikes terminal and of many colors, the corolla-tube long-spurred at the base.

The linarias are of easy culture. The annuals are propagated by seeds, the perennials usually by division although seeds sown one year should produce flowering plants the following year.

æquitríloba: *Cymbalaria æquitriloba.*

alpìna. Per. to 6 in., tufted: lvs. linear or lanceolate: fls. blue with orange palate, spur as long as corolla. Alps. Var. **ròsea** has rose fls. with orange-yellow palate.

amethýstina. Ann. to 6 in.: lvs. linear, lower ones verticillate: fls. lilac, lower lip pale yellow with violet dots or spots. Spain, Portugal and Morocco.

anticària. Much branched per. with ascending sts. to 1 ft.: lvs. oblong or lanceolate: fls. white with blue throat, spur lilac and shorter than corolla. Spain.

aparinoìdes: *L. heterophylla.*

bipartìta. CLOVEN-LIP T. Ann. 1 ft.: lvs. linear: fls. violet-purple with orange palate, upper lip deeply 2-parted, spur curved, slightly shorter than corolla. Portugal, N. Afr. Var. **álba** has white fls. and **spléndida** deep purple fls.

Broussonnètii (*L. multipunctata*). Ann. to 10 in.: lvs. lanceolate or linear: fls. yellow with orange throat and black spots, spur longer than corolla. Medit. region.

canadénsis. Ann. or bien. to 2½ ft.: lvs. linear: fls. ¼ in. long, blue with white palate, spur filiform, curved, as long as corolla. N., Cent. and S. Amer.

Cymbalària: *Cymbalaria muralis.*

dalmática. Per. to 4 ft.: lvs. lanceolate, glaucous: fls. bright yellow, spur straight, shorter than corolla. S. E. Eu. Var. **supérba** is an improved form.

delphinioìdes: *L. sapphirina.*

Elatìne: *Kickxia Elatine.*

excélsior: *L. maroccana* var.

faucícola. Ann. to 6 in.: lvs. lanceolate: fls. violet with paler throat, to ¾ in., in few-fld. racemes. Spain.

flàva (*Antirrhinum pumilum*). Ann. to 6 in.: lvs. ovate to lanceolate, to ⅜ in. long, sessile: fls. yellow to pale orange, to ½ in. long, usually 1–5 in small terminal clusters. Medit. region.

genistifòlia. Per. to 4 ft.: lvs. lanceolate: fls. citron-yellow with orange palate, to ¾ in. long, spur shorter than corolla. Eu.

gharbénsis. Ann. to 16 in., sts. glabrous, branched at base: lvs. linear, to 1¼ in. long, obtuse: fls. yellowish-white with violet spur, about 1 in. long, in racemes to 10 in. long. Morocco.

globòsa: *Cymbalaria muralis* var.

hederæfòlia: hort. name for a species of Cymbalaria.

Héndersonii: hort. name.

hepaticæfòlia: *Cymbalaria hepaticæfolia*.

heterophýlla (*L. aparinoides*). Ann. to 3 ft.: lvs. linear or lanceolate: fls. straw-colored with a yellow palate, 1 in. long. Morocco.

itálica. Per. to 2 ft.: lvs. linear-lanceolate: fls. yellow, spur slightly shorter than corolla. Eu.

Játtæ. Per. to 3 ft.: lvs. lanceolate to ovate, to 1½ in. long and nearly 1 in. wide, incurved at base, entire, acute: fls. yellow, to 1 in. long, corolla-tube somewhat swollen, spur straight, to ½ in. long. Italy.—Perhaps not distinct from *L. dalmatica*.

macedónica. Stout per. to 3 ft., grayish-green: lvs. ovate to lanceolate: fls. bright yellow marked with orange on palate, ¾ in. long, spur as long as corolla. Macedonia. Var. **speciòsa** is showy and large-fld.

macroùra. Per. to 2 ft., glaucous: lvs. oblong-linear: fls. yellow with orange palate, about 1½ in. long, spur as long as corolla. Caucasus.

maroccàna. Ann. to 1½ ft.: lvs. narrow-linear: fls. bright violet-purple with small yellow patch on palate, spur pointed, half as long again as corolla. Morocco. Var. **excélsior,** garden name for hort. mixture whose fls. vary from pink to dark blue, perhaps of mixed origin.

melanántha: *L. tristis*.

mìnor: *Chænorrhinum minus*.

multipunctàta: *L. Broussonnetii*.

origanifòlia: *Chænorrhinum origanifolium*.

pállida: *Cymbalaria pallida*.

Pancícii: hort. form, dwarf with large canary-yellow fls.; said to come from Orient. Some of the material in cult. under this name belongs to *L. macedonica*.

Perèzii: *L. Tournefortii*.

pilòsa: *Cymbalaria pilosa*.

purpùrea. Per. to 3 ft.: lvs. linear or linear-lanceolate: fls. bright purple with white-bearded palate, ⅓ in. long, spur curved and about length of corolla. S. Eu.

rèpens. Erect per., or decumbent at base, 1–2 ft., with creeping rootstocks: lvs. linear, mostly crowded near base and scattered above: fls. less than ½ in. long, white with purplish veins, fragrant. Eu.

reticulàta. Purplenet T. Ann. to 4 ft., glaucous: lvs. linear: fls. purple, netted-veined, palate orange or yellow, spur as long as corolla. Portugal. N. Afr. Var. **aùreo-purpùrea** is deeper in color.

sapphirìna (*L. delphinioides*). Ann. to 1 ft.: lvs. linear: fls. blue, to ¾ in. long, spur much longer than corolla. Spain, Portugal.

spártea (*Antirrhinum præcox*). Ann. to 2 ft.: lvs. narrowly linear, to ¾ in. long, not dense: fls. yellow, darker on the palate, to ¾ in. long, spur straight, as long as corolla. W. Medit. region.

spùria: *Kickxia spuria*.

striàta: name of doubtful application; perhaps a form of *L. bipartita* is meant.

supìna. Per. with decumbent sts. to 9 in. long: lvs. linear: fls. pale yellow, nearly 1 in. long, spur about length of corolla. Eu., nat. in E. U. S.

syrìaca: listed name.

Tournefórtii (*L. Perezii*). Ann. or per. to 1½ ft.: lvs. linear or lanceolate: fls. deep yellow with orange palate, spur about length of corolla. Spain.

triornithóphora. Per. to 4 ft., glaucous: lvs. ovate-lanceolate: fls. violet striped purple with orange palate, 1½ in. long, spur longer than corolla. Spain, Portugal.

triphýlla. Ann. to 2 ft., glaucous: lvs. ovate or oval: fls. yellowish-white with orange palate and violet curved spur, ¾ in. long. Medit. region.

trístis (*L. melanantha*). Per. to 1 ft.: lvs. linear-oblong: fls. brown or yellow with orange bearded palate, spur curved, shorter than corolla. Medit. region.

ventricòsa. Per. to 3½ ft.: lvs. lanceolate-attenuate, 3-nerved: fls. pale yellow with reddish veins, to ¾ in. long, corolla-tube broadly swollen, spur half as long as corolla. Morocco.

vulgàris. Common T. Butter-and-Eggs. Per. to 3 ft.: lvs. linear: fls. yellow with orange bearded palate, 1¼ in. long, spur about length of corolla. Eu., Asia, nat. in N. Amer.

LINDELÒFIA. *Boraginaceæ*. Erect per. herbs with alternate simple lvs. and blue or purple fls. like forget-me-not in dense long racemes.

One species is sometimes grown in rock-gardens. It thrives in any soil but requires a sheltered position and winter protection in the North. Propagated by division and seeds.

longiflòra (*L. spectabilis*). To 1½ ft., leafy: lvs. lanceolate or oblong-lanceolate: fls. deep blue, ⅜ in. long, in racemes to 6 in. long. Himalayas.

nervòsa: listed name.

spectábilis: *L. longiflora*.

LINDEN: *Tilia*.

LINDÈRA. *Lauraceæ*. Aromatic trees and shrubs native in Asia and N. Amer., with alternate lvs., unisexual or bisexual little fls. in axillary clusters, and fr. a drupe. The older name Benzoin has been rejected by botanical legislation and the more widely established name of Lindera has been conserved in accordance with the International Rules of Botanical Nomenclature. Propagated by seeds sown as soon as ripe, by layers, and by cuttings of green wood under glass.

æstivàlis: *L. Benzoin*.

Bénzoin (*Benzoin æstivale. B. odoriferum*). Spice-Bush. Deciduous shrub to 15 ft.: lvs. oblong-obovate, to 5 in. long, turning yellow in autumn, petiole usually less than ¾ in. long: fls. before the lvs. in early spring, greenish-yellow: fr. scarlet. Moist places and lowlands, Me. to Fla. and Tex.

grandifòlia: *L. megaphylla*.

megaphýlla (*L. grandifolia*). Evergreen shrub or tree to 60 ft.: lvs. oblanceolate, to 8 in. long, shining: fls. yellow: fr. black. China.

melissæfòlia (*Benzoin melissæfolium*). Shrub to 10 ft., twigs pubescent: lvs. elliptic-ovate, to 5 in. long, rounded or cordate at base, hairy: fls. yellow, appearing before lvs. N. C. to Fla. west to Ill. and Mo.

obtusíloba (*Benzoin obtusilobum*). Deciduous shrub or tree to 30 ft.: lvs. broad-ovate, to 5 in. long, entire or 3-lobed at apex, lobes obtuse when present: fls. yellow: fr. black, about ⅓ in. diam. Japan, Korea, China.

odorífera: *L. Benzoin*.

præcox (*Benzoin præcox*). Deciduous shrub or tree to 30 ft.: lvs. ovate-elliptic, to 3½ in. long, petiole to 1 in. long: fls. greenish-yellow, to ¾ in. across: fr. yellowish to reddish-brown. Japan.

touyunénsis: a form of *L. megaphylla* with under side of lvs. pubescent.

tríloba (*Benzoin trilobum*). Allied to *L. obtusiloba*, differing in lvs. deeply 3-lobed with lobes acuminate and fr. greenish-yellow, about ½ in. across. Japan.

umbellàta (*Benzoin umbellatum*). Shrub to 16 ft.: lvs. elliptic-obovate, to 5 in. long, acute, lower side glaucous with pubescent midrib, cuneate at base: fls. yellow, appearing with lvs.: fr. black, subglobose, about ⅓ in. long. Japan, China.

LINDHEÌMERA. *Compositæ*. Small genus of S. W. American annuals with usually opposite sessile lvs. with heads of both ray- and disk-fls., the former pistillate and fertile and latter perfect but sterile; fr. a much compressed and flattened winged achene. Propagated by seeds.

texàna. To 2 ft., plant hispid throughout except in fls., st. usually simple at base, becoming branched above: basal lvs. spatulate to cuneate-ovate, upper st.-lvs. ovate-lanceolate, to 1½ in. long, acuminate, entire to somewhat dentate: heads to 1 in. across, ray-fls. golden-yellow to cream and broadly ovate to obovate, acute, entire or nearly so, subtended by ovate foliaceous bracts. W. Tex.

LINDLEYELLA: *Bifrenaria aurantiaca*.

LINEAR: long and narrow, the sides parallel or nearly so, as grass leaves.

LINNÆA. *Caprifoliaceæ.* Trailing evergreen subshrub suitable for the rock-garden where it thrives in moist peaty or woodsy soil. Propagated by division and cuttings under glass. **L. boreàlis.** Twin-flower. Lvs. opposite, roundish, to 1 in. long: fls. in pairs, bell-shaped, to ⅓ in. long, rose or white, fragrant: fr. yellow, ⅛ in. long. N. Eu., N. Asia, Alaska. Var. **americàna** (*L. americana*) differs in the more tubular fls. to ½ in. long. N. Amer.—The plant in the trade as *L. canadensis* probably belongs here.

LINÒMA. *Palmaceæ.* An alternative name for the Princess palms, now retained under *Dictyosperma*, which see. It has been supposed that the genus Dictyospermum of Wight 1853 (Commelinaceæ) invalidates Dictyosperma of Wendland & Drude 1875 (Palmaceæ) and in 1917 the name Linoma was proposed for the palm. Under the Rules as now interpreted, the names Dictyospermum and Dictyosperma do not conflict, nor the earlier Dyctisperma of Rafinesque. Combination of the words *Linoma alba* has been made but the other names under Dictyosperma have not been carried over. The generic name Linoma is not adopted, even though cross-reference has been made to it from Areca.

LINOSPÀDIX. *Palmaceæ.* Probably a dozen species in New Guinea, unarmed small monœcious palms with lvs. pinnate-ribbed, pinnatisect or pinnate: spadix among the lvs., simple, the fls. spirally arranged and immersed, in 3's, the middle one pistillate; stamens 6 or 9: fr. small, ellipsoid, with stigmatic point at apex. Perhaps not regularly planted in our territory. See *Palm* for cult.

Petrickiàna. Lvs. bifid in juvenile form, later pinnate and arching; pinnæ about 30, narrow, long-acuminate, entire, strongly ribbed and nerved, more or less brown-scaly underneath. Described from juvenile specimens, and the botanical position uncertain.—Good tub-plant, and will probably stand in S. Fla.

LINÓSYRIS. *Compositæ.* Old World herbaceous perennials with alternate narrow lvs. and yellow heads of disk-fls. either solitary or in corymbose terminal clusters; pappus of bristles. Propagated by division and suited to any good soil.

vulgàris (*Aster Linosyris*). Goldilocks. To 2 ft., glabrous: lvs. linear, 1 in. long, entire: heads about ½ in. across, corymbose, late summer or autumn. Eu.

LÌNUM (incl. *Cathartolinum*). Flax. *Linaceæ.* Herbs or subshrubs with alternate narrow lvs., red, yellow, blue or white fls. with fugacious petals, 5-celled (or apparently 10-celled) ovary with 2 ovules in each cell and 5 styles; about 90 species chiefly in temp. regions, one (*L. usitatissimum*) furnishing fiber and linseed oil and others grown for the summer bloom. The foliage is very similar in most of the species, being small, narrow, sessile, usually entire or essentially so.

The annuals may be grown from seeds sown where the plants are to stand. The perennials are propagated by seeds or division or by cuttings. They are of simple cultural requirements.

abyssínicum: *L. strictum.*

africànum. Shrubby per. to 3 ft.: lvs. opposite, except uppermost, linear to ovate, acute: fls. yellow, small, in lax or contracted dichotomous corymbs. Trop. Afr.

alpìnum. Per. to 10 in., occasionally to 20 in.: lvs. linear-subulate, to ¾ in. long, usually close together along lower third of st.: fls. deep chicory-blue, to ¾ in. across, outer sepals acute, inner obtuse, all shorter than caps. Eu.—Distinguished from *L. perenne* by its smaller narrower lvs. and less diffusely branched infl., and petals overlapping entire length.

altàicum: a confused name.

americànum: unidentified name for an American species.

angustifòlium. Ann. or per. to 2 ft.: lvs. linear-aciculate, to ½ in. long, absent or scattered on lower third of st.: fls. blue, to ½ in. across, sepals all acute, ½ as long as petals, inner ones ciliate, as long as caps. or nearly so. Medit. region.

arbòreum. Shrub to 2 ft.: lvs. obovate, base cuneate, apex obtuse to mucronate, to 1½ in. long, glaucous, persistent: fls. clear yellow, to 1½ in. across, in erect few-fld. heads, sepals narrow-acuminate. E. Medit. region.—Not hardy at low temperatures.

austrìacum. Per. to 2 ft.: lvs. linear-subulate, to ⅝ in. long: fls. bluish-purple to pale wine-red, to ¾ in. across, sepals oval, obtuse rarely mucronate, to ⅓ caps. length. S. Eu.

cærùleum: *L. grandiflorum* var.

campanulàtum. Per. to 15 in., woody at base: lvs. spatulate or lanceolate, margins with narrow transparent membranes, minute spherical gland on each side of lf. base: fls. pale yellow with orange veins, to 1¼ in. across, sepals lanceolate-acuminate, white-margined. S. Eu.

capitàtum. Per. to 18 in., sts. stout: lvs. broadly spatulate to oblong-lanceolate, apex obtuse to acute, gland on each side of lf. base: fls. golden-yellow, to 1 in. across, usually 5–12 in infl., sepals lanceolate-acuminate, strongly ciliate on lower half. S. Eu.—Much of the material so named in the trade is *L. flavum.*

coccíneum: *L. grandiflorum* var.

collìnum. Perhaps not distinct from *L. austriacum* except in its lower habit. Var. **Lòreyi** is listed.

corymbíferum. Bien. to 20 in., sts. pilose: lvs. linear-lanceolate, to ¾ in. long, erect, margins and midrib ciliate, no glands present: fls. yellow, to ½ in. across, sepals glandular-ciliate, infl. a subcorymbose panicle. S. Eu.

corymbòsum: probably a misspelling of *L. corymbulosum*, a synonym of *L. strictum.*

crépitans: *L. usitatissimum* var.

flàvum. Golden F. Per. to 2 ft., sts. stout, somewhat woody: lower lvs. obovate, obtuse, upper lvs. narrower and acute, gland on each side of lf. base: fls. yellow, to 1 in. across, usually 20–50 in infl., sepals lanceolate-acuminate, glandular-ciliate and keeled. S. and Cent. Eu. Var. **compáctum** is advertised as a dwarf form.—See also *Reinwardtia indica.*

flexuòsum: name of uncertain botanical] application.

gállicum. Ann. to 15 in.: lvs. somewhat lanceolate, acute, to nearly ¾ in. long, glands absent, margins slightly revolute: fls. yellow, to nearly ¼ in. across, in open lax infl., sepals not longer than caps. Cent. Eu. and Medit. region.

glabréscens: listed name.

grandiflòrum. Flowering F. Ann. to 2 ft.: lvs. linear-lanceolate to ovate-acuminate, to 1¼ in. long, margins remotely ciliate: fls. red to bluish-purple, to 1½ in. across, sepals lanceolate-acuminate, to ½ in. long, margins membranous and ciliate. N. Afr. Var. **cærùleum,** fls. bluish-purple. Var. **coccíneum** (*L. coccineum*), fls. scarlet. Var. **ròseum,** fls. rose-pink. Var. **rùbrum,** fls. bright red.

hirsùtum. Per. to 2 ft., entire plant except petals and caps. hirsute: lvs. broadly lanceolate, to ⅝ in. long: fls. lavender-blue rarely white, to ½ in. across, sepals broadly lanceolate, densely hirsute. Cent. Eu. and Medit. region.—A form with almost glabrous lvs. may be in cult.

hológynum. Per. to 2 ft., glabrous: lvs. linear-lanceolate, 1-nerved: fls. blue, to 1 in. across, petals 2–3 times as long as calyx, styles twisted or fused about ½ their length. Mts. of Cent. Eu.

Lèwisii. Prairie F. Per. to 3 ft., differing from *L. perenne* in its slightly more robust habit, lvs. to 1¼ in. long and somewhat larger sepals and capsules; perhaps not distinct. W. N. Amer.

monógynum. Per. to 2 ft.: lvs. linear-lanceolate, to ¾ in. long, all acute: fls. white, to 1 in. across, sepals broadly lanceolate, white-margined, as long as caps. New Zeal.

narbonnénse. Per. to 2 ft.: lvs. linear-lanceolate, to ¾ in. long, somewhat dense on stout st.: fls. azure-blue with white eye, to 1¾ in. across, on stout pedicels, sepals lanceolate-acuminate, white-margined, longer than caps. Medit. region. Var. **álbum** has white fls.—Distinguished from *L. perenne* and its relatives by its long stigmas, longer sepals and stouter habit.

nervòsum. Per. to 1½ ft., st. pubescent at base: lvs. lanceolate-cuspidate, 3–5-veined: fls. blue, to 1½ in. across, sepals cuspidate, serrate on lower third, infl. a lax panicle. E. Eu.—Entirely glabrous forms may be in cult.

perénne (*L. sibiricum*). Per. to 2 ft.: lvs. linear-subulate to lanceolate, to 1 in. long, lower part of st. usually leafless or nearly so: fls. deep chicory-blue, to 1 in. across, petals not overlapping, infl. usually a much branched panicle. Eu. Var. **álbum,** fls. white.—See *L. alpinum.*

rígidum. Glabrous per. to 20 in.: lvs. linear, few, erect: fls. yellow, to 1¼ in. across, sepals with marginal glands, inner ones shorter than outer. Man. to Alta. south to Tex. and Colo.

rùbrum: *L. grandiflorum* var.

salsoloìdes. Evergreen per. to 16 in.: lvs. linear-subulate to linear-lanceolate, to 1¾ in. long but typically needle-like and less than ½ in. long, often clustered at apex: fls. white with purple veins, to 1 in. across, petals rounded at apex, sepals ovate-cuspidate, somewhat glandular-ciliate, longer than caps. S. Eu. Var. **nànum** is of prostrate habit, to 3 in. forming low clumps to 18 in. diam., lvs. usually longer than in type and plant less hardy.—Does not withstand severe cold.

sibíricum: *L. perenne.*

stríctum (*L. abyssinicum*). Ann. to 18 in.: lvs. linear-lanceolate, to 1 in. long, margins strongly revolute: fls. yellow, to nearly ¼ in. across, in tight compact head-like clusters, sepals much longer than caps. Cent. Eu. and Medit. region.

suffruticòsum. Shrubby per. to 8 in., densely puberulous, much branched from woody base: lvs. linear-subulate, to ⅜ in. long, closely clustered on young shoots: fls. blue, to 1 in. across, in few-fld. infl., sepals ovate-cuspidate, longer than caps., glandular-ciliate. S. Eu.

sulcàtum. Ann. to 2½ ft.: lvs. linear-lanceolate to subulate, to nearly 1 in. long, minute glands present on each side of lf. base: fls. yellow, to ½ in. across, sepals obtuse-cuspidate, minutely serrulate, longer than caps. Ont. to Ga. and Tex.

tenuifòlium. Shrubby per. to 1 ft.: lvs. linear-lanceolate to subulate, to ¾ in. long: fls. pink-lilac or white with purple veins or center, to 1 in. across, petals very briefly acuminate, sepals ovate-cuspidate, strongly glandular-ciliate, longer than caps. Cent. Eu. and Medit. region.—Of coarser habit and taller and more diffuse infl. than *L. salsoloides.*

trígynum: *Reinwardtia indica.*

usitatíssimum. Flax (which see). Ann. to 4 ft., sts. erect: lvs. linear-lanceolate: fls. blue, to ½ in. across, sepals ⅓ as long as petals, glabrous, nearly as long as caps.: caps. to ⅜ in. across. Probably Asia; run wild in N. Amer. and Eu. Var. **crépitans** is lower with larger fls.

viscòsum. Glandular-hairy per. to 2 ft.: lvs. oblong-lanceolate, to ⅝ in. long, margins densely glandular-ciliate: fls. pink with violet veins, to 1¼ in. across, sepals lanceolate, margins glandular-ciliate. S. Eu.

LIONS-EAR: *Leonotis.*

LIP: one of the parts in an unequally divided corolla or calyx; these parts are usually 2, the upper lip and the lower lip, although one lip is sometimes wanting; the upper lip of orchids is by a twist of the stipe made to appear as the lower; a labium. Lipped or labiate corollas are characteristic of the Labiatæ.

LÍPARIS. Twayblade. *Orchidaceæ.* Cosmopolitan terrestrial herbs with pseudobulbs or sts. swollen at base, bearing a few commonly broad lvs. and terminal racemes of usually small fls.; petals commonly much narrower than sepals. Sometimes transplanted to the wild-garden; see *Orchids.*

liliifòlia. To 10 in. high: lvs. 2, to 7¼ in. long: infl. to 6 in. high, commonly many-fld.; fl . about ¾ in. across; sepals greenish-white; petals much narrower, filiform, madder-purple; lip mauve-purple tinged with green. May–July. Me. to Ga. and Ala. west to Minn. and Mo.

Loesèlii. To 10¼ in. high: lvs. 2, to 7½ in long: infl. to 4 in. high, few-fld.; fls. yellowish-green or whitish, about ½ in. across. May–Aug. N. Amer., Eu., N. Asia.

lóngipes: *L. viridiflora.*

viridiflòra (*L. longipes*). Pseudobulbs to 6 in. high, with 2 lvs. to 12½ in. long: racemes to 12 in. long, dense; fls. very small, greenish-white or cream-color, with green to orange lip. Sept.–Mar. India, Indo-China, Malaya, China, Philippines.

LÍPPIA. *Verbenaceæ.* Herbs and shrubs having mostly opposite or whorled lvs. and small white, rose or purplish fls. in heads or spikes; native mostly in warm countries.

One (*L. canescens*) is grown as a ground-cover in warm climates and the lemon-verbena is a popular greenhouse subject. The latter should be grown in a temperature of about 55° and the pots planted out in summer. Propagated by cuttings from the new growth. *V. canescens* is best increased by planting small sods a few feet apart.

canéscens (*L. repens*). Creeping and spreading: lvs. opposite or whorled, oblong to lanceolate, to ¾ in. long, toothed toward tip: fls. lilac with yellow throat, in heads to ½ in. across. S. Amer.—Used as a lawn cover in S. Calif. and elsewhere.

citriodòra (*Aloysia citriodora* and *triphylla*). Lemon-Verbena. Shrub to 10 ft.: lvs. in whorls of 3 or 4, lanceolate, to 3 in. long, entire or toothed, with odor of lemon: fls. white, in spikes or terminal panicles. Argentina, Chile.

ligustrìna (*L. lycioides. Aloysia ligustrina*). Shrub to 14 ft.: lvs. opposite, oblong-lanceolate, to 1 in. long, entire: fls. white or tinged with violet, fragrant, in abundant spikes to 3 in. long. Tex. to Argentina.—Sometimes planted far S.

lycioìdes: *L. ligustrina.*

rèpens: *L. canescens.*

urticoìdes. Shrub to 10 ft.: lvs. opposite, ovate to oblong, to 3 in. long, toothed: fls. white, fragrant, in panicled spikes. S. Amer.

LIQUIDÁMBAR. *Hamamelidaceæ.* Attractive deciduous trees native in Asia and Amer., with palmately lobed toothed maple-like lvs., unisexual fls. without petals borne in globose heads, and fr. a dense spiny hanging head of compacted capsules. Propagated by seeds which may not germinate until the second year.

formosàna. To 120 ft.: lvs. 3-lobed. China, Formosa; hardy only in southern states.

Styracíflua. Sweet Gum. To 140 ft., the branches becoming corky: lvs. 5–7-lobed. Conn. to Fla. and Mex.; reliably hardy only in its natural range.

LIQUORICE: *Glycyrrhiza.*

LIRIODÉNDRON. Tulip-Tree. *Magnoliaceæ.* Two notable deciduous trees native in N. Amer. and China, the former often planted and an important timber tree: lvs. alternate, long-stalked, lobed and with broad truncate apex: fls. bell-shaped, solitary, terminal: fr. cone-like, of long narrow carpels.

Tulip-trees do not transplant readily, and the moving should be undertaken in spring. They thrive on rich moist land. Propagated by seeds stratified and sown in spring, or horticultural forms by layering and grafting.

chinénse. Tree to 50 ft.: lvs. 5–6 in. long, with 4 acuminate lobes: fls. to 1½ in. long. Cent. China.

Tulipífera. To 200 ft., with eventually columnar unbranched trunk: lvs. to 5 in. long and broad, pale beneath: fls. greenish-yellow with orange at base, to 2 in. long: fr. brown, to 3 in. long. Mass. to Fla. and Miss.—One of the noblest of American trees; sometimes known as Whitewood and to lumber dealers erroneously as "poplar." Var. **aùreo-marginàtum** has lvs. margined with yellow. Var. **fastigiàtum** (var. *pyramidale*) of narrow-pyramidal form. Var. **integrifòlium,** lvs. unlobed.

LIRÌOPE. Lily-Turf. *Liliaceæ.* Asian species of stemless glabrous evergreen per. herbs, prized for their attractive grass-like foliage forming mats or sods and the small lilac-purple to whitish fls. which are sessile or ascending or erect, in spikes or racemes that may or may not overtop the clump; ovary superior; filaments equalling or exceeding the blunt anthers: fr. 1-seeded, berry-like, blue or black. The species make good ground-cover in both shade and sun, and are hardy in parts of N. Y. Propagated readily by division. See *Ophiopogon.*

graminifòlia: the plant grown under this name is *L. spicata,* the true *graminifolia* apparently not being in cult.

Muscàri (*L. graminifolia* var. *densiflora*). Big Blue L. Root-system an upright stock, with thick tubers and many fibers: lvs. firm, to 18 in. long and to ½ or ¾ in. broad: scapes mostly not exceeding lvs., dense: fls. lilac-purple: fr. black. Japan, China.—There are cockscombed and fasciated forms. The plant sometimes passes as *Ophiopogon* (or *Mondo*) *Jaburan.* Var. **exiliflòra** is a slender form with lax spikes. Var. **variegàta** has lvs. yellow-striped.

spicàta. Creeping L. Root-system shallow, with many slender jointed rootstocks and tubers: lvs. narrow, about

¼ in. or less broad, grassy: spike slender and open, light lilac to almost white: fr. becoming black. Japan, China.

LISIANTHUS: *Eustoma Russellianum.*

LISSOCHÌLUS. *Orchidaceæ.* Terrestrial African orchids with creeping rhizomes and short leafy sts. thickened in a pseudobulb: lvs. long and usually narrow, plicate. scapes lateral, tall, leafless, bearing above loose racemes of medium-sized or large fls. with lip having a saccate or spurred base. Differs from the closely allied genus Eulophia by having the petals much broader than and differently colored from the sepals.

Lindleyànus. To 6 ft. high: rhizome creeping: lvs. lanceolate-linear, to 3 ft. long and 1 in. wide, acute: racemes loose; fls. yellow, to about 1½ in. across; sepals subspatulate, petals elliptic-oblong; lip entire or remotely 3-lobed. Swamps, trop. Afr.

LISTÈRA. *Orchidaceæ.* Terrestrial orchids native in the north temp. zone, with 2 opposite lvs. and small fls. in terminal racemes, the sepals and petals similar, the lip entire or 2-lobed. Sometimes planted in wild or protected places; see *Orchids.*

cordàta (*Ophrys cordata*). Heart-leaved Twayblade. To 10 in. high: lvs. sessile, cordate-ovate or deltoid, to 1½ in. long: fls. purplish- to yellow-green, about ⅓ in. long; lip narrowly oblong, very deeply cleft into 2 narrow lobes, about twice as long as sepals and petals. May–Aug. Newf. to N. C. west to Alaska and N. Mex., Greenland, Iceland, Eu., Asia.

ovàta. To about 29 in. high: lvs. oval to subrotund, to 5¼ in. long: fls. greenish-yellow with often brownish lip, about ½ in. long. Eu., Asia.

LÌTCHI. *Sapindaceæ.* Chinese tree widely grown in oriental warm regions for the edible fresh or dried fr., particularly prized in China. **L. chinénsis** (*Nephelium Litchi*). Litchi. Leechee. Lychee. To 40 ft.: lvs. of 2–4 pairs of oblong to lanceolate lfts. to 4 in. long, leathery and shining: fls. small, greenish-white or yellowish, in terminal panicles to 1 ft. long: fr. bright red, to 1½ in. across, covered with angular tubercles, the white flesh or aril juicy and edible, the seed single and large.—When well established, the litchi will stand a few degrees of frost. It requires abundant moisture and thrives on deep loamy soil. Trees should be set 30–40 ft. apart. Propagated by seeds, air-layering and inarching. The tree stands in S. Fla. and S. Calif.

LITHOCÁRPUS (*Pasania*). *Fagaceæ.* Evergreen oak-like trees native in Asia and W. N. Amer., with alternate lvs., unisexual fls. in erect catkins, and fr. a solitary nut partly or wholly inclosed by a cup-like spineless involucre. Sometimes grown in the S. and Calif. Propagated by cuttings, layers, or seeds: The species have also been named in Quercus.

cleistocárpa (*Quercus Wilsonii*). Lvs. to 5 in. long, entire, glaucescent and becoming glabrous beneath. China.

córnea (*Quercus cornea*). Lvs. to 4 in. long, toothed above the middle, usually only pubescent on veins beneath. China.

densiflòra (*Quercus densiflora*). Tanbark Oak. Tree 60 or 80 ft., sometimes 150 ft.: lvs. to 5 in. long, toothed, rusty-tomentose beneath but becoming glabrous. Ore., N. Calif.

edùlis. Lvs. to 6 in. long, entire, glabrous. Japan.

glàbra (*L. thalassica. Quercus glabra*). Lvs. to 5 in. long, entire or sometimes toothed toward tip, grayish-tomentose beneath. China, Japan.

Hénryi. Lvs. to 10 in. long, entire, becoming glabrous beneath. China.

thalássica: *L. glabra.*

LITHODORA: *Lithospermum.*

LITHOFRÁGMA. *Saxifragaceæ.* Simple-stemmed rather small per. herbs with tuberous rootstocks, sometimes named in Tellima: fls. small, white or pink, with clawed petals and 3 styles, in simple terminal racemes: lvs. mostly radical, nearly orbicular or very broad. A few species in W. N. Amer., useful in wild-gardens and rockeries.

affìnis (*Tellima affinis*). Woodland Star. To 16 in., glandular-hairy: lvs. crenately lobed, often bronzed: fls. white. Calif.

parviflòra (*Tellima parviflora*). To 1 ft., glandular-hairy: lvs. divided to base into 3–5 parts which are ternately cut into oblong or linear segms.: petals deeply 3–5-lobed. Alta. to Calif.

tenélla. To 6 in., glandular-hairy: lvs. 3-parted about half way, lobes 3-toothed: petals 3-lobed at apex. Alta. to Wyo.

LÍTHOPS. Stoneface. *Aizoaceæ.* Segregate from the great group Mesembryanthemum, native in S. Afr.: lvs. thick, in pairs, mostly buried as they grow in nature, the exposed top flat or concave and stone-like as if a single st. or body with a fissure across the top, in the juvenile state with only a central orifice at the apex after the manner of Conophytum: fls. solitary, yellow or white, issuing from the fissure, the petals many and tube none; stamens numerous in an erect column; stigmas 4–7. The plants resemble pebbles when not in bloom.

alpìna. Growths about ½ in. high and broad, lined and spotted with brown: fls. yellow.

Aùcampiæ. Growths to ½ in. high, 2 in. broad at apex, with sprinkling of small blackish dots: petals in 3 or 4 series, obtuse or emarginate or interior ones acute, golden.

bélla (*M. bellum*). Growths to 1 in. high and broad, ½ in. thick, top brownish with darker markings: fls. white, to 1¼ in. across,

Cómptonii. Growths 1½ in. thick, olive-green: fls. yellow, 1 in. across.

Éberlanzii (*M. Eberlanzii*). Growths to 1½ in. high and 1¼ in. broad, grayish marked with lines, fissure nearly ½ in. deep: fls. white.

Èdithiæ. Differs from *L. bella* in the flat top with chocolate-brown markings, and dove-gray color.

Elízabethiæ. Growths about ½ in. high and broad, brick-red, spotted with dark green and with red lines: fls. probably yellow.

Erniàna. Growths to 1 in. high and nearly as broad, the halves unequal, reddish-green with brown lines: fls. white, about 1 in. across.

farinòsa: *L. pseudotruncatella.*

flòre-álbis: listed name.

Fràmesii. Growths pinkish-dove-gray, about 2 in. long: fls. about 1 in. across, petals white, obtuse, many in about 3 series, filaments white, anthers yellow.

Francíscii (*M. Franciscii*). Growths to 1½ in. high and broad, ¾ in. thick, grayish-white marked and dotted with darker green: fls. yellow, to ¾ in. across.

Fúlleri. Growths to 1 in. high and broad, ¾ in. thick, fissure ½ in. deep, light gray or brownish, rough on top with row of dark brown spots around margin: fls. white, 1 in. across.

fúlviceps. Growths about 1 in. high and broad, brown and spotted: fls. yellow, whitish beneath, 1 in. across.

Hélmutii. Growths about 1 in. wide, bright green: fls. golden-yellow, 1 in. across.

Hérrei. Forming clumps: growths 1 in. high and ½ in. wide, brownish-green: fls. yellow, ½ in. across.

Jùlii. Tufted: growths 1 in. high and ¾ in. broad, with deep fissure, pale gray spotted and lined on top with brown: fls. white, 1 in. across.

karasmontàna (*M. karasmontanum*). Growths to 1 in. broad and ¾ in. thick, pale gray or brown marked with darker lines and spots: fls. white with yellow anthers, 1½ in. across.

kewbéscens: catalogue name.

Koegràbie: listed name.

kuibisénsis. Growths in clumps, 1½ in. high and broad, yellow-brown with red-brown sunken markings: fls. yellow.

kunjasénsis. Tufted: growths about 1 in. high and broad, grooved, with dark spots: fls. yellow.

láctea. Growths about 1 in. high and nearly as broad, rough, greenish-white lined and spotted with red-brown: fls. white, 1 in. across.

lateritia. Tufted: growths 1 in. high and ¾ in. broad, grooved, brick-red.

Lericheàna (*M. Lericheanum*). Tufted: growths to 1¼ in. high and broad, reddish-gray, with transparent dots: fls. white, fragrant, 1 in. across.

Lésliei (*M. Lesliei*). Growths to 2½ in. long, 1½ in. across, and 1 in. thick, flat on top, olive-green spotted with orange: fls. bright yellow, whitish or pinkish on back, to 1¾ in. across.

Lýdiæ: name without description.

marmoràta (*M. marmoratum*). Growths to 1½ in. high and broad, 1 in. thick, grayish-green and mottled with cream or yellow: fls. white with yellow anthers, shining, fragrant, 1¼ in. across.

Márthæ. Growths about 1 in. high and broad, top slightly convex, grayish-yellow or pale brown, with transparent dots and often reddish lines: fls. yellow, petals many and narrow.

Meỳeri. Forming clumps: growths about 1 in. high and broad, deeply fissured, dark gray-green: fls. yellow, 1½ in. across.

mickbergénsis. Tufted: growths broad-oval, about ¾ in. high and broad, reddish-gray, grooves yellow-brown: fls. white.

Múndtii: *L. pseudotruncatella* var.

olivàcea. Similar to *L. Fulleri* but smaller, top greenish with row of cream-colored dots parallel to fissure: fls. yellow, ¾ in. across.

opalìna. Growths to 1¼ in. high and 1 in. broad, gray-blue: fls. white.

óptica (*M. opticum*). Growths to ¾ in. high and broad, yellowish-white with greenish-white top usually without markings: fls. white or pinkish with yellow anthers, ¾ in. across.

Peèrsii. Growths to 1½ in. high and ¾ in. broad and thick, pale reddish-brown, rough, unspotted: fls. yellow, 1 in. across.

pseudotruncatélla (*M. pseudotruncatellum. L. farinosa*). Tufted: growths to 1½ in. across, with fissure across top which is a central orifice when young, grayish or brownish with brown lines: fls. bright yellow, paler in center, to 2 in. across. Var. **Múndtii** (*L. Mundtii*) has 1–2 growths together, yellow or orange fls., petals edged and tipped with red.

pulmonúncula. Similar to *L. pseudotruncatella* but more reddish with red-brown lines.

rugòsa. Tufted: growths broad-oval, to ¾ in. high and ½ in. broad, grooved, reddish-gray with transparent spots: fls. yellow.

Ruschiòrum (*M. Ruschiorum*). Forming clumps: growths to 1½ in. high and broad, gray-green without distinct markings: fls. yellow, 1 in. across.

Schwántesii. Tufted: growths to 1½ in. high and 1 in. across, reddish-gray spotted and edged with red: fls. yellow.

summitàtum. Growths about 1 in. high and broad, yellow-brown with broad brown markings: fls. white.

terrícolor. Growths to 1¼ in. high, 1 in. broad and ¾ in. thick, grayish dotted with red-brown: fls. bright yellow with white stamens, 1 in. across.

Trièbneri. Growths ¾ in. high and broad and 1 in. thick, grayish with red-brown lines: fls. yellow, 1½ in. across.

turbinifórmis (*M. turbiniforme*). Growths to about 1½ in. high and broad, irregularly tuberculate, gray marked with dark brown: fls. bright yellow, 1½ in. across.

umdausénsis. Similar to *L. Fulleri* but of drab olive-green color: fls. white, 1 in. across.

urikosénsis. Growths conical, about 1 in. high and ½ in. broad, gray-green marked with brown: fls. yellow.

Vállis-Marìæ. Forming clumps: growths to 1½ in. high and 2 in. broad, pitted, blue-gray: fls. yellow, 1½ in. across.

Vanzíjlii. Growths 1–1½ in. thick, greenish-brown irregularly marked with dark brown: fls. orange-yellow, ½ in. across.

LITHOSPÉRMUM. GROMWELL. *Boraginaceæ.* Hairy ann. and per. herbs, or sometimes subshrubs, mostly in northern hemisphere, with alternate entire lvs. and white, yellow, blue or violet fls. in bracted racemes or spikes; corolla funnelform or salverform, naked in throat, often showy; planted in rock-gardens and borders. Propagated by seeds and cuttings.

angustifòlium (*L. linearifolium*). Per. to 2 ft.: lvs. linear: fls. of two kinds, the earlier ones bright yellow, to 1 in. long, later fls. pale yellow. Ind. to B. C. and Ariz. on dry land.

breviflòrum. Per. to 1½ ft.: lvs. narrowly linear, to 2 in. long, usually ascending: fls. deep yellow, to ½ in. long, corolla-lobes fringed or finely toothed. Ark. to Colo. and New Mex.

canéscens. PUCCOON. Per. to 1½ ft., hairy: lvs. oblong to linear: fls. orange-yellow, ½ in. long, corolla-lobes entire, tube not hairy. Ont. to Tex.

carolinénse. Per. to 2½ ft., sts. leafy, clustered and branched: lvs. narrowly lanceolate: fls. orange-yellow, to ¾ in. long, corolla-lobes entire, tube long, hairy at base. N. Y. to Mont. south to Fla. and New Mex.

diffùsum (*L. prostratum. Lithodora diffusa*). Dwarf or prostrate evergreen subshrub: lvs. linear-lanceolate: fls. deep blue striped with reddish-violet, ½ in. long. S. Eu.

dístichum. Per., erect, silky-hairy: lvs. oblong-lanceolate: fls. white with yellow throat. Mex.

Fròebellii: listed as a "dwarf compact plant to 10 in. with rosemary-like lvs. and dark blue fls."; it may be a Moltkia.

fruticòsum (*Lithodora fruticosa*). To 10 in.: lvs. narrow, revolute, white-tomentose beneath: fls. blue. S. Eu.—The plant commonly cult. under this name is *L. diffusum.*

Gástonii. Per. to 10 in.: lvs. ovate-lanceolate, to 3 in. long, acuminate, somewhat spreading and recurved: fls. dark blue with white center, few, corolla-tube short, hairy at base. Pyrenees.

Gmélinii (*L. hirtum*). Per. to 2 ft.: lvs. lanceolate or oblong, hairy: fls. orange, ¾ in. across. N. Y. to Fla. and New Mex.

graminifòlium: *Moltkia suffruticosa.*

hirsùtum: listed name.

hírtum: *L. Gmelinii.*

intermèdium. Subshrub to 10 in.: lvs. narrow, slightly hoary: fls. blue, drooping. Of uncertain botanical position and country not recognized.

lanígerum: listed name.

linearifòlium: *L. angustifolium.*

multiflòrum. Per. to 2 ft.: lvs. linear or linear-lanceolate: fls. light yellow, ½ in. long. Wyo. to Mex.

oblóngum. Per. to 8 in.: lvs. spatulate to linear-oblong, rough-hairy: fls. ⅓ in. across. Wyo. to New Mex.

officinàle. Per. to 4 ft.: lvs. lanceolate or ovate-lanceolate: fls. yellowish-white, ⅙ in. long. Eu.; widely nat. in E. U. S.

oleifòlium. Prostrate subshrub: lvs. elliptic-oblong, ½ in. long: fls. ½ in. long. Pyrenees.

petræum: *Moltkia petræa.*

pilòsum. Per. to 1 ft., usually unbranched: lvs. linear-lanceolate, to 4 in. long: fls. greenish-yellow, in leafy infl., calyx about as long as corolla. W. N. Amer.

prostràtum: *L. diffusum.*

purpuráscens: *L. purpureo-cæruleum.*

purpùreo-cærùleum (*L. purpurascens*). Per. with procumbent sts. to 2 ft. long: lvs. lanceolate: fls. rich blue, ½ in. across. Eu.

rosmarinifòlium. Tufted suffrutescent per. to 2 ft., sts. hairy: lvs. linear-lanceolate, margins revolute, white-silky beneath: fls. blue, hairy outside, in short solitary terminal racemes, calyx white-woolly. Italy and Greece.

sibíricum: *Mertensia sibirica.*

tenuiflòrum. Sts. decumbent, to 1 ft. long: lvs. oblong-linear: fls. blue or rarely white, ¼ in. long. S. E. Eu. to W. Asia.

LITHRÆA. *Anacardiaceæ.* Evergreen trees and shrubs with leathery simple or pinnate lvs., small fls. in panicles, 10 stamens, fr. a 1-celled drupe; 3 species in S. Amer., planted in Calif. for ornament.

caústica. Shrub: lvs. simple, oval or oblong-ovate: fls. white: fr. white and lustrous, small. Chile.

molleoìdes. Shrub to 12 ft.: lvs. pinnate, of 3–5 lfts.: fls. greenish or whitish: fr. whitish and lustrous, small. S. Brazil, Argentina, Bolivia.

LÍTSEA. *Lauraceæ.* Diœcious trees and shrubs mostly of the Old World tropics, having commonly alternate lvs., small fls. in umbels, and fr. a berry; sometimes planted in S. Calif. for ornament and interest.

calicàris. Tree to 40 ft.: lvs. ovate to ovate-oblong, to 5 in. long, entire: umbels in racemes: fr. reddish, ¾ in. long. New Zeal.

ferrugínea. Tree to 80 ft.: lvs. oblong, to 7 in. long, red-tomentose on nerves beneath: fr. globose, small. Singapore, Java.

glaùca. Lvs. elliptic to lanceolate-oblong, to 5 in. long, acute to acuminate, minutely silvery- to yellow-hairy beneath or sometimes subglaucous: fls. in dense umbels or glomerules: fr. subglobose, to ⅓ in. diam. Japan.

LITTÆA HYSTRIX: *Agave stricta.*

LITTÒNIA. *Liliaceæ.* Small genus of tender plants mostly in trop. Afr. and Arabia, having a tuberous non-bulbous rootstock, an erect or prostrate leafy st., with campanulate fls. solitary in axils: allied to Gloriosa from which it differs technically in its more climbing sts. and perianth-segms. not clawed nor strongly reflexed. Cult. as for *Gloriosa.*

modésta. St. simple, suberect, often prostrate or runner-like: lvs. ovate, lanceolate or linear, tip produced into tendril, central ones whorled: fls. bright orange, to 1¼ in. long, pedicel to 2 in. long. S. Afr.

LIVE-FOR-EVER: *Sedum.*

LIVERLEAF: *Hepatica.*

LIVING ROCK: *Roseocactus fissuratus.*

LIVISTÒNA. *Palmaceæ.* Hermaphrodite more or less ringed fan-palms in trop. Asia, Malaya, Philippines, New Guinea, and Australia, unarmed except on the petioles of some species, mostly tall, with branching long-peduncled spadices among the heavy foliage: lvs. more or less orbicular, plicate, deeply cut into narrow often bifid lobes: fls. small, numerous; stamens 6, filaments united: fr. drupe-like, small, globose or somewhat oblong, with thin flesh, variously colored; seed 1. The Livistonas are sometimes yet known to planters as Corypha. The species are much confused among cultivators, particularly the immature plants. Only one of the Livistonas, *L. chinensis*, is much known in the U. S. For cult. see *Palm.*

altíssima: *L. rotundifolia.*

austràlis (*Corypha australis*). To 60 or 80 ft., bearing a dense crown: lvs. orbicular in outline, 3–5 ft. across, divided to middle into narrow entire or bifid lobes, without threads between the lobes when mature; petiole broad at base, to 5 ft. long, bearing stout short curved spines: spadix much branched, glabrous, spathe densely tomentose: fr. spherical, ½–¾ in. diam. Australia.

chinénsis (*L. olivæformis*). Chinese Fan or Fountain Palm. Trunk stout and obscurely ringed, 20–30 ft., bearing a heavy dense globular crown with the lower lvs. declined or hanging: lf.-blade 3–6 ft. across, rotundate-reniform, cut ⅓ to ½ the depth into many narrow 1-ribbed segms. which in young plants are bifid an in. deep but on mature trees are parted a ft. or two deep and the narrow parts hang like a fringe; filaments usually none; petiole 2–6 ft. long, armed below with small spines (which may disappear): spathes scurfy: fr. olive-form, about ½ in. long, dull blue. Cent. China. Var. **subglobòsa** (*L. subglobosa*), fr. globose, little if any longer than thick.—The Chinese fan palm is the commonest palmate palm in cult. in N. Amer., being prized as a tub-plant and for decorations as well as an out-door tree in most regions where palms will grow. It is very easy of cult. The plant is still sometimes known by the misapplied name *Latania borbonica:* this name should now be dropped from the lists.

cochinchinénsis (*L. Hoogendorpii*). Tall and relatively slender, to 40 or 50 ft., the lf.-bases soon falling and leaving triangular scars: lvs. dark green, 3–6 ft. across; pinnæ very deeply bifid, with 2 strong side ribs; petiole bearing many dark colored very stout long sometimes branched spines or thorns that are thickened at base: fr. globose or somewhat broader than long, about ½ in. diam., blue. Malaya.

decípiens. Small or medium-sized palm making a loose open head: lf.-blade 2–5 ft. across, somewhat glaucous underneath, cut to the base into many narrow deeply bifid pendent segms.; petiole slender, bearing scattered small prickles: fr. spherical, about ½ in. diam. Probably Australian.

Hoògendorpii: *L. cochinchinensis.*

hùmilis. Low, trunk 6–15 ft.: lvs. rather small, blade about 1½ ft. in radius, rather stiff, deeply divided, filaments very short or wanting; petiole bearing small prickles: fr. ovoid-oblong, about ⅔ in. long. Australia.—Decorative when young.

Jenkinsiàna. To 30 ft.: lvs. 5–6 ft. across, glaucous underneath; segms. 70–80, very narrow, shortly bifid; petiole spiny whole length: fr. 1 in. or less diam., blue. Assam.

Marìæ. To 40 ft., bearing a loose head: lvs. glaucous, when young the petiole and blade red or tinged; blade 3–6 ft. long, nearly orbicular and contracted toward base, split to middle and beyond, with a thread in each sinus; segms. deeply bifid, but the segm. itself rather than its lobes hanging; petiole with many stout but short spines: fr. spherical, about ½–¾ in. diam. Inland palm in Australia.

olivæfórmis: *L. chinensis.*

rotundifòlia (*L. altissima. Corypha rotundifolia*). Trunk to 80 ft. and more, rather slender, obscurely ringed: lf.-blade nearly orbicular, with short segms. bifid at apex; petiole of young lf. bearing spines, that of older lvs. nearly to quite spineless: fr. spherical, about ¾ in. long, black. Malayan region; variable.

subglobòsa: *L. chinensis* var.

LIZARDS-TAIL: *Saururus.*

LLÓYDIA. *Liliaceæ.* Bulbous herbs of the Erythronium group, with narrow grass-like lvs. and small white fls., the perianth-segms. distinct; suitable for the alpine-garden.

serótina. To 6 in.: lvs. to 4 in. long: fls. yellowish-white veined with purple, ½ in. long. Rocky Mts.; mts. of Eu. and Asia.

LOÀSA. *Loasaceæ.* Herbs or subshrubs native in S. Amer. and Mex., usually with stinging hairs, the fls. yellow, white or red, with hooded petals and colored nectar-scales so that the coloration may be complex, and fr. a caps.; sometimes grown in flower-gardens. Propagated by seeds and cuttings.

acanthifòlia. Erect per. covered with stinging hispid hairs: lvs. 3–5-pinnate, to 4 in. long, lobes coarsely sinuate, dark green: fls. yellow, to ¾ in. across, petals sac-like, recurved; calyx-lobes longer than petals, linear-lanceolate, serrate-hispid. Chile.

aurantiàca: *Caiophora lateritia.*

híspida: *L. urens.*

laterítia: *Caiophora lateritia.*

trícolor. Ann. to 2 ft.: lvs. opposite, 2-pinnate: fls. yellow with a red crown and white stamens. Chile.

triphýlla. To 1½ ft.: lvs. alternate, 3- or rarely 4–5-lobed: fls. few. Peru.

ùrens (*L. hispida*). Ann. to 1½ ft.: lvs. alternate, pinnatifid: fls. yellow, 1 in. across. Peru.

vulcánica (*L. Wallisii*). Ann. to 3 ft.: lvs. palmately 3–5-lobed: fls. white with deep yellow crown barred with red and white. Ecuador, Colombia.—Some of the material offered as *Blumenbachia Hieronymii* belongs here.

Wállisii: *L. vulcanica.*

LOASÀCEÆ. Loasa Family. Mostly herbaceous sometimes twining plants, of 13 genera mostly in N. and S. Amer., usually armed with rough bristly and often stinging hairs: fls. regular and bisexual, polypetalous, having 4–5 sepals and petals, numerous stamens, inferior 1–3-celled ovary, and capsular fr. Species cult. for ornament are in the genera Blumenbachia, Caiophora, Eucnide, Loasa, Mentzelia.

LOBE: any part or segment of an organ; specifically a part of petal or calyx or leaf that represents a division to about the middle more or less.

LOBÈLIA. *Lobeliaceæ.* Showy ann. and per. herbs with alternate lvs., fls. in terminal racemes, spikes or panicles, the corolla-tube split down one side and the 5-lobed limb 2-lipped, and capsular frs.

Lobelias are grown in borders and the flower-garden. The native perennial horticultural species thrive in moist locations. Seeds of the annual kinds sown in early winter will produce flowering plants by April or May. Propagated also by cuttings, and the perennials by division.

aberdárica. To 9 ft.: lvs. oblong-lanceolate, to 16 in. long and 2 in. wide, obtuse, sessile, entire: fls. French-blue to lilac-blue and white, to 1½ in. long, in spikes to 4 ft. or more long. Kenya, E. Afr., said to grow in swampy places at elevations of 8,000–10,000 ft.

campanulàta: *Monopsis campanulata.*

cardinàlis. Cardinal-Flower. Indian-Pink. Per. to 3 and 4 ft., glabrous: lvs. oblong-ovate or -lanceolate toothed: fls. bright cardinal, to 1½ in. long. N. B. to Fla. and Tex.

Cavanìllesii: *L. laxiflora* var. *angustifolia.*

compácta: *L. Erinus* var.

Dàvidii. Ann. to 3 ft.: lvs. ovate oblong to linear-lanceolate, to 6 in. long including petiole, doubly and sharply dentate to serrulate, glabrescent: fls. violet, to 1 in. long, subtended by long leafy bracts, in dense elongated racemes. China.

Erìnus. Edging L. Ann. 4–12 in. high, partially trailing, nearly glabrous: lvs. obovate to linear, toothed: fls. pale blue or violet with white or yellowish throat, to ¾ in. across. S. Afr. Some of the hort. vars. are: **álba,** fls. white; **compácta,** low and dense; **erécta,** of low compact habit; **flòre-plèno,** fls. double; **grácilis,** sts. long and slender; **kermesìna,** fls. crimson; **Lindleyàna,** fls. rose with white throat; **Paxtoniàna,** fls. light blue with white throat; **pùmila,** very dwarf; **speciòsa,** fls. azure-blue with white throat.

fúlgens. Per. to 3 ft., usually pubescent and tinged brown or bronze: lvs. lanceolate, toothed: fls. deep red, about 1½ in. long. Mex.

Gerárdii. Hybrid between *L. siphilitica* and a form of *L. fulgens:* fls. rich violet, 1½ in. long. Var. **lugdunénsis** has rose-colored fls.

glandulòsa. Per. to 4 ft.: lvs. linear or narrow-lanceolate, toothed: fls. blue, to 1 in. long. Swamps, Va. to Fla.

grácilis. To 1 ft., glabrous: lvs. ovate to linear, the lower pinnatifid: fls. blue with whitish throat, to ¾ in. across. Australia.

heterophýlla. Resembling *L. gracilis* but with larger fls. and winged seeds. Australia.

hýbrida. A group name comprising garden hybrids between various or several species.

inflàta. Indian Tobacco. Ann. to 3 ft., hairy: lvs. oval to ovate-lanceolate, toothed: fls. light blue, ¼ in. long: caps. inflated. Lab. to Ga. and Ark.

Kálmii. Per. to 20 in., sts. slender, somewhat branched: lower lvs. spatulate, obtuse, upper lvs. narrower: fls. light blue, about ⅓ in. long, in loose racemes, on pedicels to 1 in. long: caps. subglobose, to ⅙ in. long, not inflated. N. S. to N. J. west to Man. and Ohio.

laxiflòra. Per. to 5 ft., hairy: lvs. lanceolate or ovate-lanceolate, toothed: fls. red and yellow, 1½ in. long, cylindric, stamens exserted at one side. Mex. Var. **angustifòlia** (*L. Cavanillesii*) has lanceolate to linear lvs.

Lindleyàna: *L. Erinus* var.

linarioìdes. Ann. to 6 in.: lvs. obovate-oblong to lanceolate, to ¾ in. long, remotely serrulate, acute: fls. blue, small, on erect pedicels ½ in. long: caps. obovoid, to ⅙ in. long. S. Afr.

lugdunénsis: *L. Gerardii* var.

péndula: probably represents a pendulous form of *L. Erinus.*

pùmila: *L. Erinus* var.

ramòsa: *L. tenuior.*

speciòsa: *L. Erinus* var.

spicàta. Per. or bien. to 4 ft.: lvs. oval to lanceolate, wavy-toothed or entire: fls. pale blue, ¼ in. long. P. E. I. to N. C. and La.

siphilítica. Per. to 3 ft., nearly glabrous: lvs. oblong-oval to lanceolate, toothed: fls. deep blue or purplish, 1 in. long. Me. to La. Var. **álba** has nearly white fls. Var. **nàna** is listed as a dwarf form.

spléndens. Per. to 4 ft., nearly glabrous: lvs. linear or linear-lanceolate, toothed: fls. deep red. Tex. to Mex.

tenùior (*L. ramosa*). Ann. to 1½ ft., pubescent: lvs. ternately divided or upper entire: fls. bright blue, 1 in. long. Australia. Var. **compácta** is listed.

triquètra. Ann. to 2 ft.: lvs. linear-lanceolate, toothed: fls. blue, small. S. Afr.

Tùpa. Per. or subshrub to 7 ft.: lvs. oblong-oval, toothed, tomentose and wrinkled: fls. blood-red, 2 in. long, the lobes of corolla united at tips. Chile.—Grown in Calif.

LOBELIÀCEÆ. Lobelia Family. About 20 genera of herbs, shrubs or trees of wide distribution, separated from the closely related Campanulaceæ chiefly because of the irregular fls. and the anthers united into a ring or tube. A few genera are grown for ornament, as Centropogon, Downingia, Hypsela, Isotoma, Lobelia, Monopsis, Palmerella, Pratia.

LOBÍVIA. *Cactaceæ.* About 60 species of Peru, Bolivia and Argentina, differing from Echinopsis (among other things) by fl. short-funnelform to bell-shaped and the tube short. See *Cacti.*

Allegraiàna. Usually solitary, globose, to 3½ in. diam., somewhat glaucous green; ribs spiralled, crenate, tubercled; spines about 12, to 1¼ in. long, curved, yellow to brownish: fls. red, to 2 in. long. S. W. Peru.

atróvirens. To 3 in. long and ¾ in. diam.; ribs about 15, flattish; radial spines 9–12, to ⅛ in. long, whitish to brown. Argentina.

aùrea (*Echinopsis aurea*). Globular to cylindrical, to 4 in. tall and 2½ in. diam.; ribs 14–15, acute, high; spines yellowish-brown, radials 8–10, divergent, centrals 3–6, to 1¼ in. long: fls. glossy lemon-yellow, segms. acute. W. Argentina.

Báckebergii (*Echinopsis Backebergii*). Simple or branched at base, globose or ovoid, 2 in. diam.; ribs about 15; spines all radial, usually 5, to 2 in. long: fls. carmine, 1½ in. long. Bolivia.

Binghamiàna. Solitary or cespitose, depressed-globose, to 3½ in. diam., pale green with white dots; ribs about 22, wavy, to ¼ in. high; radial spines 9–12, unequal, orange-yellow, pungent; centrals 3, to ⅝ in. long: fls. purplish-red, to 2 in. long. S. E. Peru.

boliviénsis. Clustered, globose, to 4 in. diam.; ribs about 20 and tubercled, spines 6–8 and to 3½ in. long. Bolivia.

breviflòra. Usually solitary, depressed-globose, grayish-green; ribs 22–25, somewhat wavy, obtuse to acute, areoles white-woolly; radial spines about 25, pectinate, to ½ in. long, brownish to gray; central erect, often swollen at base: fls. cinnabar-red, to 1¼ in. long.

cæspitòsa (*Echinopsis cæspitosa*). Cylindrical, to 4 in. tall or more and about 1¾ in. diam., usually spineless on top; ribs 10–12, sharply angled, straight and notched; spines brownish, radials 11–13, to ¾ in. long, central 1, to 2 in. long, curved: fls. carmine inside with darker red throat, reddish-yellow without, stigma 8-lobed. Bolivia.

chionántha (*Echinopsis chionantha*). Depressed-globose, to 3 in. diam., pale green; ribs about 15, to ½ in. tall, acute, notched; spines brown to black, becoming gray, subulate, radials 6–10, centrals 2, to 1½ in. long: fls. white, to 2½ in. long, slightly fragrant. Argentina.

chrysántha. Solitary, globose, gray-green; ribs about 13, to ¼ in. high, areoles ⅝ in. apart, becoming glabrous; spines all radial, 5–8, to ¾ in. long, reddish-brown to gray, often dark tipped: fls. golden-yellow with wine-colored throat, to 2 in. long, fragrant, stigma 9-lobed, purple. Argentina.

cinnabarìna (*Echinopsis cinnabarina*). Simple, broader than high; ribs about 20 and tubercled; radial spines 8–10 and curved backward; central spines 2–3: fls. near top of plant, scarlet, 1¾ in. across. Bolivia.

córbula (*Mammillaria corbula*). Cespitose, globular, usually 5–8 plants together; ribs 12–18, wavy; spines often absent, when present usually 6–9 in areole, to 2 in. long, yellowish: fls. nocturnal, salmon-red, to 1½ in. long. Peru.

cylíndrica. Solitary, cylindrical, to 5 in. high and 2½ in. diam.; ribs about 11, to ½ in. high and as wide; radial spines about 7, to ⅓ in. long, awl-shaped, pinkish with black base; central 1, to 1¼ in. long, stiff: fls. yellow, to 2¼ in. long. N. Argentina.

densispìna: probably the same as *L. famatimensis* var. *longiseta.*

Drijveriàna. Solitary, root somewhat fleshy and fusiform, st. globular, about 3 in. diam.; ribs low, obtuse; spines curved, radials 10–12, bristly, gray-white, centrals 1–4, to ¾ in. long: fls. pale yellow, style green. Argentina. Var. **aurantìaca** has orange fls. with purple style. Var. **nóbilis** has dark orange fls. with pale purple style.

Dùcis-Paùlii. Globose becoming cylindrical, to nearly 3 in. diam., dark to gray-green; ribs 18–21, to ⅛ in. high, acute, notched; radial spines 6–8, to ¾ in. long, spreading, slender, purplish-brown to gray; centrals 2–4, to 1 in. long: fls. white. Argentina.

euánthema. Globular to obconical with distinct taproot, sts. dull green, to 2 in. tall and 1½ in. diam., usually less; ribs usually 8–12, low, somewhat tubercled; spines glossy white with reddish base, radials about 10, centrals 2, to ½ in. long: fls. orange-red within with carmine throat, dark red without. Bolivia.

famatiménsis (*Echinopsis famatimensis*). Solitary or clustered, to 1½ in. high and 1 in. diam.; ribs 24; spines small and whitish: fls. on side near middle of plant, from yellowish-white to deep red, 1¾ in. long. Argentina. The listed vars. are: **cinnabarìna,** with carmine- to cinnabar-red fls.; **hæmatántha,** with blood-red fls.; **longisèta,** spines to 1¾ in. long; **rosiflòra,** with fls. rose-pink; and **setòsa,** spines more numerous and bristly.

fèrox (*Echinopsis ferox*). Globose with fibrous roots, to 1 ft. diam.; ribs 23–31, undulate, notched into tubercles to 1¼ in. long; spines curved, radials 10–12, slender, to 3¼ in. long, centrals 3–4, to 6 in. long, weak: fls. not seen. Bolivia.

formòsa: probably *Echinopsis formosa.*

grandiflòra. Globose to subcylindric, to 8 in. tall and 5 in. diam.; ribs usually 14, notched; spines all radial, about 14–16, awl-shaped, to ½ in. long, yellowish: fls. pink, to 4 in. long. Argentina.

grándis (*Echinopsis grandis*). Globose, to 10 in. high; ribs 14–16; spines 10–15, to 3 in. long: fls. lateral, white, 2½ in. long. Argentina.

Graùlichii: *Echinopsis Kratochviliana.*

Haageàna. Cespitose, st. probably cylindrical, to 12 in. tall; ribs 11–13, acute; spines yellowish, radials usually 10, to ¾ in. long, centrals 3–4, to 2¾ in. long: fls. clear yellow with red stamens, usually campanulate, to nearly 3 in. long. Argentina-Bolivia. Var. **albihepática** has purplish- to orange red throat. Var. **chrysántha** has flesh-colored fls. Other listed vars. are: **albicéphala, bícolor, cinnabarìna, croceántha, durispìna** and **leucoerythrántha.**

hæmatántha. Globose, 2 in. high; ribs 11; radial spines 6–8 and small; central spines 3 and 2 in. long: fls. purplish, 1½ in. across. Argentina.

Hermanniàna. Clump-forming, sts. cylindrical to 8 in. tall and 2 in. diam., bright green; ribs about 13, straight, obtuse to acute; spines numerous, the upper ones to ⅝ in. long, flexible, slender, the lower ones to 2½ in. long, gray: fls. rose-violet to carmine, to 3¼ in. long, style and stamens yellow. N. E. Bolivia.

Hertrichiàna (*Echinopsis Hertrichiana*). Solitary in the wild but cespitose when propagated from seed, st. depressed-globose, to 4 in. across; ribs 10–12, pale glossy green, obtuse, about ½ in. across, tubercled; spines pale to dark yellow, radials usually 7, to ⅝ in. long, spreading, central 1, to 1 in. long: fls. scarlet, to nearly 3 in. long and as wide. S. E. Peru.

Higginsiàna (*Echinopsis Higginsiana*). Usually solitary, depressed-globose, to 4 in. diam., gray-green; ribs commonly 16, acute, tubercled; spines grayish, radials 9–11, usually contorted and curved, to nearly 2 in. long, central 1, to 3 in. long: fls. yellow-red inside and dark red without, to about 2½ in. long, funnelform, stigma green, 8-lobed. Bolivia.

Hóssei (*Echinopsis Hossei. L. Marsoneri*). Solitary, cylindrical; ribs about 13, to ¼ in. high; spines reddish becoming gray, radials 7–8, to ¾ in. long, centrals 1–3, to 1¼ in. long: fls. yellowish-orange, slightly fragrant, stigma green, 10–12-lobed. Argentina.

incaìca. Solitary, globose to cylindrical, occasionally branched, to 6 in. high and 3 in. diam., green, minutely spotted white; ribs about 15, usually to ½ in. wide, acute, wavy; radial spines usually 14–20, unequal, ⅓–¾ in. long, stiff, pungent, brown to reddish, centrals about 7, stouter: fls. blood-red, to 1½ in. long. S. E. Peru.

Jajoiàna. Usually solitary, subcylindrical, light green, to 2 in. diam. or more; ribs usually 14–20, rarely more than 24, acute, tubercles acute; radial spines about 10, pinkish-white, to ½ in. long; central 1, blackish, to ¾ in. long: fls. dark wine-red tinged purplish-blue, to 2½ in. long and nearly as wide. Argentina.

Janseniàna. Solitary, usually to 3 in. tall and 2 in. diam., rarely to 8 in. tall, gray-green; ribs 11–14, about ⅓ in. high, straight, acutish; radial spines 10–14, to ½ in. long, black, base somewhat swollen; centrals about 4, longer: fls. yellow, throat reddish, to 2½ in. across. Argentina. Var. **leucacántha,** st. light colored, spines brownish to gray.

Johnsoniàna. Cespitose, depressed-globose, to 2½ in. diam. and 1½ in. high; ribs about 16, to ⅙ in. high, areoles to 1¼ in. apart; spines 1–7, the central one to 1¼ in. long, the others to ½ in. long: fls. to 2 in. across. Bolivia.

laterítia. Globose to subcylindrical, to 3 in. tall and nearly as thick; ribs 16–18, obtuse, to ½ in. across and as high, gray-green; spines curved, radials about 10, to ¾ in. long, centrals 1–2, stout at base, to 1 in. long: fls. dark red, to 2 in. long, funnelform, stigma green, 8–9-lobed. Bolivia.

leucorhòdon. Globose, base somewhat tuber-like, to 2 in. diam. or more, top spineless or nearly so; ribs 20–22, acutish, notched, high, tubercles acutely angled; spines curved, radials about 7, adpressed, central 1, stouter to ¾ in. long: fls. lilac with white throat. Bolivia.

longispìna (*Echinopsis longispina*). Globose to cylindrical, to 10 in. tall and 4 in. diam.; ribs usually 24–30, strongly tubercled; spines brown to gray, radials 8–10, centrals 1–4, to 3¼ in. long: fls. white, to 1¾ in. long. N. Argentina.

Ma̋rsoneri: *L. Hossei.*

mistiénsis (*Echinopsis mistiensis*). Usually solitary, globose to subconical; ribs 25–30, acute, narrow, to ¼ in. high; spines all radial, usually 7–9, to 2 in. long, red becoming gray, darker toward tip: fls. pink. S. Peru.

Nealeàna (*Echinopsis Nealeana*). Solitary, cylindrical, to 3 in. tall and 1¼ in. diam., usually spineless and reddish-brown toward base; ribs commonly 13–15, inconspicuous; spines radial, usually 7–9, to nearly ¼ in. long, yellow or reddish: fls. brilliant red, to 2 in. long and as wide. Peru.

neo-Haageàna. Usually cespitose, globose, to 1½ in. diam., roots tuberous; ribs 10–11, low, to ¼ in. wide, obtuse, gray to blue-green, tubercled; spines all radial, usually 10–12, bristly, to ⅛ in. long, glossy white with reddish base: fls. pale to dark salmon-pink, about 1½ in. diam., rotate. N. Argentina.

nìgra: see *Echinopsis nigra.*

oruréns is. Cespitose, sts. about ¾ in. diam., olive-green; ribs about 9, to ⅛ in. tall, tubercled; spines commonly 10, less than ⅛ in. long, usually pectinate, yellowish-white: fls. probably red. Bolivia.

pampàna. Somewhat cespitose, sts. globose, to 3 in. diam.; ribs 17–21, somewhat undulate; spines 5–20, usually curved, to 2 in. long: fls. red, to 2½ in. long. S. Peru.—Cult. forms are frequently spineless or nearly so.

Péntlandii (*Echinopsis Pentlandii*). Simple, ellipsoidal, to 6 in. diam., often somewhat glaucous; ribs about 12; spines 5–8 and all radial, about 1 in. or less long: fls. about 1½ in. long, rose-colored inside. Bolivia.

polycéphala. Plant compressed-globose with fusiform root, dull gray-green becoming olive-green; ribs about 16, rounded becoming acute, areoles about ⅝ in. apart, white-woolly; radial spines about 10, 1/24 in. long; centrals 3–4, slightly longer and stouter: fls. bright brick-red, 1½ in. long and slightly wider. Argentina.

potosìna (*Echinopsis potosina*). Solitary, globose, to 3½ in. diam., bright green; ribs usually 13, acute, to ¾ in. high; spines stiff, to 1½ in. long, white to reddish becoming grayish-brown, radials 8–9, centrals 1–4 usually hooked: fls. dark pink to red. Bolivia.

pseudocachénsis (*Echinopsis pseudocachensis*). Cespitose, depressed-globose, with prominent tap-root, st. to 2½ in. diam.; ribs 12–14, obtuse; spines curved, radials about 10, brownish-yellow, to ½ in. long, central 1, to ⅝ in. long, nearly black: fls. bright dark red, to 2½ in. long. Argentina. Vars. **cinnabarìna** and **sanguínea** are listed.

pygmæ̀a. Short-cylindric, to 2 in. long and 1 in. diam. and perhaps larger; ribs 8–12, low, areoles close, white-woolly; spines 9–11, all radial, tiny, glossy white: fls. pale purple, to 1¼ in. long, tube white-hairy. Argentina.

raphidacántha. Cespitose, depressed-globose; ribs acute; spines usually 7, the radials spreading and curved, the central 1, to 3 in. long. Bolivia.

rebutioìdes. Cespitose, forming broad tufts, sts. depressed-globose, to ¾ in. diam., dull bluish-green; ribs 12–14, acute, straight, densely tubercled; spines all radial, about 8–9, bristly, glossy white, to ¾ in. long, a pseudo-central one to 1¼ in. long: fls. bright red, to 1½ in. long. Argentina. Var. **citriniflòra** has pale yellow fls.

rubéscens. Similar to *L. Haageana,* differing in having 12 radial spines and 4 centrals, the latter to 1¾ in. long, the fls. reddish. Argentina.

Rùmii: listed name.

salténsis (*Echinopsis saltensis*). Becoming clustered, shining light green; ribs 17–18; radial spines 12–14; centrals 1–4 and ½ in. long: fls. on side near middle of plant, red, 1½ in. long. Argentina.

Schreìteri (*Echinopsis Schreiteri*). Cespitose forming tufts to 1 ft. or more across, sts. globose to 1½ in. diam.; ribs 9–14, low; spines to ⅝ in. long, radials 6–8, slender, curved, central 1 or absent, short: fls. purple, to 1½ in. long. N. Argentina.

Shâferi. Cylindrical, to 6 in. tall and 1¾ in. diam., very spiny; ribs 10, obtuse, low; radials 10–15, to ½ in. long, slender; centrals 3-5, to 1¼ in. long: fls. pale yellow, to 2½ in. long. Argentina.

spiniflòra: *Acanthocalycium spiniflorum.*

Steìnmannii (*Echinocactus* and *Rebutia Steinmannii*). To ¾ in. high and ½ in. across, areoles circular; spines about 8: fls. from side of plant, campanulate. Bolivia.

Tegleriàna: listed name.

thionántha: *Acanthocalycium thionanthum.*

Wegheiàna. Solitary, globose with long tap-root, st. to 2 in. diam., gray-green; ribs about 20, acute, sharply tubercled, to ¼ in. high; spines dark brown becoming gray, radials 7–8, to 1¼ in. long, central 1, to about 1½ in. long: fls. white to very pale lavender, to 2½ in. long. Bolivia.

LOBULÀRIA (*Koniga*). *Cruciferæ*. Per. herbs and subshrubs differing from Alyssum in clear white fls. and in technical points; Medit. region; one is a favorite flower-garden subject.

marítima (*Alyssum maritimum*). SWEET ALYSSUM. Per. but grown as an ann., sometimes escaped, passing the winter in mild climates, diffuse and much spreading, rising to 1 ft.: lvs. lanceolate to linear, entire, 1–3 in. long: fls. small but many in lengthening racemes, white but sometimes running to violet, fragrant, produced over a long season.—There are many forms in cult., as *Benthamii*, *compacta*, *gigantea*, *minima*, Tom Thumb, also with variegated lvs. and double fls.; sometimes grown under glass. Raised from seeds.

LOCHNERA: *Vinca rosea*.

LOCKHÁRTIA. *Orchidaceæ*. Trop. American epiphytes with simple clustered sts. covered with short imbricated equitant lvs., and axillary 1–2-fld. infl., the sepals and petals similar, the lip commonly 3-lobed. For cult. see *Orchids*.

élegans. Sts. to 4 in. high: lvs. broadly triangular, about 1½ in. long: infl. short, but surpassing the lvs., 1–2-fld.; fls. pale green with lip yellow spotted with red-purple. Sept.–Jan. Trinidad, N. Brazil.

lunífera. Sts. to 14 in. long, thickly covered with lvs. to about ¾ in. long: infl. small, 1–2-fld.; fls. golden-yellow, lip spotted with purple-red. Jan.–Aug. Brazil.

LOCO WEED: *Oxytropis Lambertii*.

LOCUST: *Robinia*. **Honey:** *Gleditsia*. **Swamp:** *Gleditsia aquatica*. **Sweet:** *Gleditsia triacanthos*. **Water:** *Gleditsia aquatica*. **West Indian:** *Hymenæa Coubaril*.

LODOÌCEA. DOUBLE COCONUT. *Palmaceæ*. Diœcious unarmed fan-palm of the Seychelles, not regularly planted in the U. S. unless under test, and little known in cult. under glass but of interest because of the great 2-lobed drupe that reaches a length of 18 in. and contains 1 great 2-lobed seed and is one of the most remarkable frs. of the vegetable world. The staminate fls. are borne underneath scales in a dense catkin-like spike 2–6 ft. long and 4–5 in. thick; pistillate fls. on an open spike 4–6 ft. long; all spadices are borne in the lf.-axils, and on low trees the great frs. may rest on the ground. The lvs. are several ft. across, thick and heavy, on petioles 5–10 ft. long. The tree rises to 100 ft. in its native place. The floating nuts were once supposed to come from the Maldive Isls., an error preserved in the name **L. maldívica** (*L. seychellarum*). A small tree is standing in S. Fla., with protection when needed.

LOESÈLIA. *Polemoniaceæ*. Herbs or sometimes subshrubs with alternate or opposite toothed lvs. and red or violet bright funnelform fls. solitary or in clusters; grown in the open in warm climates and under glass; Tex. and Calif. to S. Amer.

coccínea: *L. mexicana*.

mexicàna (*L. coccinea*). Attractive per. to 3 ft.: lvs. oval to lanceolate, to 2 in. long: fls. tubular, brilliant rose-red, 1 in. long. Mex.

LOGANBERRY. A blackberry-like red acid fruit (*Rubus ursinus* var. *loganobaccus*) originated in California, with very long prostrate canes, much grown in Oregon and other parts of the Pacific coast country. The loganberry is used in the canned and dried product and in fruit juice. The plant is propagated by rooting tips. It is grown in rows 6 feet or more apart and usually trained on wires after the manner of dewberries. In the rows the plants are 8 feet or more apart, as it is a long and vigorous grower. The loganberry is not hardy in the northeastern states although the roots may pass the winter.

LOGÀNIA. *Loganiaceæ*. Herbs or shrubs with opposite lvs., small white or pink fls. mostly in terminal cymes or panicles, and capsular dehiscent frs.; native in Australia and 1 in New Zeal.

longifòlia. Shrub to 6 ft. or more: lvs. elliptic or lanceolate, to 3 in. long: fls. in leafy panicles. Australia; intro. in Calif.

LOGANIÀCEÆ. LOGANIA FAMILY. About 30 genera of herbs, shrubs and trees widely distributed in warm and trop. regions of both hemispheres, having commonly opposite simple lvs., bisexual regular gamopetalous fls. in panicles, cymes, heads or spikes, or sometimes solitary, with 4–5-lobed calyx and corolla, 4–5 stamens, superior 2-celled ovary, and fr. a caps., berry or drupe. Several genera yield drugs and poisons and others are grown for ornament as Buddleja, Desfontainea, Gelsemium, Geniostoma, Logania, Spigelia, Strychnos.

LOGWOOD: *Hæmatoxylum campechianum*.

LOISELEÙRIA. ALPINE-AZALEA. *Ericaceæ*. Depressed glabrous evergreen subshrub, **L. procúmbens**, of circumpolar regions, extending southward to the White Mts. and Mt. Katahdin, useful in alpine-gardening and cold rockery: 6–8 in., making mats: lvs. mostly less than ¼ in. long, oblong, revolute: fls. very small, white or rose.

LÒLIUM. RYE-GRASS. *Gramineæ*. Ann. and per. grasses grown in pastures and meadows, native in the Old World: lvs. flat: spikelets flat, in terminal interrupted spikes. See *Grasses*.

itálicum: *L. multiflorum*.

multiflòrum (*L. italicum*). ITALIAN R. Per. to 3 ft.: lvs. to 8 in. long and ⅓ in. wide: spikelets 20–30-fld., awned, in spikes to 1 ft. long. Eu.; nat. in N. Amer.

perénne. PERENNIAL OR ENGLISH R. Tufted per. to 2½ ft.: lvs. to 5 in. long and ⅙ in. wide: spikelets 5–10-fld., awnless, in spikes to 1 ft. long. Eu., Asia; nat. in N. Amer.

temuléntum. DARNEL. Per. to 4 ft.: lvs. to 10 in. long and ¼ in. wide: spikelets 4–8-fld., shorter than the outer glume, in spikes to 1 ft. long. Eu.; nat. in N. Amer.

LOMARIA: *Blechnum*.

LOMÀTIA. *Proteaceæ*. Trees and shrubs with alternate, entire or pinnate lvs., bisexual fls. borne in pairs in simple or branched loose racemes, and fr. a leathery follicle; differs from Grevillea in having several instead of 2 seeds. Native in Australia and Chile; they require cool greenhouse treatment or are grown out-of-doors in warm regions. Propagated by cuttings of well-ripened wood.

fraxinifòlia. Small tree: lvs. pinnate into 3–7 ovate or ovate-lanceolate toothed stalked segms. to 3 in. long, leathery and shining: racemes to 8 in. long. Australia.

ilicifòlia. Shrub or small tree: lvs. ovate to lanceolate, to 3 in. or more long, prickly-toothed or lobed, silky-pubescent beneath, rarely pinnate. Australia.

oblìqua. Lvs. ovate, to 4 in. long, crenate-toothed, bright green and leathery: fls. white, about ⅓ in. long. Chile.

silaifòlia. Shrub to 3 ft.: lvs. to 8 in. long, 2–3-pinnate into linear or lanceolate toothed sessile segms. Australia.—Dyed sprays are employed by florists and decorators, as "crinkle-bush."

LOMÀTIUM (*Cogswellia*). *Umbelliferæ*. Several short-stemmed or stemless per. herbs with thickened roots, dissected lvs., small yellow, white or purple fls. in umbels, and flattened frs.;

mostly native in W. N. Amer.; sometimes planted in wild-gardens or similar places.

ambíguum. To 1 ft.: lvs. 1–2-pinnate into linear lfts.: fls. yellow: fr. glabrous. B. C. to Ore. and Utah.

angustàtum: *L. Martindalei* var.

fœniculàceum (*Cogswellia villosa*). Stemless per. to 1 ft.: lvs. pinnately decompound, finely dissected: fls. yellow: fr. pubescent. N. D. to Wyo. and Tex.

Mártindalei var. **angustàtum** (*L. angustatum*). Short-stemmed plant to 2½ ft. or more: lvs. bipinnate, narrow in outline, much dissected: fls. pale yellow: fr. glabrous. B. C. to Ore.—The typical form is of lower stature, has less dissected lvs. and is not known to be in cult.

nudicaùlis. To 2 ft., glabrous: lvs. biternate, segms. ovate to lanceolate, entire or toothed, to 2 in. long: fr. elliptic, glabrous, to ½ in. long. Ida. to B. C. and Calif.

triternàta. To 2½ ft., puberulous: lvs. 2–3-ternate, segms. linear to linear-lanceolate, to 4 in. long: fr. narrowly oblong, to ½ in. long. Wyo. to B. C. and Calif.

utriculàtum. Spring Gold. Low, nearly stemless plant to 1 ft.: lvs. pinnately decompound with linear segms. to ⅜ in. long: fls. yellow, bractlets obovate, often toothed: fr. glabrous. B. C. to Calif.

villòsa. Lvs. several times pinnate, villous: bractlets of infl. very tomentose: fr. oval, puberulent, to ⅓ in. long. Kans. to Wyo. north to Alta. and Sask.

LÒNAS. *Compositæ.* Branching ann. to 1 ft. high, native in the Medit. region, and sometimes grown for ornament. **L. inodòra** (*Athanasia annua*). African Daisy. Lvs. alternate, pinnately divided into linear entire segms.: heads ⅜ in. across, of yellow disk-fls., borne in dense corymbs to 2 in. across; pappus cup-shaped.

LONCHOCÁRPUS. Lance-Pod. *Leguminosæ.* Trop. trees or climbing shrubs with alternate pinnate lvs., papilionaceous white, violet or purple fls. in racemes, and flat few-seeded indehiscent pods; sometimes planted in warm regions.

speciòsus: *Bolusanthus speciosus.*

violàceus. Tree to 12 ft.: lfts. ovate, commonly 4 pairs: fls. violet. Farther W. Indies.

LONDON PRIDE: *Saxifraga umbrosa.*

LONGAN: *Euphoria Longana.*

LONÍCERA. Honeysuckle. *Caprifoliaceæ.* Well known and favorite erect or climbing neat shrubs with opposite short-stalked or sessile lvs., rather small but showy fls. in axillary pairs subtended by 2 bracts and 4 bractlets, or in sessile whorls, followed by attractive berry-like often twin frs., widely spread in northern hemisphere. The name honeysuckle is sometimes applied erroneously to native azaleas (rhododendrons.).

Honeysuckles are very popular ornamental subjects and most of them are hardy North with the exception of the Himalayan species which require winter protection. They thrive in any good garden soil. Propagated by seeds in autumn or stratified, by cuttings of ripe wood, by layers, or by cuttings of green wood under glass.

Álbertii: *L. spinosa* var.

álbida: *L. bella* var.

albiflòra. Somewhat climbing: lvs. oval or ovate, to 1½ in. long: fls. yellowish-white, 2-lipped, 1 in. long, in clusters, spring: fr. orange. Ark., Tex.

alpígena. To 10 ft.: lvs. elliptic to oblong, to 4 in. long: fls. yellowish tinged red, 2-lipped, ½ in. long, in pairs, May: fr. scarlet. Eu.

alseuosmoìdes. Twining shrub: lvs. lanceolate, to 2½ in. long and ⅝ in. wide, base rounded: fls. orange-red, to ⅝ in. long, corolla-tube longer than limb, June–Aug.: fr. reddish. W. China.—Similar to *L. Henryi.*

Áltmannii. To 6 ft.: lvs. ovate, to 2 in. long, pubescent beneath: fls. whitish, 2-lipped, ½ in. long, in pairs, May: fr. orange-red. Turkestan.

americàna. Hybrid between *L. Caprifolium* and *L. etrusca:* climbing: lvs. oval or obovate, to 4 in. long, the upper connate: fls. yellowish, purple outside, 2-lipped, 2 in. long, in whorls, fragrant, June–July.

amœ̀na. Hybrid between *L. tatarica* and *L. Korolkowii:* lvs. ovate, to 2 in. long: fls. pink or white, 2-lipped, ¾ in. long, in pairs, May–July.

atrosanguínea: a form of *L. Caprifolium.*

aùreo-reticulàta: *L. japonica* var.

bélgica: a form of *L. Periclymenum.*

bélla. Hybrid between *L. tatarica* and *L. Morrowii:* lvs. ovate, to 2 in. long: fls. white or pink changing to yellow, 2-lipped, ½ in. long, in pairs, May–July: fr. red. Vars. **álbida** (*L. albida*) and **cándida** have white fls. Var. **chrysántha** is listed as having yellow fls. Var. **incarnàta** and **ròsea** have rose fls.

bícolor: probably *L. tatarica* var.

Billárdii: listed name of unknown botanical application.

brachýpoda: *L. japonica* var. *repens.*

Brownii. Hybrid between *L. sempervirens* and *L. hirsuta*, and closely resembling the former but the fls. somewhat 2-lipped. Var. **fuchsioìdes** (*L. fuchsioides*), fls. scarlet outside. Var. **plantierénsis,** fls. coral-red with orange lobes. Var. **punícea,** fls. orange-red.

cærùlea (*Xylosteon cæruleum*). To 5 ft., much branched: lvs. ovate to oblong, to 3 in. long, bright green: fls. yellowish-white, ½ in. long, paired, Apr.–May: fr. dark blue and bloomy. Eu., Asia; nat. N. Amer. Var. **altàica** has lvs. pubescent on both sides. Var. **edùlis** has lvs. pubescent, oblong-lanceolate, and stamens longer than limb. Var. **graciliflòra** (*L. Karelinii*) has bluish-green pubescent lvs. less than 2 in. long. Turkestan. Var. **viridifòlia** (*L. Kirilowii*) has bright green smaller lvs.

califórnica: *L. hispidula* var. *vacillans.*

canadénsis (*L. ciliata*). Fly H. To 5 ft.: lvs. ovate or oval, to 3 in. long, ciliate: fls. yellowish or tinged red, to ¾ in. long, paired, Apr.–May: fr. red. Que. to Pa. and Minn.

Caprifòlium (*L. verna*). Twining to 20 ft.: lvs. oval, to 4 in. long, bluish-green beneath, the upper connate: fls. white or purplish, 2-lipped, 2 in. long, fragrant, in whorls, May–June: fr. orange-red. Eu., W. Asia; nat. in E. U. S. Var. **atrosanguínea** (*L. sanguinea*) has fls. reddish-purple without and somewhat yellowish within.

caucásica: *L. orientalis* var.

chætocárpa. Shrub to 7 ft., twigs glandular-hispid: lvs. mostly oblong-ovate, to 3 in. long, acutish, hairy above and densely so beneath: fls. yellowish-white, to 1¾ in. long: fr. red. W. China.

Chamissòi. Erect shrub to 3 ft., twigs glabrous: lvs. ovate to elliptic, to 2 in. long, usually obtuse, glabrous, subsessile: fls. dark violet, to ½ in. long: fr. red. N. E. Asia.

chinénsis: *L. japonica* var.

chrysántha. To 12 ft.: lvs. ovate to ovate-lanceolate, to 5 in. long: fls. yellowish-white changing to yellow, 2-lipped, to ¾ in. long, in pairs, May–June: fr. coral-red. Asia. Var. **latifòlia** (var. *turkestanica*) has broad-oval lvs.

ciliàta: *L. canadensis.*

ciliòsa. Usually twining: lvs. deciduous or persistent, ovate to oblong-elliptic, to 4 in. long, ciliate, blue-green beneath, upper pairs connate: fls. yellow, sometimes tinged purple, to 1½ in. long, in terminal 3-fld. sessile head-like cymes: fr. red. Mont. to Utah west to B. C. and Calif.

confùsa. Twining: lvs. somewhat persistent, ovate, to 2½ in. long, gray-green and pubescent beneath, apex acute, petioles to ¼ in. long: fls. white changing to yellow, 2-lipped, to 1¾ in. long, fragrant, in short panicles, ovaries pubescent, June–Sept.: fr. black. China.

conjugiàlis. Erect and much branched, to 5 ft.: lvs. elliptic to obovate, to 2 in. long, acute, ciliate: fls. dark red, about ⅓ in. long, June: fr. red. Nev. to Calif. and Wash.

demíssa. To 12 ft., much branched: lvs. obovate, to 1¼ in. long, pubescent: fls. whitish changing to yellow, 2-lipped, ½ in. long, in pairs, May–June: fr. scarlet. Japan.

dioìca (*L. glauca. L. parviflora*). Branches often twining: lvs. oval or oblong, to 3 in. long, glaucous beneath, upper pair connate: fls. greenish or yellowish, 2-lipped, ½ in. long, in whorls, style usually glabrous, May–June: fr. red. Que. to N. C. and Ia.

etrúsca. Climbing, evergreen or partially so: lvs. obovate or oval, to 3 in. long, glaucous and pubescent beneath, upper connate: fls. yellowish-white, 2-lipped, 2 in. long, fragrant, in dense spikes, June–July. Medit. region. Var. **grandiflòra** is listed. Var. **pubéscens** has lvs. pubescent on both sides. Var. **supérba** (*L. gigantea*) has large lvs. and deep yellow fls.

flàva. Climbing: lvs. oval, to 3 in. long, bluish-green beneath, upper connate: fls. orange-yellow, 2-lipped, 1¼ in. long, fragrant, in whorls, May–June. N. C. to Okla.

fragrantíssima (*L. Magnevilleæ. L. odoratissima*). To 8 ft., partially evergreen: lvs. ovate or oval, to 3 in. long, bluish-green beneath: fls. creamy-white, 2-lipped, ½ in. long, very fragrant, in pairs, Mar.–Apr.: fr. red. China.—Fls. partly or wholly in advance of lvs. where deciduous.

fuchsioìdes: *L. Brownii* var.

gigantèa: *L. etrusca* var. *superba.*

Giráldii. Climbing: lvs. oblong-lanceolate, to 3 in. long, pubescent: fls. purplish-red with yellow pubescense outside, ¾ in. long, June–Aug.: fr. purple-black. China.

glaùca: *L. dioica.*

glaucéscens. Similar to *L. dioica*, differing in lvs. pubescent beneath, corolla about ¾ in. long, style usually pubescent. Que. to Alta. south to Va. and Neb.

gracílipes. To 6 ft.: lvs. ovate, to 3 in. long, bluish-green beneath: fls. pink to carmine, ½ in. long, usually solitary and drooping, Apr.–May: fr. scarlet. Japan.

grandiflòra: perhaps *L. tatarica* var.

Hallìana: *L. japonica* var.

Héckrottii. Probably hybrid between *L. americana* and *L. sempervirens:* lvs. oval, to 2 in. long, glaucous beneath: fls. purple outside, yellow inside, 2-lipped, to 2 in. long, in spikes, June–Sept.

Hénryi. Twining or prostrate, partially evergreen: lvs. oblong-lanceolate, to 3 in. long, ciliate: fls. yellowish- or purple-red, to ¾ in. long, in pairs, June–Aug.: fr. black. China.

Hildebrandtiàna. Climbing, evergreen: lvs. ovate, to 6 in. long: fls. yellow changing to orange-red, to 7 in. long, the tube very slender. Burma; not hardy N.; thrives in S. Calif.

hirsùta. Climbing: lvs. oval, to 4 in. long, gray-pubescent beneath, upper connate: fls. orange-yellow, 2-lipped, 1 in. long, in short spikes, June–July: fr. red. Que. to Pa. and Neb.

híspida. Shrub to 5 ft., twigs hispid to glabrate: lvs. elliptic to oblong, to 3 in. long, acute, glabrous to somewhat hispid, margins setose-ciliate: fls. yellowish-white, to 1¼ in. long: fr. red, oblong. W. China to Turkestan.

hispídula. Branches sarmentose: lvs. ovate or ovate-oblong, to 2½ in. long, pubescent beneath, upper connate: fls. whitish or purplish, 2-lipped, ½ in. long, in whorls, June–July: fr. red. B. C. to Calif. Var. **vacíllans** (*L. californica*) is more vigorous with larger lvs. and fls.

ibérica. To 6 ft., much branched: lvs. orbicular-ovate, to 1½ in. long, hairy: fls. yellowish-white, 2-lipped, ½ in. long, in pairs, June: fr. bright red. W. Asia.

impléxa. Twining or bushy, evergreen: lvs. ovate or oblong, to 3 in. long: fls. yellowish-white tinged red, 2-lipped, to 1¾ in. long, in whorls, June–Aug. Medit. region.

involucràta (*Distegia involucrata*). To 3 ft.: lvs. ovate to oblong-lanceolate, to 5 in. long: fls. yellow or tinged red, ½ in. long, in pairs, May–June: fr. purple-black, shining. Que. to Alaska and Mex. Var. **flavéscens,** lvs. light green. Var. **serótina,** fls. orange-yellow tinged scarlet.

japónica. Climbing, wholly or partially evergreen: lvs. ovate, to 3 in. long: fls. white or purplish, 2-lipped, to 1½ in. long, fragrant, in pairs, June–Sept.: fr. black. E. Asia; nat. in N. Amer. Var. **aùreo-reticùlata,** lvs. smaller, veined with yellow. Var. **chinénsis** (*L. chinensis*), fls. carmine outside. Var. **Hallìana** (*L. Halliana*), fls. pure white changing to yellow. Vars. **purpùrea** and **rùbra** are color forms. Var. **rèpens** (var. *flexuosa*, *L. brachypoda*), lower, often veined with purple. Var. **variegàta** has lvs. variegated yellow.

Karelìnii: *L. cærulea* var. *graciliflora.*

Késselringii: *L. orientalis* var. *longifolia.*

Kirilòwii: *L. cærulea* var. *viridifolia.*

Koehneàna. To 12 ft.: lvs. ovate, to 4 in. long, densely pubescent beneath: fls. yellowish-white, ¾ in. long, 2-lipped, in pairs: fr. dark red. China.

Korolkòwii. To 12 ft.: lvs. ovate or oval, to 1 in. long, bluish-green and pubescent beneath: fls. rose or rarely white, 2-lipped, ½ in. long, in pairs, May–June: fr. bright red. Turkestan. Var. **floribúnda** has broad-ovate lvs. Var. **Zàbelii** has lvs. glabrous and broadly ovate, base subcordate.

Ledeboùri. To 9 ft.: lvs. ovate-oblong, to 5 in. long, pubescent beneath: fls. orange tinged with scarlet, to ¾ in. long, in pairs, June–July: fr. black. Calif.

Lindleyàna: catalogue name.

longiflòra. Climbing, evergreen: lvs. oblong-lanceolate, to 2½ in. long, pale beneath: fls. white changing to yellow, to 4 in. long, fragrant: fr. white. China; not hardy N.

Maàckii. To 15 ft.: lvs. ovate to ovate-lanceolate, to 3 in. long: fls. white changing to yellowish, 2-lipped, ¾ in. long, in pairs, June: fr. dark red. Asia. Var. **erubéscens** is similar to var. *podocarpa* with larger pale pink fls. Var. **podocárpa** is of more spreading habit and has smaller fls. pubescent outside.

Mágnevilleæ: *L. fragrantissima.*

magnífica: *L. sempervirens* var.

Maximowíczii. To 10 ft.: lvs. ovate, to 2½ in. long, pubescent beneath: fls. violet-red, ⅓ in. long, 2-lipped, in pairs, May–June: fr. red. Manchuria, Korea. Var. **sachalinénsis** has dark purple fls.

micrántha: *L. xylosteoides.*

microphýlla. Shrub to 3 ft., twigs glabrous to puberulous: lvs. obovate to oblong-elliptic, to 1 in. long, obtuse or acutish, usually puberulous: fls. yellowish-white, nearly ½ in. long: fr. orange-red, fused in pairs. Cent. Asia.

minutiflòra. Hybrid between *L. Morrowii* and *L. xylosteoides:* lvs. oblong, to 1½ in. long: fls. whitish, 2-lipped, ½ in. long, May–June: fr. red.

modésta. Shrub to 7 ft., branches brownish-gray, fibrous: lvs. rhombic-ovate to oblong, to 1¾ in. long, obtuse to mucronate, dull green and glabrous above, pale green and villous-pubescent beneath at least on veins: fls. white, becoming yellowish with reddish base, to ½ in. long, in pairs on short peduncles in axils of upper lvs. W. China.

Mórrowii. To 8 ft.: lvs. oval to oblong, to 2 in. long, pubescent beneath: fls. white changing to yellow, 2-lipped, ½ in. long, in pairs, May–June: fr. red. Japan. Var. **xanthocárpa** has yellow fr.

muendeniénsis. Hybrid between *L. bella* and *L. Ruprechtiana*, resembling the former but lvs. darker green and more acuminate.

muscaviénsis. Hybrid between *L. Morrowii* and *L. Ruprechtiana:* lvs. ovate, to 2 in. long, pubescent beneath: fls. white, 2-lipped: fr. red.

nervòsa. Shrub to 10 ft.: lvs. elliptic to ovate-oblong, to 2½ in. long, acute, reddish when young becoming green except at midrib and primary veins, bluish-green beneath: fls. light pink, to ½ in. long: fr. black. N. W. China.

nítida. To 6 ft., evergreen: lvs. ovate, to ½ in. long, shining above: fls. creamy-white, ½ in. long, fragrant, in pairs: fr. blue-purple, transparent. China.

nótha. Hybrid between *L. Ruprechtiana* and *L. tatarica:* lvs. ovate-oblong, to 2½ in. long: fls. pinkish changing to yellowish, 2-lipped, ¾ in. long, in pairs: fr. red.

oblongifòlia. Swamp Fly H. To 5 ft.: lvs. oblong, to 3 in. long, gray-pubescent beneath: fls. yellowish-white, 2-lipped, ½ in. long, in pairs, May: fr. red. N. B. to Pa. and Minn. Var. **altíssima** is nearly glabrous.

obovàta. Shrub to 7 ft., twigs glabrous: lvs. obovate, ⅕–½ in. long, tapering toward base, whitish beneath: fls. whitish, nearly ½ in. long: fr. blue-black. Cent. Asia.

odoratíssima: *L. fragrantissima.*

orientàlis. To 10 ft.: lvs. ovate or ovate-lanceolate, to 4 in. long, pale and pubescent beneath: fls. pink or violet, 2-lipped, ½ in. long, in pairs: fr. black. Asia Minor. Var. **caucásica** (*L. caucasica*) has elliptic lvs. glabrous beneath. Var. **longifòlia** (*L. Kesselringii*) has oblong or lanceolate lvs.; fls. smaller and reddish.

parviflòra: *L. dioica.*

Periclýmenum. Woodbine. Climbing: lvs. ovate or ovate-oblong, to 3 in. long, bluish-green beneath: fls. yellowish-white, 2-lipped, to 2 in. long, in whorls, June–Aug.: fr. red. Eu., N. Afr., W. Asia. Var. **aùrea,** lvs. yellowish. Var. **bélgica,** Dutch W., fls. purple outside. Var. **serótina,** fls. dark purple outside, yellow inside.

pileàta. Evergreen or partially so, branches often prostrate: lvs. ovate to oblong-lanceolate, to 1½ in. long, shining above: fls. whitish, ⅓ in. long, fragrant, in pairs, Apr.–May: fr. purple, translucent. China. Var. **yunnanénsis** has lvs. thicker and more nearly orbicular.

prolífera (*L. Sullivantii*). Climbing: lvs. oval or oblong, to 4 in. long, very glaucous, the upper connate: fls. pale yellow marked with purple, 2-lipped, 1 in. long, in whorls, June–July: fr. red. Ohio to Tenn. and Mo.

prostràta. Prostrate: lvs. ovate or oval, to ¾ in. long, pale green: fls. small: fr. bright red. China.

punícea: perhaps *L. Brownii* var. *punicea.*

Púrpusii. Hybrid of *L. fragrantissima* and *L. Standishii:* lvs. to 3 in. long and 1½ in. wide, dark green above and light beneath, midrib hairy: fls. mostly as in *L. fragrantissima.*

pyrenàica. To 3 ft.: lvs. oblong to oblong-lanceolate, to 1½ in. long, pale beneath: fls. white, to ¾ in. long, in pairs, May: fr. red. Pyrenees.

quinqueloculàris. To 15 ft.: lvs. ovate or oval, to 3 in. long, grayish and pubescent beneath: fls. yellowish, 2-lipped, ¾ in. long, in pairs, June: fr. translucent white. W. Asia.

reticulàta. Similar to *L. confusa*, from which it differs chiefly in its glabrous non-hairy ovary, lvs. obtusish and strongly netted beneath and petioles ½–⅝ in. long. S. E. China. Var. **aùrea** is listed.

Ruprechtiàna. To 12 ft.: lvs. oblong to lanceolate, to 4 in. long, pale and pubescent beneath: fls. white changing to yellow, 2-lipped, ½ in. long, in pairs, May–June: fr. red. Manchuria. Var. **xanthocárpa** has yellow fr.

saccàta. To 6 ft.: lvs. oblong, to 2 in. long: fls. pinkish, ½ in. long, in pairs, May: fr. scarlet. China.

sachalinénsis: *L. Maximowiczii* var.

salicifòlia. Hybrid between *L. Ruprechtiana* and *L. xylosteoides:* lvs. narrow and pointed.

sanguínea: *L. Caprifolium* var. *atrosanguinea.*

sempérvirens. TRUMPET H. Climbing: lvs. ovate to oblong, to 3 in. long, glaucous beneath, upper connate: fls. orange-scarlet, yellow inside, 2 in. long, in spikes, May–Aug.: fr. red. Conn. to Fla. and Tex. Var. **fuchsioìdes** is *L. Brownii* var. Var. **magnífica,** an improved late-flowering form. Var. **mìnor,** partially evergreen. Var. **sulphùrea,** fls. yellow. Var. **supérba,** fls. bright scarlet.—The species is evergreen in the South.

sibírica: a confused name, the plants so listed are probably forms of *L. heterophylla* or *L. tatarica.*

símilis. Climbing, partially evergreen: lvs. lanceolate, to 4 in. long, whitish-tomentose beneath: fls. white, 2-lipped, 2 in. long, in pairs, Aug.: fr. black. China. Var. **Delavàyi** differs in being glabrous except lvs. underneath.

sinénsis: *L. Standishii.*

speciòsa: a form of *L. sempervirens,* perhaps not distinct from its var. *superba.*

spinòsa. To 4 ft., the branches somewhat spiny: lvs. linear-oblong, to 1 in. long: fls. in pairs, ¾ in. long: fr. whitish or purplish, bloomy. Himalayas. Var. **Álbertii.** Lvs. glaucous: fls. rose, ½ in. long, fragrant. Turkestan.

Stándishii (*L. sinensis*). To 8 ft., partially evergreen: lvs. ovate-oblong to lanceolate, to 4 in. long, hairy: fls. white, 2-lipped, ½ in. long, fragrant, in pairs, Mar.–Apr.: fr. red. China. Var. **lancifòlia** has narrow-lanceolate lvs.

strophióphora. Shrub to 7 ft., twigs glandular-pilose: lvs. ovate to elliptic-ovate, to 3 in. long, acuminate, densely pilose beneath and glabrous to hairy above: fls. white, to ¾ in. long: fr. red, pilose. Japan.

subséssilis. To 6 ft.: lvs. ovate, to 2 in. long, pale beneath: fls. white to yellowish, ½ in. long, 2-lipped, in pairs, June: fr. bright red. Korea.

Súllivantii: *L. prolifera.*

syringántha. To 10 ft.: lvs. oval to oblong, to 1 in. long: fls. pinkish or lilac, ½ in. long, fragrant, in pairs, May· June: fr. red. China. Var. **Wólfii** has larger narrower lvs. and carmine fls.

tangùtica. Low: lvs. obovate, to 1¼ in. long, pale beneath: fls. yellowish-white, to ½ in. long, drooping, in pairs, May–June: fr. scarlet. China.

tatárica. TATARIAN H. To 10 ft.: lvs. ovate or ovate-lanceolate, to 2½ in. long, pale beneath: fls. pink or white, 2-lipped, to 1 in. long, in pairs, May–June: fr. red. Russia to Turkestan. Cult. vars. are: **álba,** fls. pure white; **angustifòlia,** lvs. narrow; **bícolor,** fls. pink within, red outside; **grandiflòra,** fls. pure white, large; **latifòlia** (var. *splendens*), lvs. to 4 in. long and 2 in. wide; **lùtea,** fr. yellow; **parvifòlia** (var. *gracilis*), lvs. to 2 in. long; **punícea** (var. *pulcherrima*), fls. deep pink; **ròsea,** fls. rose outside, pink inside; **sibírica** (var. *rubra*), fls. deep pink; **virginàlis,** fls. white; **Zàbelii** is probably *L, Korolkowii* var.

Tellmanniàna. Hybrid between *L. tragophylla* and *L. sempervirens*; showy.

ténuipes. Shrub to 7 ft., twigs glabrescent to pilose: lvs. elliptic to oblong or ovate, to 1⅓ in. long, pilose above and densely so beneath, petiole glandular-hairy: fls. red, to ¾ in. long, pilose outside: fr. red. Japan.

thibética. To 5 ft.: lvs. oblong-lanceolate, to 1¼ in. long, shining above, white-tomentose beneath: fls. pale purple, ½ in. long, pubescent outside, in pairs, May–June: fr. red. China.

tragophýlla. Climbing: lvs. oblong, to 5 in. long, glaucous beneath, upper connate: fls. bright yellow, 2-lipped, to 3 in. long, in heads, June: fr. red. China.

trichosántha. To 6 ft.: lvs. ovate or obovate, to 2 in. long, hairy on veins beneath: fls. yellow, ½ in. long, 2-lipped, in pairs, June: fr. bright red. China, Tibet.

utahénsis (*Xylosteon utahense*). Low: lvs. ovate to oblong, to 2 in. long: fls. pale yellow, to ¾ in. long, in pairs: fr. red. B. C. to Ore. and Utah.

vérna: *L. Caprifolium.*

virginàlis: *L. tatarica* var.

xylosteoìdes (*L. micrantha*). Hybrid between *L. tatarica* and *L. Xylosteum:* lvs. rhombic-ovate, bluish-green: fls. pinkish, small.

Xylósteum. EUROPEAN FLY H. To 10 ft.: lvs. ovate or obovate, to 2½ in. long, pale and pubescent beneath: fls. yellowish-white, 2-lipped, ½ in. long, pubescent outside, in pairs, May–June: fr. dark red. Eu., Asia. Var. **móllis** has lvs. pubescent on both sides.

yunnanénsis. Sts. twining: lvs. oblong to obovate-lanceolate, to 3 in. long, acutish, glaucous, upper ones connate: fls. yellow, to 1 in. long, hairy within. S. W. China.

LOOSESTRIFE: *Lysimachia, Steironema.* **Purple:** *Lythrum Salicaria.* **Swamp:** *Decodon verticillatus.*

LOPÈZIA. *Onagraceæ.* A few small shrubs or herbs with alternate simple lvs. or the lower ones opposite, small attractive fls. in leafy racemes, and capsular frs.; grown under glass or in the open in mild climates. Propagated by seeds and cuttings of firm wood.

albiflòra. Per. to 2 ft.: lvs. ovate to ovate-lanceolate: fls. white, often tinged with pink at the base. Mex.

coronàta. Ann. to 3 ft.: lvs. ovate to lanceolate: fls. rose or lilac. Mex.

lineàta. Subshrub to 3 ft.: lvs. ovate to lanceolate: fls. red. Mex.

ròsea: listed name.

LOPHANTHUS: *Agastache.*

LOPHÌOLA. *Hæmodoraceæ.* One per. herb native in wet pine barrens, N. J. to Fla. **L. americàna** (*L. aurea*). To 2 ft.: lvs. mostly basal, linear, much shorter than st.: fls. yellowish, small, in densely white-woolly panicles.

LOPHOCÈREUS. *Cactaceæ.* One columnar cactus usually branching only at base, native in S. Ariz., Mex. and Lower Calif. **L. Schóttii** (*L. australis. Cereus Schottii*). To 20 ft.; ribs commonly 5–7, flowering areoles with many straight gray bristles to 2½ in. long: fls. pink, greenish outside, nocturnal, to 1½ in. long. Var. **Gàtesii** (*L. Gatesii*) has more slender sts. with obtuse ribs. Var. **monstròsus** is listed. Var. **Sargentiànus** (*L. Sargentianus*) has spines and fls. to ¾ in. long.

LOPHÓPHORA. *Cactaceæ.* Small depressed-globose or top-shaped often proliferous plants spineless except in seedlings, covered with ribs of conical tubercles that are white-hairy at apex: fls. from center of plant. One or two species. See *Cacti.*

Wílliamsii (*Echinocactus* and *Anhalonium Williamsii*). PEYOTE. Plant dull bluish-green, depressed-globose, to 3 in. diam., with a thick tap-root; ribs 5–13, low and wide, with narrow intercostal spaces, tubercles conspicuously white-tufted: fls. pale pink to white, 1 in. broad when expanded. S. Tex., Mex.

Zièglerì. Similar to *L. Williamsii,* differing in its more globose st., lower shorter-tufted tubercles and pale yellow fls. S. Tex., Mex.

LOPHOSPERMUM SCANDENS: *Maurandia Lophospermum.*

LOPHOTOCÁRPUS. *Alismaceæ.* Aquatic ann. herbs with tuberous rootstocks and perfect or staminate hypogynous fls. Grown in aquatic gardens in Calif.

guyanénsis (*Sagittaria guyanensis*). Lvs. floating, to 2 in. long, broadly ovate, base strongly cordate, apex obtuse; submersed lvs. linear, to 18 in. long or more: fls. inconspicuous, on erect or procumbent scapes. Mex. and other trop. regions.

LOQUAT. Evergreen broad-leaved tree (*Eriobotrya japonica*) of China and Japan sometimes seen as an ornamental pot subject under glass but grown in California, the lower Gulf regions and Florida for its yellow oblong-pyriform to spherical acid fruits that are eaten raw or in jellies, jams, pies and preserves. The fruits attain to a length of 3 inches in large varieties. The fragrant white panicled flowers appear in autumn, followed by ripe fruits in spring. The trees attain to a height of 25 feet. In orchard formation they may be set 20 to 24 feet apart either way. The requirements are not peculiar. In northern Florida and similar regions frost may limit fruitfulness some seasons. For best results improved varieties should be grown, being budded on seedling stocks; but as commonly seen in yards the trees are unimproved seedlings.

LORANTHÀCEÆ. Mistletoe Family. Association comprising more than a half thousand species in about a score of genera, arranged with Urticaceæ and Aristolochiaceæ series. They are green parasites with jointed sts., mostly woody and on trees, inhabitants of temp. and trop. climates in many parts of the world: lvs. mostly broad and conspicuous but sometimes reduced to scales: fls. small, in clusters or solitary, unisexual and the plants monœcious or diœcious, or bisexual: fr. a berry, which germinates on the host, and the haustoria (or roots) appropriate the juices. They are not hort. subjects. The mistletoe of literature is *Viscum album*, native from Great Britain to N. Asia, parasitic on many kinds of trees. The mistletoe of the N. American holiday markets is *Phoradendron flavescens* (first known as *Viscum flavescens*), parasitic on many deciduous trees from N. J. to Fla. and westward; there are more than 200 species of Phoradendron, all in the western hemisphere, whereas Viscum is confined to the Old World and Australia. *Arceuthobium* (or *Razoumofskya*) *pusillum* is a very small parasite on coniferous trees in E. N. Amer.; lvs. scale-like. The genus Loranthus, with many species, inhabits the warm belt mostly in the eastern hemisphere and is absent from N. Amer.

LORANTHUS: see *Loranthaceæ.*

LORATE: strap-shaped.

LORDS-AND-LADIES: *Arum maculatum.*

LORINSERIA: *Woodwardia areolata.*

LOROMA: *Archontophœnix.*

LOROPÉTALUM. *Hamamelidaceæ.* Evergreen shrubs of China with alternate entire lvs., white or yellowish fls. in clusters, and woody capsular frs.

Grown out-of-doors in mild climates and in a cool greenhouse in the North, although the root may withstand rather severe regions. Propagated by seeds and by grafting on Hamamelis.

chinénse. To 12 ft.: lvs. ovate, to 2 in. long: fls. with strap-shaped petals to 1 in. long, Mar.–Apr.

LÒTUS. *Leguminosæ.* Herbs or subshrubs of Eurasia and N. Amer., with pinnate lvs., papilionaceous fls. in axillary umbels or sometimes solitary, and cylindrical pods; grown for ornament and some species for the edible pods and for forage. Propagated by seeds and the woody kinds also by cuttings, divisions and layers.

Berthelòtii (*L. peliorhynchus*). Silvery shrub to 2 ft.: lfts. 3–7, very narrow: fls. scarlet, the standard narrow and recurved. Cape Verde and Canary Isls. Var. **atrococcíneus** has darker red fls. spotted with black.

bícolor: *L. pinnatus.*

corniculàtus. Birds-foot Trefoil. Per. to 2 ft., often decumbent: lfts. 3, obovate, short: fls. yellow or tinged with red. Eu., Asia.—Sometimes grown for forage.

erióphorus (*Hosackia eriophora. Syrmatium eriophorum*). Woolly mat-forming per., sts. to 4 ft. long, gray-hairy, hairs mostly erect and not appressed: lfts. 4–6, obovate to oblanceolate, about ⅓ in. long: fls. to ⅓ in. long, in subsessile leafy umbels of 4–10: pods curved. Calif. Var. **Heérmannii** (*L., Hosackia* and *Syrmatium Heermannii*) has lfts. thinly pubescent to glabrate with fls. to ¼ in. long.—The typical form not known to be in cult.

formosíssimus (*Hosackia gracilis*). Witchs-Teeth. Per., sts. weak, to 1 ft. long: lfts. 3–7, to ½ in. long, obovate or oblanceolate: fls. to ¾ in. long, rose, upper petal yellow: pods cylindrical, to 1 in. long. Wash. to Calif.

glàber of hort. lists is probably *L. scoparius.*

glaùcus. Per., sts. prostrate, glaucous-gray and pubescent: lfts. obovate, fleshy, small and crowded: pods irregularly beaded or moniliform. Madeira.

Heérmannii: *L. eriophorus* var.

jacobæ̀us. St. James Trefoil. Per. to 3 ft.: lfts. 3–5, linear: fls. black-purple to yellow on same plant. Cape Verde Isls.

mascaénsis. Silvery shrub: lfts. very narrow: fls. bright yellow. Teneriffe.

nígricans: *Kennedia nigricans.*

ornithopioìdes. Ann., usually roots with small tubercles: lfts. rhombic: fls. yellow. S. Eu.

peliorhýnchus: *L. Berthelotii.*

pinnàtus (*Hosackia bicolor*). Per.: lvs. glabrous, lfts. 5–9, to ¾ in. long, obovate: fls. yellow, wings white: pods cylindrical, linear, to 2½ in. long. Cent. Calif. to Wash.

scopàrius (*Hosackia glabra*). Deer-Weed. Erect suffrutescent per. to 5 ft. high, sts. green, mostly glabrescent: lfts. 3–5, oblong to oblanceolate: fls. in sessile umbels, corolla to ½ in. long: pods slightly curved. Calif.

siliquòsus (*Tetragonolobus siliquosus*). To 1 ft., sts. often decumbent: lfts. obovate: fls. pale yellow: pods 4-angled. S. Eu.

tenuifòlius: *L. tenuis.*

ténuis (*L. tenuifolius*). Per., sts. to 20 in. long, spreading with ascending tips: lfts. 3, to ⅝ in. long, oblong-oblanceolate: fls. yellow, to ⅜ in. long, usually 3–7 in head: pods to 1 in. long. Eu.; escaped from cult. in Ida.—By some authors considered a variant of *L. corniculatus.*

tetragonólobus (*Tetragonolobus purpureus*). Winged-Pea. Trailing ann.: lfts. 3, ovate: fls. purplish-red: pods 4-angled, the seeds and young pods edible. S. Eu.

LOTUS: *Nelumbium, Nymphæa.*

LOUSEWORT: *Pedicularis.*

LOVAGE: *Levisticum officinale.*

LOVE-IN-A-MIST: *Nigella damascena.*

LOVE-LIES-BLEEDING: *Amaranthus caudatus.*

LUCERNE: *Medicago sativa.*

LUCÙLIA. *Rubiaceæ.* Shrubs bearing opposite leathery lvs., white or pink salverform 5-lobed fls. in terminal corymbs, and fr. a caps. with winged seeds; native India to Yunnan (in China). Grown in the greenhouse and planted out in summer. Propagated by cuttings of ripe wood.

gratíssima. To 16 ft.: lvs. ovate-oblong, to 6 in. long: fls. pink or rose, 1½ in. across, in corymbs to 8 in. across.

intermèdia. To 12 ft.: lvs. oblong or oblong-lanceolate, to 6 in. long; fls. reddish, to 2 in. long, distinguished from other species by the flap-like processes between the lobes of the corolla.

limoncélla: listed name of unknown botanical application.

speciòsa: hort. name for a larger form with deeper rose fls.

LUCÙMA. *Sapotaceæ.* Shrubs and trees bearing alternate leathery entire lvs., small fls. and fr. a berry; differs from Achras in having 4 or 5 sepals in 1 or 2 series rather than 10 sepals in several series.

The canistel is grown in the tropics and southern Florida for the edible fruit. It is not particular as to soil. Propagated by seeds from which the husks should be removed, and probably also by budding.

mammòsa: *Achras Zapota.*

nervòsa (*L. Rivicoa* var. *angustifolia*). Canistel. Ti-Es. Egg-Fruit. Tree to 25 ft.: lvs. oblong-obovate, to 8 in. long: fls. greenish-white, in small clusters: fr. to 4 in. long, orange-yellow, with 2–3 shining seeds and soft orange flesh. N. S. Amer.; nat. in S. Fla. and S.

Rivicòa var. **angustifòlia:** *L. nervosa.*

spinòsa: *Gourliea spinosa.*

LUDOVIA: *Carludovica Laucheana.*

LUDWÍGIA (or *Ludvigia*). *Onagraceæ.* Paludose or aquatic per. herbs with alternate or opposite usually entire lvs., yellow or greenish inconspicuous fls. solitary or in spikes or racemes, and capsular frs.; planted in bog-gardens or aquaria. Propagated by seeds and cuttings.

alternifòlia. Rattle-box. Erect glabrous shrub to 4 ft.: lvs. lanceolate to oblanceolate, to 4 in. long, usually entire, alternate: fls. yellow, to ½ in. across. E. U. S.

califórnica: listed name of unknown botanical standing.

Mùlerttii. Sts. rooting at nodes: lvs. opposite, oval, glossy above and crimson-purple beneath: fls. yellow, solitary in the axils. A garden plant said to have come from S. Amer.; probably *L.* (or *Isnardia*) *palustris*.

LUÉTKEA. *Rosaceæ.* Tufted undershrub with trailing branches, adapted to the rock-garden. Propagated by cuttings of green wood and by division. **L. pectinàta** (*Spiræa pectinata*). Herb-like: lvs. alternate, 1–2 three-parted into linear lobes: fls. white, ⅓ in. across, in terminal racemes to 2 in. long. High mts., Calif. north to Alaska.

LÚFFA. *Cucurbitaceæ.* Monœcious tender tendriliferous vines of trop. regions, with angled or lobed lvs., fls. large and conspicuous, yellow or whitish, pistillate solitary and staminate racemose, the corolla of 5 petals: fr. not hairy, becoming dry and more or less papery, eaten when young in some countries, grown by us mostly for ornament or for the "vegetable sponge" provided by the dry interior; called also dishcloth gourd and rag gourd. They grow easily from seeds. The two commonly cult. species are annuals from the Old World tropics, bearing green frs.

acutángula. Lvs. angled but little if at all lobed except on young shoots: fr. club-shaped, 1 ft. or less long, strongly ridged.

cylíndrica. The prevailing species cult. with us, under several names: lvs. mostly 3–7-lobed: fr. cylindric, to 2 ft. long, sometimes curved, not ridged; variable and grown under different names as *L. gigantea*, *L. macrocarpa*, *L. marylandica*.

LUÌNA. *Compositæ.* One species native in the Cascade Mts. of Wash. **L. hypoleùca.** Tufted per. to 1 ft., white-tomentose: lvs. ovate, 1 in. long, shining above: fls. cream-colored, ⅓ in. long, in corymbose heads; pappus of soft white bristles. The genus belongs to the Arnica and Doronicum group.

LUNÀRIA. Moonwort. Satin-Flower. Honesty. *Cruciferæ.* Herbs of Eu. and Asia, one ann. or bien., one per., both cult. and also somewhat escaped: plants erect, branching: lvs. broad and simple: fls. purple to white: seed-pods or silicles moon-shaped, the septum papery and satiny after the valves drop away late in the season, and which are used in dry bouquets. Plants come readily from seed; partial shade is desirable.

ánnua (*L. biennis*). Honesty. Ann. or bien., 1½–3 ft. high: lvs. ovate or narrower, coarsely toothed: fls. white and purple: pods to 2 in. long and nearly as broad, obtuse or rounded at both ends. There is a variegated-lvd. form, and a var. **álba** is offered.

biénnis: *L. annua.*

redivìva. Perennial H. Per. with more closely and sharply toothed lvs.: seed-pods oblong-lanceolate, tapering at both ends, much longer than broad.

LUNGAN: *Euphoria Longana.*

LUNGWORT: *Pulmonaria.*

LUPINE: *Lupinus.*

LUPÌNUS. Lupine. *Leguminosæ.* Ann. and per. herbs, sometimes subshrubs, with digitately compound lvs., showy papilionaceous fls. in terminal spikes or racemes, and flattened pods often constricted between the seeds; a few species grown for cover-crops, forage and human food but in Amer. mostly known as ornamental subjects in the flower-garden.

Lupines may be grown on any well-drained soil, thriving even on poor sandy lands. Propagated by seeds sown where the plants are to stand or the perennial kinds also by division.

affìnis. Ann. to 2 ft., nearly glabrous: fls. deep bluish-purple, in spring: pods 1 in. long, the seeds small. Calif.

álbifrons. Woody per. to 5 ft., often with hard trúnk: lfts. 7–10, spatulate to obovate, silvery-silky, to 1 in. long: fls. about ½ in. long, blue or purplish with white or yellow center: pods yellowish, to 2 in. Calif. Var. **Doúglasii** (*L. Douglasii*) differs in floral bracts much exceeding buds. Var. **éminens** (*L. Brittonii*) has slightly larger fls.

albococcíneus: *L. pubescens.*

álbus. White L. Ann. to 4 ft., hairy: fls. white or slightly tinted: pods to 4 in. long, the seeds large. Levant. —An agricultural species.

alpéstris Erect per. to 2½ ft.: lfts. 5–9, linear-oblanceolate, to 2¾ in. long, glabrous above, hairy beneath: fls. blue, to ⅜ in. long: pods to 1¼ in. long. Colo., Utah and Mont.

angustifòlius. Ann. to 1 ft. or more, hairy: fls. dark blue, in early summer: pods ½ in. wide. Medit. region. Var. **ròseus,** fls. rose.

arboréscens: listed name.

arbòreus. Tree L. Shrub to 8 ft., slightly pubescent: fls. sulfur-yellow, in summer: pods to 3 in. long, the seeds small. Calif. Var. Snow Queen has pure white fls. and also **álbus.** Var. **Pàynei** is *L. Paynei.*

árcticus. Per. to 1 ft., allied to *L. nootkatensis* and differing in sts. erect not decumbent, petioles much longer than lfts., fls. on pedicels to ¼ in. long and not longer, and seeds usually 5–7 rather than 9–12. Alaska to N. Wash. and B. C.

argénteus (*L. decumbens. L. tenellus*). Per. to 3 ft., silvery-pubescent: fls. violet, rose or white, in summer: pods ¾ in. long. W. N. Amer.

atrococcíneus: *L. pubescens.*

bícolor. Ann. or bien. to 1½ ft., erect, villous: lfts. 5–7, to 1 in. long: fls. blue and white, to ½ in. long, verticillate on naked peduncle: pods less than 1 in. long, pubescent. Pacific coast.—A variable species, perhaps not in cult. *L. bicolor* of trade may be *L. polyphyllus* var.

Breẁeri. Low, prostrate or decumbent shrubby per. to 10 in. high or less, silvery-hairy: lfts. 7–10, to ¾ in. long: fls. violet with yellow or whitish center, to ⅜ in. long, in dense racemes to 2 in. long: pods 3–4-seeded, to ½ in. long. Mts. of Calif. to S. Ore.

Bríttonii: *L. albifrons* var. *eminens.*

califórnicus: *L. pubescens.*

Chamissònis. Shrubby, to 3 ft., silky-tomentose: fls. blue or lavender with yellow spot on standard, in spring and at other seasons. Calif.

columbiànus: *L. latifolius* var.

concínnus. Ann. to 6 in., densely hairy: fls. violet with yellow spot on standard. S. Calif.

confértus. Per. to 1½ ft., silky-pubescent, similar to *L. Torreyi* but with larger fls. ½ in. long. Calif., Nev.

Crúckshanksii: *L. mutabilis* var.

cytisoìdes. Broom L. Per. to 6 ft., minutely hairy: fls. rose-purple. Apr.–Aug. S. Calif.

decúmbens: *L. argenteus.*

densiflòrus (*L. Menziesii*). Ann. to 2 ft., hairy: lfts. 7–9, glabrous above, to ¾ in. long, obtuse to mucronate: fls. white, yellow or rose, calyx subtended by narrow reflexed bracts, in spring. Calif. Var. **crinìtus,** low, to 6 in. high. Var. **lácteus,** fls. nearly white.

diffùsus. Deer-Cabbage. Decumbent per., silky sts. woody at base, to 2 ft. long: lvs. entire, oblanceolate, to 4 in. long: fls. light blue with yellow spot in center of standard, on spikes to 12 in. long: pods woolly. N. C. to Fla., sandy soil.

Doúglasii: *L. albifrons* var.

Dúnnettii: *L. pubescens.*

dùplex: *L. pubescens.*

élegans: *L. pubescens.*

excùbitus: see *L. Paynei.*

formòsus. Per. to 2½ ft., sometimes decumbent, silky-pubescent: fls. purple, blue, lilac or white, ½ in. long: pods 1¼ in. long, seeds mottled. Calif.

guatemalénsis: *L. pubescens.*

Hártwegii. Ann. to 3 ft., with shaggy hairs: fls. blue with standard partially rose-colored, July–Sept.: pods about 1 in. long, the seeds small. Mex. Vars. **álbus, cœléstinus, ròseus** and **rùber** are color forms.

hirsutíssimus. Ann. to 1 ft., very hairy with stinging hairs: fls. reddish-purple, in spring: pods to 1½ in. long. S. Calif.

hirsùtus. Blue L. Ann. to 2 ft., brown-hairy: fls. blue, the keel usually tipped with white, July–Aug.: pods large with large seeds. S. Eu. Vars. **álbus, cærùleus, cárneus** and **rùber** are color forms.

hýbridus: *L. pubescens* and *L. mutabilis.*

insígnis: *L. pubescens.*

latifòlius. Erect per. to 4 ft.: lfts. 5–8, to 4 in. long, acute, glabrous above or nearly so: fls. blue to purple, rarely yellowish, to ½ in. long, in lax racemes to 18 in. long: pods to 1¼ in. long, dark brown. S. Calif. Var. **columbiànus** (*L. columbianus*). To 2 ft.: fls. with broader wings than type covering most of the keel. Calif. to Wash.

lépidus. Per. to 1 ft., densely tufted: fls. violet, ½ in. long: pods to ¾ in. long. B. C. to Ida. and Calif.

longifòlius. Shrubby, to 5 ft., grayish-pubescent: fls. deep blue to nearly white with a whitish or rose-purple spot on standard, in winter and spring: pods to 1½ in. long. S. Calif.

ludoviciànus. Erect per. to 2 ft., densely woolly: lfts. 4–8, spatulate, to 4 in.: fls. purplish, to ½ in. long: pods to 1 in. long. S. Calif.

lùteus. Yellow L. Ann. to 2 ft.: lfts. 7–10, lanceolate, acute: fls. yellow, fragrant, in verticillate whorls on long pubescent stalks, June–July. S. Eu.—Differs from *L. densiflorus* chiefly in calyx not subtended by bracts, and much longer pods.

Lỳallii. Per. to 4 in., silky-pubescent: fls. blue, nearly ½ in. long: pods ½ in. long. Wash. to Calif.

Ménziesii: *L. densiflorus.*

micránthus. Ann. to 1½ ft., hairy: fls. blue and white, very small: pods about 1 in. long. B. C. to Calif.

microcárpus. Ann. 4–20 in. high, sts. often branched: lfts. 5–8, to ¾ in. long, glabrous above, long-petioled: fls. usually pink to dull red, to ⅜ in. long, in racemes of 2–10 whorls: pods usually hairy, to ¾ in. long. Calif.

mínimus. Per. to 6 in., densely tufted, silky-pubescent: fls. blue or purple, ⅓ in. long. Alta. to Ore.

Mòerheimii: *L. polyphyllus* var.

Moritziànus: *L. pubescens.*

mutábilis. Ann. to 6 ft., glabrous: fls. white with yellow or violet on standard, June–Aug.: pods to 3 in. long, the seeds large. Mts. of S. Amer. Var. **Crúckshanksii** (*L. Cruckshanksii*) has bluish fls. shaded with violet and purple. Peru. Vars. **ròseus** and **versícolor** are color forms. *L. pantelericus* and *L. hybridus nigrescens* are probably forms of *L. mutabilis.*

nànus. Ann. to 15 in., pubescent: fls. blue with white purple-dotted spot on standard, fragrant, May–July: pods ¾ in. long, the seeds small. Calif. Vars. **álbus, álbo-ròseus** and **álbo-violàceus** are color variations.

nootkaténsis. Per. to 3 ft., hairy: fls. blue variegated with red and yellow, May–July: pods 1½ in. long. Near sea, Wash. to Aleutian Isls.

odoràtus. Ann.: fls. blue or purple with yellow on standard, ⅖ in. long: pods ¾ in. long. Calif., Ariz., Nev.

ornàtus. Per. to 3 ft., silky-pubescent: fls. dark blue with light spot on standard, ¾ in. long: pods to 1½ in. long. Wash., Ida.

pantelléricus: *L. mutabilis.*

Pàynei. Shrub to 8 ft., with silvery foliage: fls. blue, lavender, pink or white with yellow blotch on standard, fragrant, in spring. Calif.—Sometimes treated as a synonym of *L. excubitus* var. *Hallii.*

perénnis. Sun-Dial L. Per. to 2 ft., pubescent: fls. blue varying to pink and white, May–June: pods 1½ in. long. Me. to Fla.

pilòsus. Ann. to 4 ft., hairy: fls. rose with red spot on standard. Levant.

Pìperi. Per. to 1½ ft., silky-pubescent: lfts. 5–8, oblanceolate, acute, to 1⅓ in. long, petioles to 4 in. long: fls. deep blue, in showy loose racemes: pods to 1 in. long. Wash.

platténsis. Per. to 2 ft., hairy: fls. pale blue with dark spot on standard, June–July: pods to 1¼ in. long. Wyo. to Kans.

polyphýllus. Per. to 5 ft., glabrous except the woolly pods: fls. purplish with blue wings, in compact racemes, June–Sept.: pods 1½ in. long, the seeds small. Wash. to Calif. Var. **Mòerheimii** is more compact and has various colored fls. Listed color forms are **albiflòrus, álbus, atro-violàceus, bícolor, cærùleus, carmíneus, lùteus, ròseus, salmòneus.** Vars. **élegans** and **trícolor** belong to the hybrids of *L. pubescens.*

pubéscens. Ann. to 3 ft., pubescent: fls. violet-blue with white center: pods 1 in. long, the seeds small. Mex. and Guatemala.—Here belongs the group known as **L. hýbridus,** comprising such names as *albococcineus, atrococcineus, californicus, Dunnettii, duplex, elegans, guatemalensis, hybridus roseus, insignis, Moritzianus, pulcherrimus, speciosus, succulentus, superbus, tricolor, venustus.*

pulchérrimus: *L. pubescens.*

pusíllus. Ann. to 10 in., sts. hairy: lfts. 5–8, oblanceolate-oblong, smooth above, hirsute beneath: fls. white to pale rose-purple, in racemes to 3 in. long: pods about ¾ in. long, 2-seeded. Sask. to Wash. south to New Mex. and Nev.

rivulàris. Per. to 3 ft., hairy: fls. blue or variegated, marked with yellow: pods to 2 in. long. Wash. to Calif.

ròseus: *L. polyphyllus* and *L. pubescens.*

speciòsus: *L. pubescens.*

Stìversii. Ann. to 1½ ft.: fls. with bright yellow standard and rose or purple wings, ½ in. long: pods ¾ in. long. Calif.

subcarnòsus (*L. texensis*). Ann. to 1 ft., silky-pubescent: fls. blue with white or yellow spot on standard, in spring: pods 1½ in. long, the seeds small. Tex.

succuléntus: *L. pubescens.*

sulphùreus. Per.: lfts. 13–15, narrowly lanceolate, densely pubescent on both sides: fls. sulfur-yellow, small, in dense racemes, calyx without bracts. Blue Mts. of Ore.—Probably not in cult., plants so listed may be *L. densiflorus* or a form of *L. pubescens.*

supérbus: *L. pubescens.*

tenéllus: *L. argenteus.*

Térmis. Egyptian L. Ann. to 5 ft., silky-hairy: fls. white tinted with blue: seeds large. Levant.—An agricultural species.

texénsis: *L. subcarnosus.*

Tórreyi. Per. to 8 in., silky-pubescent: fls. violet-blue with center of standard yellow to purple, ⅓ in. long: pods ½ in. long. Wash. to Calif.

trícolor: *L. pubescens.*

truncàtus. Ann. to 2 ft., slightly hairy: fls. violet: pods 1 in. long. S. Calif.

variícolor. Per. with decumbent or prostrate sts. to 2½ ft. long: fls. yellow, white, pink, blue, purple, ½ in. long: pods to 1¼ in. long, seeds mottled. Calif.

vàrius. Ann. to 3 ft.: fls. red and blue. S. Eu.

venústus: *L. pubescens.*

villòsus. Lady L. Per. to 3 ft.: lvs. entire, elliptic-lanceolate to oblanceolate, to 6 in. long, long-petioled: fls. cream-colored to deep purple, the keel usually darker than wings, in erect dense panicles: pods to 1¾ in. long. N. C. to Fla. west to Miss.

LUVUNGA: *Lavanga.*

LÙZULA. Wood Rush. *Juncaceæ.* Glabrous or somewhat pubescent per. herbs with grass-like lvs., differing from the closely related Juncus in the 1-celled 3-seeded caps., Juncus having a caps. with 1–3 cells and many seeds. Plants of dry shaded woods adapted to naturalizing in colonies or for the border. Propagated by seeds and division.

campéstris (*L. pilosa*). Common W. Tufted, to 1½ ft.: lvs. to ¼ in. across: fls. brown, to nearly ⅛ in. long, crowded into erect infl. of 2–12 spike-like clusters. N. Amer., Eu., Asia.

pilòsa: *L. campestris.*

LYCÁSTE. *Orchidaceæ.* Trop. American epiphytic orchids with pseudobulbs bearing 1 to several plaited lvs., and solitary fls. on basal shoots, the lateral sepals united with the foot of the column to form a spur-like body or chin, the lip 3-lobed. Grown in intermediate temperature and shade; see *Orchids* for cult.

aromática. Pseudobulbs to about 3 in. high, with 2–3 lvs. to about 20 in. long: fls. very fragrant, to 2½ in. across, orange-yellow, the lip often spotted with red and with a broad callus. Jan., Apr.–Oct. Cent. Amer.

Bárringtoniæ. Pseudobulbs ellipsoidal, to about 3 in. tall: lvs. 2–3, elliptical, to nearly 2 ft. long and 4¼ in. wide: fls. olive-green to tawny-yellow, lip 3-lobed and fimbriate. Apr.–June. W. Indies.

brevispàtha (*L. candida*). Pseudobulbs to 2½ in. high, commonly 2-lvd.: lvs. to 1 ft. long: fls. 2½–3 in. across; sepals pale green; petals white; lip white tinted with yellow, all parts of perianth often dotted with red-brown. Feb.–May. Costa Rica, Panama.

cándida: *L. brevispatha.*

cruénta. Pseudobulbs to 3¼ in. high, 2–3-lvd.: lvs. to 1½ ft. long: sepals brownish- or yellowish-green; petals orange-yellow; lip orange-yellow with blood-red at base. Blooms almost all year. Cent. Amer.

Déppei. Pseudobulbs to 3½ in. high, with 3–4 lvs.: fls. to over 4 in. across; sepals greenish spotted with red;

petals ivory-white; lip white and yellow spotted with red. June–Sept. Mex.

fulvéscens. Pseudobulbs to 5 in. high, with 2 lvs. to 20 in. long: fls. yellowish tinged with brown, the lip 3-lobed, fringed in front. May–June. Colombia.

Hárrisoniæ: *Bifrenaria Harrisoniæ.*

lánipes. Pseudobulbs subcylindric, to 6 in. long, with 2–3 lvs. to 25 in. long: fls. about 4 in. across, greenish-white to ivory-white, lip fringed in front. Autumn. Ecuador.

lasioglóssa. Pseudobulbs to 5 in. high, 2–3-lvd.: lvs. to 2 ft. long: fls. to 5 in. across, with brown sepals, yellow petals and lip with hairy red-spotted mid-lobe. Guatemala.

Lawrencèana: a form of *L. brevispatha* with petals and lip white tinted rose-pink.

leucántha. Pseudobulbs to 3 in. tall, 2–3-lvd.: lvs. to 25 in. long: fls. to 4 in. across; sepals greenish-brown, petals yellowish-white; lip pale yellow suffused with white. Cent. Amer.—This name is occasionally misapplied to *L. brevispatha.*

Skínneri. Pseudobulbs to 3 in. high, with 2–3 lvs. to 2 ft. long: fls. the largest in the genus, to 6 in. across, with white or rose sepals, rose petals, and lip rose or crimson-carmine of many shades often mottled with white. Jan.- May, Nov. Mex., Guatemala, Honduras.

LYCHEE: *Litchi chinensis.*

LÝCHNIS. *Caryophyllaceæ.* Herbaceous annuals and perennials, many of which are good garden subjects: fls. solitary or in clusters, often very showy, white, pink, purple, shades of red, the petals usually 2-notched: lvs. commonly opposite and entire: native in the north temp. and arctic zones. All are easily grown from seed, the perennials being propagated also by division.

álba (*L. vespertina. Melandrium album*). Evening Campion. Bien. or per. to 2 ft., sticky-hairy: lvs. ovate-lanceolate to oblong: fls. white and fragrant, to 1 in. across, opening in the evening, in loose few-fld. panicles. Eu.; adventive in E. U. S.

alpìna (*Viscaria alpina*). Arctic Campion. Per., smooth, tufted, 1 ft. or less: lvs. linear-lanceolate: fls. pink, ⅓ in. across, in dense terminal heads. Apr. Arctic and alpine regions in Eu., Asia, N. Amer. Color vars. are **álba, ròsea** and **rùbra.**

apétala (*Viscaria parviflora*). Per. to 8 in., glandular-pubescent above: lvs. linear to oblanceolate, to 2½ in. long, sessile: fls. solitary, nodding, petals inconspicuous and shorter than the deeply purple-veined calyx. Arctic regions of northern hemisphere.

Árkwrightii. Hybrid between *L. Haageana* and *L. chalcedonica,* with fls. in shades of scarlet.

atropurpùrea (*Viscaria atropurpurea*). Perhaps not distinct from *L. Viscaria,* from which it supposedly differs in its shorter fr. and smaller darker purple fls. S. Hungary to Bulgaria.

cándida: hort. name for a white-fld. form.

caramánica: see *Silene caramanica.*

cardinàlis: plants listed as *Viscaria cardinalis* are *L. Cœli-rosa.*

chalcedónica. Maltese Cross. Jerusalem Cross. Scarlet Lightning. Per., 2–3 ft., usually loosely hairy: lvs. ovate to lanceolate, mostly clasping: fls. scarlet, about 1 in. across, in dense terminal heads. June–July. Russia and Siberia; escaped in E. U. S. There are vars. with white, rose or flesh-colored fls. as **álba, ròsea,** and **salmònea,** and sometimes double forms. Var. **grandiflòra** is listed.

Cœli-ròsa (*Agrostemma Cœli-rosa. Viscaria cardinalis*). Rose-of-Heaven. Ann. to 1½ ft.: lvs. linear: fls. nearly 1 in. across, rose-red, solitary, terminal. Medit. region. Var. **álba,** fls. white. Var. **fimbriàta,** petals toothed. Var. **kermesìna,** fls. red. Var. **oculàta** (*Viscaria oculata*), fls. purple-eyed.

compácta: hort. name.

Coronària (*Agrostemma-Coronaria. Coronaria tomentosa*). Mullein-Pink. Dusty Miller. Rose Campion. Bien. or per. to 3 ft., densely white-woolly: lvs. oval or oblong: fls. crimson, 1 in. or more across, terminal and solitary. June–July. S. Eu.; escaped in N. Amer. Color forms listed are **álba, atrosanguínea** and **bícolor.**

coronàta (*L. grandiflora*). Bien. or per. to 1½ ft.: lvs. oval-elliptic: fls. brick-red, salmon or cinnabar, 2 in. or more across, in open panicles. China, Japan. Var. **Sièboldii,** large pure white fls.

córsica. Ann. to 3 ft.: fls. pink changing to reddish, in panicles. Corsica.

dioìca (*L. diurna. Melandrium dioicum, M. rubrum* and *M. silvestre*). Red or Morning Campion. To 2 ft., coarse, hairy and usually somewhat sticky: lvs. oblong to ovate: fls. normally red, to 1 in. across, in loose clusters, opening in the morning. Eu. and Asia; escaped in E. U. S. There are white and double-fld. vars.

diúrna: *L. dioica.*

fimbriàta: *L. Cœli-rosa* var.

Flós-cùculi (*Agrostemma Flos-cuculi. Coronaria Flos-cuculi*). Cuckoo-Flower. Ragged Robin. Per., slender, floriferous, soft-hairy below, sticky above: lvs. narrow-lanceolate: fls. red or pink, to 1 in. across, in loose panicles. May–Aug. Eu., N. Asia; nat. in E. U. S. There are double-fld. and white vars.

Flós-Jòvis (*Agrostemma* and *Coronaria Flos-Jovis*). Flower-of-Jove. Per. to 1½ ft., white-tomentose: lvs. oval-lanceolate: fls. pink, to ½ in. across, in dense umbel-like clusters. June–July. Mts. of S. Eu. Var. **alpìna** is listed.

Fórrestii. A strain of bybrids with fls. in shades of crimson, carmine, pink and white: 1½–2 ft. high.

fúlgens. Per. to 2 ft., hairy: lvs. ovate to ovate-oblong: fls. bright scarlet, to 2 in. across, in few-fld. dense terminal clusters. Siberia.

Githàgo: *Agrostemma Githago.*

grandiflòra: *L. coronata.*

Haageàna. Hybrid between *L. fulgens* and *L. coronata* var. *Sieboldii:* per., somewhat hairy, to 1 ft., intermediate in characters between the parents: fls. orange-red, scarlet or crimson, about 2 in. across, in 2's or 3's. May–June.

Lagáscæ: *Petrocoptis Lagascæ.*

lappónica: listed as a plant 6 in. high with bright rose fls.

macrocárpa. Per. to 3 ft., glandular-pubescent: lvs. ovate to ovate-lanceolate, to 2½ in. long or more, undulate fls. white to rose-pink, diœcious, the fruiting calyx-lobes narrowly lanceolate. Eu., W. Asia, N. Afr.

Miqueliàna. Similar to *L. coronata* from which it differs in its more spreading infl., shorter bracts, and petals not eroded nor toothed but 2-lipped: fls. salmon-red. Japan.

mongólica. To about 2 ft., sts. hairy: lower lvs. short-petioled, lanceolate, to 5 in. long, obtuse, upper lvs. briefly connate, linear-oblong: fls. 1–3, probably white, about ¾ in. long. Mongolia.

montàna. Per. to nearly 6 in., glabrous below and glandular-hairy above: lvs. linear-oblanceolate, to 2 in. long, petioles ciliate: fls. white to pink, usually solitary, petals shorter than calyx. Mts. of Colo. and Wyo.

oculàta: *L. Cœli-rosa* var.

parviflòra: see *L. apetala.*

Préslii. Per. to 1½ ft.: lvs. ovate-lanceolate to obovate, acuminate to obtuse, entire, decurrent, dark green: fls. purplish, about 1 in. across, abundant in panicled clusters. Bolivia.

pyrenàica: *Petrocoptis pyrenaica.*

Sártori. To 1 ft.: lvs. lanceolate: fls. purple, ½ in. across. China? Botanical position uncertain.

segitàlis: *Agrostemma Githago.*

Sénno. Per. to 2 ft., sts. pubescent to villous: lvs. ovate to ovate-lanceolate, to 3 in. long, acute, entire, villous: fls. scarlet, white or sometimes scarlet striped with white, to 2½ in. across, in cymes of 3–7, petals broadly cordate, overlapping, margins sharply toothed. Japan.

Sièboldii: *L. coronata* var.

trístis. Per. to 1½ ft. or more, sts. black-glandular above, viscid: basal lvs. oblong-lanceolate, to 6 in. long, petioled; st.-lvs. linear-oblong, to 4 in. long, acute, ciliate: fls. dark brownish-purple, in terminal clusters of 1–3, petals narrowly obcordate. Caucasus.

Vaccària: *Saponaria Vaccaria.*

vespertìna: *L. alba.*

Viscària (*Viscaria viscosa*). German Catchfly. Per. to 1½ ft., smooth with sticky patches beneath the fl.-clusters: lvs. long and narrow: fls. red or purple, about ½ in. across, in loose panicles. May–June. Eu., N. Asia. Vars. are **álba, grandiflòra álba, nàna, ròsea, spléndens, spléndens flòre-plèno.**

Wálkeri. Hybrid between *L. Coronaria* and *L. Flos-Jovis:* silvery-hairy, with carmine-red fls. from June to Oct.

yunnanénsis. Tufted per. 8 in. tall or less, sts. hairy, slender: lvs. linear to lanceolate, sessile, acute, hairy: fls. white, petals exceeding calyx, 2-lobed, calyx mostly 10-nerved, segms, ovate, glandular, margins reddish. China.

LÝCIUM. Box-Thorn. Matrimony-Vine. *Solanaceæ.* Ornamental deciduous and evergreen shrubs, often clambering and requiring support, with alternate or clustered small lvs., usually grayish-green: fls. funnel-shaped, greenish, whitish, purplish, or violet, solitary or clustered, the stamens commonly exserted: berries usually scarlet.

Lyciums grow in all usual soils. As suckers are generally produced, the plants should not be set near flower-beds. They may be propagated by hardwood cuttings, by suckers, by layers, and by seed.

bárbarum. Often confused with *L. halimifolium* but differing in the smaller narrow lvs. and the glabrous filaments. N. Afr.

caroliniànum. To 5 ft., spiny: lvs. spatulate, thick and fleshy, to 1 in. long: fls. ¼ in. long, limb as long as tube, the filaments woolly at base: fr. red, ½ in. across. S. C. to Fla. and Tex.

chinénse. Shrub with arching and often prostrate branches to 12 ft. long, usually unarmed, branchlets yellowish-gray: lvs. ovate or ovate-lanceolate, to 3 in. long, remaining green until late in autumn: fls. purple, ½ in. long, the limb longer than corolla-tube, filaments pubescent at base: fr. scarlet to orange-red, to 1 in. long. E. Asia. Var. **ovàtum** has lvs. to 4 in. long.—Very like *L. halimifolium* and perhaps not distinct as commonly defined; the fl. characters of separation are not constant; in *L. chinense* the lvs. on flowering branchlets are prominently broad and short while those of *L. halimifolium* are long and very narrow.

europæum. Differs from *L. halimifolium* in the smaller narrower lvs., more slender corolla-tube, and glabrous filaments. Medit. region.

halimifòlium (*L. vulgare*). Upright or spreading shrub to 10 ft., arching or recurving branches, usually spiny; branchlets light gray: lvs. commonly lanceolate, to 2½ in. long, thickish: fls. dull lilac-purple, the limb shorter than tube, filaments pubescent at base: fr. to ¾ in. long, scarlet to orange-red. S. E. Eu., W. Asia.

hórridum. To 3 ft., much branched, spiny: lvs. spatulate, ¼ in. long: fls. whitish, ¼ in. long, the filaments pubescent at base. S. Afr., where it is planted for hedges.

pállidum. To 6 ft., much branched, spiny: lvs. lanceolate, to 2 in. long, glaucous and fleshy: fls. nodding, greenish-yellow tinged purple, ¾ in. long, tube 3 times longer than lobes, filaments glabrous: fr. scarlet, ½ in. across. Utah to Mex.

ruthénicum. Spiny: lvs. linear to linear-lanceolate, to 1¼ in. long: fls. ½ in. long, lobes much shorter than tube, filaments pubescent at base: fr. black. E. Eu., W. Asia.

vulgàre: *L. halimifolium.*

LYCOPÉRSICON. Tomato. *Solanaceæ.* Herbaceous annuals and perennials, the lvs. pinnately compound, fls. yellow, fr. a pulpy berry, 2- or few-celled, the cells multiplied under cult.; native in S. Amer. but spontaneous in small-fruited forms in many warm regions. Linnæus placed the tomato in the genus Solanum and it was first separated as a genus by John Hill in his Vegetable System who spelled the generic name Lycopersicum. Because Hill did not follow the binomial system of nomenclature consistently in this work, the names are not valid and it is necessary to take up the name and spelling as next given by Philip Miller, namely Lycopersicon. Certain modern authors have reunited Lycopersicon with Solanum. Relationship of tomato and potato is close, as shown by the fact that one may be grafted on the other: see *Potomato.*

esculéntum. Tender per. but treated as an ann., to 6 ft. and more, more or less hairy, with strong odor: lvs. to 1½ ft. long, of 5–9 more or less curled toothed lfts. to 3 in. long: fls. nodding, ¾ in. across: fr. red or yellow, to 3 in. across, usually flattened at the ends, sides grooved or furrowed. W. S. Amer. Var. **cerasifórme.** Cherry T. Lvs. thinner and smaller: fls. in longer clusters: fr. globular and regular, about ¾ in. diam., red or yellow; forms with oblong fr. are Plum T. Var. **commùne** (var. *vulgare*). Common T. Lfts. little if at all curled: plants heavier and more lopping: fr. mostly globular or only flattened a little, the sides not furrowed or grooved, many-celled. Var. **grandifòlium.** Large-leaved or Potato-leaved T. Lvs. large and plane, lfts. fewer. Var. **pyrifórme.** Pear T. Fr. pear-shaped, about 1½ in. long. Var. **válidum.** Upright T. Stout, erect, very compact: lvs. crowded and curled.

pimpinellifòlium (*L. racemiforme. L. racemigerum*). Currant T. Weak, sts. slender, finely pubescent, without pronounced odor: lvs. of 5–7 lfts. to 1½ in. long: fls. 10–25 in an elongated raceme: fr. red, currant-like, about ½ in. diam., 2-celled. Peru.

racemifórme: *L. pimpinellifolium.*

racemígerum: *L. pimpinellifolium.*

LYCOPODIÀCEÆ. Club-Moss Family. Three genera of moss-like evergreen herbs with numerous small lvs. and minute spores borne either in terminal spikes or in lf.-axils, often picked for decorations, particularly in the holiday season. They are pteridophytes or "flowerless" plants, belonging with the fern allies. Only Lycopodium is known to hort.

LYCOPÒDIUM. Club-Moss. *Lycopodiaceæ.* Per. evergreen herbs with needle- or scale-like lvs., widely scattered over the world, the native ones often used for Christmas greens. Grown in moist shady places. Propagated by cuttings.

Billardièri. Usually growing on trees or rocks, sts. to 5 ft. long, much branched: spikes numerous, terminal, to 4 in. long. New Zeal.

clavàtum. Running-Pine. Sts. creeping to 9 ft., with very leafy ascending branches: spikes 1–4, on sts. to 4 in. long. N. Amer., Eu., Asia.

complanàtum. Ground-Cedar. Sts. trailing, the ascending branches often fan-like (var. *flabelliforme*) and lvs. 4-ranked; spikes 1–4, on sts. to 5 in. long. N. Amer., Eu., Asia.

dendroídeum: *L. obscurum.*

lucídulum. Shining C. Sts. to 10 in. high, decumbent at base: lvs. glossy green: sporangia in axils of lvs. N. Amer.

obscùrum (*L. dendroideum*). Ground-Pine. Main st. creeping underground, branches to 10 in. high, tree-like: spikes nearly sessile. N. Amer., Asia.

Selàgo. Sts. stiff and erect, forming tufts to 8 in. high, the sporophylls shorter than other lvs. and not in spikes. Alaska to Ore. and mts. of N. C., Eurasia.

tristàchyum. Sts. creeping underground, with narrow glaucous branches and 4-ranked imbricated lvs.: spikes on sts. to 5 in. long. Me. to Ga. and Minn., Eu.

LÝCOPUS. Water Hoarhound. *Labiatæ.* Per. mint-like herbs making stolons at base, in north temp. zone, with small white, tinted or purplish fls. in close axillary clusters, adapted to moist places and wild-gardens: lvs. opposite, sessile or short-stalked, variously dentate, mostly narrow.

americànus (*L. sinuatus*). To 2 ft., erect: lvs. lanceolate or somewhat broader, short-petioled, incised to pinnatifid, to 4 in. long: corolla little exceeding calyx, pale with crimson spots. Moist ground, Newf. to Fla. and Calif.

europæus. To 2½ ft., more pubescent than above: lvs. ovate to oblong-lanceolate, to 3 in. long, coarsely dentate: fls. as above. Eu., nat. in U. S. from Mass. to Va.

sinuàtus: *L. americanus.*

LÝCORIS. *Amaryllidaceæ.* Bulbous herbs with narrow basal lvs. disappearing before the fls. which are yellow or red and borne in an umbel at tip of solid scape, the perianth-segms. united into a short tube; Chinese and Japanese. Hardy out-of-doors with winter protection, and also grown under glass.

aùrea (*Amaryllis aurea*). Lvs. to ¾ in. across: fls. yellow, 3 in. long, in summer. China.

incarnàta. To 1¾ ft.: lvs. somewhat linear: fls. salmon to bright rose, fragrant, large, segms. only slightly reflexed and undulate. Cent. China.

purpùrea: probably *L. squamigera* var.

radiàta (*Amaryllis radiata*). Lvs. linear: fls. bright red or white in var. **álba**, 1½ in. long, in autumn. China, Japan.

sanguínea. Lvs. linear: fls. bright red, 2 in. long, in summer. Japan.

squamígera (*Amaryllis Hallii*). Lvs. to 1 in. across: fls. rose-lilac or pink, 3 in. long, in summer, fragrant. Japan. Var. **purpùrea** is listed.

LYGISTUM: *Manettia.*

LYGÒDIUM. Climbing-Fern. *Schizæaceæ.* Twining vine-like ferns with palmately or pinnately lobed or divided lfts. or secondary pinnæ; sori borne on contracted divisions of frond, often forming panicles; mostly native in tropics. The twining st. is really petiole and rachis.

circinàtum (*L. dichotomum*). Lfts. deeply palmately divided into entire segms. to 1 ft. long, bright green. Trop. Asia, Malaya.

dichótomum: *L. circinatum.*

japónicum. Lfts. pinnate into pinnatifid or lobed segms., margins toothed, pale green. E. Indies, E. Asia, Australia.

palmàtum. Hartford-Fern. Lfts. nearly orbicular, palmately 4–7-lobed, margins entire, fertile lfts. forming terminal panicle. Mass. to Fla. and Tenn.

scándens. Lfts. pinnate into ovate or ovate-lanceolate segms. to 2 in. long, sometimes lobed, bluish-green. E. Asia.

volùbile. Lfts. pinnate into lanceolate segms. to 1 ft. long. Trop. Amer.

LYÒNIA (*Xolisma*). *Ericaceæ.* Shrubs, evergreen and deciduous, with alternate lvs., white or pinkish fls. in clusters or panicles, and capsular frs.; cult. as for Leucothoë. Adapted for colonizing and in shrubby collections; mostly plants of moist soil. Asian species may be expected to appear in general cult.

ligustrìna (*Andromeda ligustrina* and *paniculata. Arsenococcus ligustrinus*). Male-Berry. He-Huckleberry. To 12 ft., deciduous: lvs. to 3 in. long, entire or finely toothed: fls. in panicles to 6 in. long. May–July. Me. to Fla. and Tex.

lùcida (*L. nitida. Pieris lucida* and *nitida. Neopieris nitida. Andromeda nitida. Desmothamnus lucidus*). Fetter-Bush. To 6 ft., evergreen: lvs. to 3 in. long, entire, shining above: fls. in terminal leafy racemes. Mar.–May. Va. to Fla. and La., in low woods and barrens.

mariàna (*Andromeda, Neopieris* and *Pieris mariana*). Stagger-Bush. To 6 ft., deciduous: lvs. to 2½ in. long, entire: fls. nodding, in terminal leafless racemes. May–June. R. I. to Fla. and Ark.

nítida: *L. lucida.*

LYONOTHÁMNUS. Lyon-Shrub. *Rosaceæ.* One evergreen tree confined to the isls. off coast of S. Calif. and planted in warm regions. **L. floribúndus.** Catalina Ironwood. To 55 ft.: lvs. lanceolate, to 8 in. long, nearly entire or pinnately cut or sometimes pinnately compound, dark green and shining above: fls. small, white, in corymbs to 8 in. across. In var. **asplenifòlius** the lvs. are pinnately divided into lobed lfts.—Propagated by basal sprouts, with difficulty by cuttings or by seeds when produced.

LYON-SHRUB: *Lyonothamnus.*

LYRATE: pinnatifid, but with an enlarged terminal lobe and smaller lower and sometimes intermediate lobes.

LYSIAS: *Habenaria.*

LYSICHÌTUM. *Araceæ.* Two stemless ill-scented herbs native in swamps of W. Asia to W. N. Amer. **L. americànum.** Yellow Skunk-Cabbage. Lvs. from thick rootstocks, to 5 ft. long, oblong-lanceolate: fls. greenish- to golden-yellow, borne on a spadix; spathe yellowish, the blade to 4 in. long.—The *L. camtschatcense* of E. Asia is odorless or sweet-scented, has a white spathe, and is the plant sometimes cult. as var. *album* of that species.

LYSILÒMA. *Leguminosæ.* A small genus of trop. American trees or shrubs with 2-pinnately compound lvs. and greenish-white to white fls. in capitate heads or cylindrical spikes, with the numerous stamens partly united into a tube: fr. an elliptic to linear dehiscent pod. One species may be in cult. in Fla. for ornament.

latisíliqua (*L. Sabicii*). Tree to 65 ft. or more, usually much smaller, twigs glabrous: lvs. to 8 in. long, lfts., 3–7 pairs, ovate to obovate, to 1 in. long, obtuse, to ⅝ in. wide: fls. greenish-white, in solitary long-peduncled axillary heads: pods to 6 in. long and 1¼ in. wide. Bahamas, Cuba, Hispaniola.—The tree has been confused with *L. bahamensis* which differs in its smaller linear-oblong lfts.

Sàbicii: *L. latisiliqua.*

LYSIMÀCHIA. Loosestrife. *Primulaceæ.* Ann. and per. summer-blooming herbs, bearing yellow or white, rarely purple or blue, fls. singly or in spikes or racemes, sometimes whorled, wheel- or bell-shaped corolla, and fr. opening by 5 valves; of temp. and subtrop. distribution, a few grown for ornament in moist situations. Propagated by division.

atropurpùrea. Ann. to 2 ft.: lvs. lanceolate: fls. red with dark purple anthers, in dense spikes. Greece, Asia Minor.

barýstachys (*L. brachystachys*). To 2½ ft.: lvs. linear to lanceolate, glaucous beneath: fls. white, in dense racemes at first nodding. E. Asia.

brachýstachys: *L. barystachys.*

ciliàta: *Steironema ciliatum.*

clethroìdes. To 3 ft., pubescent: lvs. ovate-lanceolate: fls. white, in slender terminal spikes. China, Japan.

dùbia. To 2 ft.: lvs. linear-lanceolate: fls. rose, in spikes. S. E. Eu., W. Asia.—Similar to *L. atropurpurea*, differing in all the lvs. briefly petioled and not sessile, and in fls. rose-colored.

Ephémerum. To 3½ ft.: lvs. linear-lanceolate, glaucous: fls. white, in racemes. Medit. region.

Fórtunei. To 2 ft., glabrous: lvs. oblong-lanceolate: fls. white, in many-fld. racemes. China, Japan.

Fràseri. To 7 ft.: lvs. lanceolate or oblanceolate: fls. yellow, in broad terminal panicles. S. C. to Ga.

japónica. Decumbent or ascending to 5 in.: lvs. ovate, punctate: fls. yellow, solitary in the axils. E. Asia to Sumatra.

lobeliafòlia: listed name.

lobelioìdes. To 1 ft., sts. slender, erect or ascending: lvs. ovate to orbicular-ovate, to nearly 2 in. long, glabrous, opposite: fls. white, broadly campanulate. N. W. Himalayas.

minoricénsis. To 2 ft., sts. erect, rarely branched: lvs. lanceolate, alternate, glabrous: fls. in clusters of 5–8. Balearian Isls.

Nummulària. Moneywort. Creeping Jennie or Charlie. Creeping: lvs. round: fls. yellow, solitary in the axils. Eu.; nat. in E. N. Amer. Var. **aùrea** has yellow foliage.

punctàta (*L. verticillata*). To 3 ft.: lvs. in 3's or 4's, ovate-lanceolate: fls. yellow, in axillary whorls, petals margined with minute glandular hairs. Eu., nat. in E. U. S.

quadrifòlia. To 3 ft.: lvs. usually in 4's or 5's, lanceolate to ovate: fls. yellow with dark streaks, axillary, long-stalked. N. B. to Ga. and Tenn.

terréstris. Glabrous, erect, to 2 ft.: lvs. mostly opposite, lanceolate, acute, to 3 in. long, with minute black dots: fls. yellow, in terminal racemes. Moist ground, Newf. to Ga. and west.

thyrsiflòra. To 2 ft.: lvs. opposite, sessile, lanceolate: fls. yellow, in short axillary heads. Swamps, Eu., Asia, N. Amer.

verticillàta: *L. punctata.*

vulgàris. Bushy, 3-5 ft.: lvs. whorled or opposite, ovate-lanceolate: fls. yellow, in leafy panicles. Eu., Asia; nat. in E. U. S. Var. **dahùrica** is listed, and may not be distinct from the type.

LYTHRÀCEÆ. Loosestrife Family. About 21 widely distributed genera of herbs, shrubs or trees, many of them in trop. Amer., with mostly alternate or whorled lvs., bisexual polypetalous fls. having tubular calyx, 4–6 petals or sometimes without petals, few to many stamens, superior 2–6-celled ovary, and capsular fr. Several genera furnish medicinal and dye products, others timber, and the following are grown with us for ornament: Cuphea, Decodon, Heimia, Lagerstrœmia, Lawsonia, Lythrum.

LÝTHRUM. *Lythraceæ.* Ann. and per. herbs with mostly opposite entire lvs. and 4-angled branches, purple to white fls. solitary or in racemes or spikes, and capsular frs.; planted in borders and wild-gardens. Of easy cult. in moist soil. Propagated by division and by seeds when available.

alàtum. Per., erect, to 4 ft., st. angled or winged: lvs. opposite or alternate, sessile, oblong to lanceolate, to 1¼ in. long: fls. small, purple, solitary in axils. New England to Ark.

flexuòsum (*L. Graefferi*). Per., sts. to 2½ ft. long, prostrate or ascending: lvs. to 1¼ in. long and ⅓ in. wide: fls. purple, usually solitary. Eu., N. Afr., Asia Minor.

Graèfferi: *L. flexuosum.*

Hyssopifòlia. Ann. to 2 ft.: lvs. to ¾ in. long and ¼ in. wide: fls. pink-purple, very small, solitary. Temp. regions of world.—Hyssopifolia is an old substantive adopted by Linnæus.

ròseum supérbum: *L. Salicaria* var.

Salicària. PURPLE LOOSESTRIFE. Per. to 3 ft. with a hard and woody root: lvs. lanceolate, to 4 in. long, broad at base: fls. purple, to ¾ in. across, in dense leafy terminal spikes. Old World; nat. in N. Amer. Var. **atropurpùreum** is listed with dark purple fls. Var. **ròseum supérbum** has larger rose-colored fls. and in var. **tomentòsum** the whole plant is white-tomentose.

virgàtum. Closely resembling *L. Salicaria* but with lvs. narrow at base and smaller fls. in leafy open racemes. Eu., Asia; somewhat nat. in Mass.

M

MAÀCKIA. *Leguminosæ.* A few deciduous trees with pinnate lvs., white papilionaceous fls. and flattened pods; native in E. Asia. Cult. as for *Cladrastis* from which the genus differs in lfts. opposite or nearly so and fls. in dense upright panicled racemes.

amurénsis (*Cladrastis amurensis*). To 40 ft.: lvs. of 7–11 ovate lfts.: fls. ⅓ in. long, July–Aug.: pods to 2 in. long. Manchuria. Var. **Buérgeri** has more obtuse lfts. which are pubescent beneath.

chinénsis (*M. hupehensis*). To 50 ft.: lvs. of 11–13 ovate lfts. pubescent beneath: fls. ⅓ in. long. China.

Faùriei. To 30 ft.: lfts. 9–17, elliptic to oblong, to 2 in. long, glabrous: fls. ½ in. long. Korea.

hupehénsis: *M. chinensis.*

MÀBA. *Ebenaceæ.* Trees and shrubs differing from Diospyros in technical floral characters, native in warm and trop. regions, two of them having been intro. into southern parts of U. S. for ornament; mostly diœcious.

natalénsis (*Ebenus natalensis*). Evergreen shrub to 20 ft.: lvs. small, ovate, oblong or elliptic, obtuse or mucronate, glabrous: berries black, in bunches, chestnut-color, about ⅓ in. long. S. Afr.

sandwicénsis (*Ebenus sandwicensis*). Lama. Tree to 40 ft.: lvs. thick, elliptic to ovate-oblong, to 2 in. long, glabrous or becoming so: berries reddish-yellow when mature, about ⅓ in. long, edible. Hawaii, Fiji.

MACADÀMIA. *Proteaceæ.* Trees or shrubs in Australia with whorled lvs., small bisexual fls. borne in pairs in simple racemes, and fr. a hard globose drupe; one species grown in S. Calif. and S. Fla. for the edible nuts.

The Queensland nut withstands slight frosts; it succeeds in fertile loamy moist soils. Propagated by seeds planted singly in pots or stratified in sand; germination under glass is slow unless artificial heat is employed.

alternifòlia: a listed name of no botanical standing; it is probably a misspelling for *M. ternifolia.*

ternifòlia. Queensland Nut. To 50 ft.: lvs. in whorls of 3–4, oblong or lanceolate, to 1 ft. long, toothed, shining: fls. white, in racemes to 1 ft. long: nuts 1 in. across, smooth and shining, globular or hemispherical. Queensland, New S. Wales.

MACE: see *Nutmeg.*

MACFADYENA: *Dolichandra cynanchoides.*

MACHÆRANTHÈRA. *Compositæ.* A genus of midwestern American ann., bien. or per. herbs having alternate bristle-tipped entire to pinnatifid lvs. and corymbose or paniculate radiate heads whose involucral bracts are in several series, the pistillate ray-fls. blue-violet to purple and disk-fls. yellow to red or brown; achenes with pappus of bristles. One species is cult., **M. tanacetifòlia.** Tahoka Daisy. Bien or winter ann. to 2 ft., sts. glandular-pubescent: lvs. 2—3-pinnatifid, to 3 in. long, lobes linear-oblong, acute, often mucronate: heads to 2 in. across, ray-fls. blue-violet, disk-fls. yellow. S. D. to Mont. south to Mex. and Calif.—Desirable for cutting or in border, best treated as winter ann., sowing seeds in autumn or very early spring. For other species see *Aster.*

MACHÆRIUM: *Tipuana Tipu.*

MACHÆROCÈREUS. *Cactaceæ.* Prostrate or low and bushy cacti of Lower Calif. (Mex.), of two species, often with long horizontal branches, very spiny, ribs low, the central spines dagger-like: fls. diurnal, long and slender, the perianth persisting on the fr. *See Cacti.*

Erùca (*Cereus* and *Lemaireocereus Eruca*). Prostrate, tips ascending: fls. 4 in. or more long, yellow.—A creeping plant, dying back at basal end, and therefore should not be grown in a pot but on a bed or large flat box.

gummòsus (*Cereus* and *Lemaireocereus gummosus*). Bushy and erect, 3 ft. or less: fls. to 5 in. long, purple.

MACHAIROPHÝLLUM. *Aizoaceæ.* Stemless S. African succulents of the Mesembryanthemum group: lvs. decussate, 3-angled, united at base: fls. large, usually in 3's, long-stalked; stigmas 7–15.

álbidum (*M. albidum*). Lvs. to 4 in. long and ¾ in. wide, with short spine at tip, whitish: fls. reddish outside, yellow inside, 2½ in. across.

Bíjlii (*Perissolobus Bijlii*). Lvs. crowded, to 1 in. long, ½ in. wide and ⅓ in. thick, edges often purplish, having many stiff dead lvs. under living ones: fls. solitary, terminal, stamens with white filaments and yellow anthers.

MACKAW-TREE: *Acrocomia fusiformis.*

MACKÀYA. *Acanthaceæ.* Shrubs native in India and Afr., with opposite simple lvs. and tubular fls. much dilated above; one species grown in the open in S. U. S. and under glass. Propagated by cuttings in spring or summer.

bélla (*Asystasia bella*). To 4 ft., erect: lvs. oblong, to 5 in. long, toothed: fls. lavender, to 2½ in. long, in terminal racemes to 6 in. long. S. Afr.

MACLEÀYA. *Papaveraceæ.* Per. herbs, sometimes shrubby, with pinnately lobed lvs. and many small cream-colored fls. without petals borne in terminal panicles, known in cult. as Bocconia; commonly glaucous; grown in borders and as specimen plants for the bold attractive habit and appearance. Propagated by suckers.

cordàta (*Bocconia cordata* and *japonica*). Plume-Poppy. Tree Celandine. To 8 ft.: lvs. to 8 in. across, white beneath: panicles to 1 ft. long. China, Japan.—Common in cult.

microcárpa (*Bocconia microcarpa*). Differs from *M. cordata* in the lvs. pubescent beneath, 8–12 instead of 24–30 stamens, and 1-seeded rather than 4–6-seeded caps. Cent. Asia.

MACLÙRA (*Toxylon*). *Moraceæ.* Deciduous spiny tree native from Ark. to Tex., **M. pomífera** (*M. aurantiaca*). Osage-Orange. To 60 ft.: lvs. ovate to oblong-lanceolate, to 5 in. long, entire, slender-stalked: staminate fls. in short racemes, pistillate in small dense heads: fr. a rough heavy syncarp, orange, to 5 in. across.—A popular hedge plant and succeeds on land not very rich. Hardy as far north as Cent. N. Y. and New England. Propagated easily by seeds, also by cuttings of young wood and root-cuttings under glass.

MACRADÈNIA. *Orchidaceæ.* Trop. American epiphytes with 1-lvd. pseudobulbs and fls. in lateral pendulous racemes, the sepals and petals similar, the lip 3-lobed, the side lobes surrounding the column. Grown in the warm greenhouse; see *Orchids.*

modésta (*Serrastylis modesta*). Lvs. to 8¾ in. long: fls. in many-fld. racemes to 10 in. long; sepals and petals red-brown edged with pale yellow; lip yellowish-white. Jan.–Mar. Colombia.

MACROPÌPER. *Piperaceæ.* Woody plants native in New Zeal. and the S. Seas, having alternate entire lvs. and very small fls. without perianth, in dense axillary unisexual spikes; sometimes grown in the greenhouse for ornament. Propagated by cuttings.

excélsum. To 20 ft., aromatic: lvs. broad-ovate, to

5 in. long, yellow-green, palmately nerved from base: spikes to 3 in. long.

MACROPLECTRUM: *Angræcum sesquipedale.*

MACROZÀMIA. *Cycadaceæ.* Australian species often with underground trunks, having pinnate lvs. without distinct midvein in the pinnæ and striate underneath, and fls. borne in cones. They differ in technical non-horticultural characters from *Cycas*, which see; more closely related to Dion and Encephalartos.

Dénisonii: *M. Peroffskyana.*

flexuòsa. Trunk mostly underground: lvs. erect, flexuous, the rachis spirally twisted, rarely more than 3 ft. long; lfts. very narrow, about ¼ in. broad, to 8 in. long, entire, base usually red. New S. Wales.

Peroffskyàna (*M. Denisonii*). Trunk to 20 ft. high and 1½ ft. diam.: lvs. to 12 ft. long; lfts. to 2 ft. long and ½ in. broad. Queensland, New S. Wales.

spiràlis. Trunk mostly subterranean but sometimes to 6 ft. and 2 ft. diam.: lvs. more than 3 ft. long; lfts. to 10 in. long, flat, somewhat decurrent on lower margin, pale green at base, apex acuminate, parallel-veined beneath. New S. Wales.

MADDÈNIA. *Rosaceæ.* Deciduous trees or shrubs in Asia with alternate toothed lvs., diœcious fls. without petals borne in racemes, and fr. a drupe; infrequently planted and hardy N.

hypoleùca. Madden-Cherry. To 20 ft.: lvs. oblong, to 3 in. long: racemes to 2 in. long. Apr.–May. China.

hypoxántha. Differs from *M. hypoleuca* in lvs. yellowish rather than whitish beneath and somewhat hairy on nerves. China.—This is the usual species in cult.

MADDER: *Rubia tinctorum.*

MADEIRA-VINE: *Boussingaultia baselloides.*

MÀDIA. Tarweed. *Compositæ.* Usually heavy-scented ann. and per. herbs, glandular: lvs. mostly alternate: heads axillary or terminal, of yellow ray- and disk-fls. closing in the sunshine; pappus none; native W. N. Amer. to Chile.

corymbòsa: *M. elegans.*

dissitiflòra. Ann. to 2 ft.: lvs. linear, to 2½ in. long: heads sulfur-yellow, rays to ⅙ in. long. Calif.

diversifòlia: listed name.

élegans (*M. corymbosa*). Common T. Ann. to 2 ft.: lvs. linear, to 5 in. long: heads long-stalked, rays yellow throughout or with a brown spot at base, to ¾ in. long. Calif. and Ore. to Nev.

satìva. Chile T. Ann. to 4 ft.: lvs. lanceolate to linear, to 2 in. long: heads sessile or short-stalked, rays honey-yellow, ⅙ in. long. Chile; a coarse plant, nat. in Ore., Calif.

MADRE: *Gliricidia sepium.*

MADRONA: *Arbutus Menziesii.*

MADRONELLA: *Monardella.*

MADWORT: *Alyssum.*

MÆSA. *Myrsinaceæ.* Trees or shrubs native in the tropics of the Old World, bearing alternate lvs., small white fls. in racemes, and berry-like fr.; one species is grown under glass, and in the open in warm countries. Propagated by seeds and cuttings.

índica. Tree to 30 ft.: lvs. oval to lanceolate, to 5 in. long, leathery: racemes to 4 in. long. India.

MAGA: *Montezuma.*

MAGNÒLIA. *Magnoliaceæ.* Attractive deciduous and evergreen trees and shrubs with entire lvs., large solitary terminal often very showy fls. which are white, pink, purple or yellow and cone-like frs. composed of aggregated carpels; native in Asia, N. and Cent. Amer.

Magnolias are very ornamental as specimen trees and sometimes are planted in avenues. The evergreen sorts are not hardy far North. The species that bloom in early spring in advance of the leaves are most striking in appearance. Fertile soil that holds moisture is best. They transplant usually with difficulty and this should be undertaken before new growth starts. Propagated by seeds sown in fall or stratified; also by green cuttings under glass, by layers put down in spring and transplanted to pots the following summer, and named varieties by grafting on *M. acuminata*. In the following list, the plants are deciduous unless otherwise stated.

acuminàta. Cucumber-Tree. Tree to 100 ft., twigs mostly glabrescent: lvs. elliptic to oblong-ovate, to 10 in. long, pubescent beneath: fls. with the lvs., greenish-yellow, to 3 in. long: fr. red, to 4 in. long. N. Y. to Ga. and Ark. Var. **cordàta** is *M. cordata*.

álba supérba: *M. Soulangeana* var. *alba*.

Alexandrìna: *M. Soulangeana* var.

Áshei. Similar to *M. macrophylla* from which it differs in its smaller habit, corolla 1¼–1½ in. wide, fr. cylindric-ovoid, and petals less irregular. W. Fla. and Tex.

auriculàta: *M. Fraseri.*

Cámpbellii. Tree to 80 ft.: lvs. elliptic-oblong to ovate, to 1 ft. long, glaucous beneath: fls. before the lvs., pink outside, pink and white inside, to 10 in. across: fr. greenish-brown, to 8 in. long. Himalayas.

Candolleàna: *M. Soulangeana* var.

compréssa: *Michelia compressa.*

conspícua: *M. denudata.*

cordàta (*M. acuminata* var. *cordata*). Differs from *M. acuminata* in the twigs densely pubescent, lvs. broader and fls. canary-yellow. Ga.

Delavàyi. Tree to 35 ft., evergreen, allied to *M. grandiflora:* lvs. ovate-oblong to ovate, about 10 in. long, glaucescent beneath: fls. white, 6–8 in. across: fr. about 5 in. long. S. W. China.

denudàta (*M. conspicua*). Tree to 50 ft.: lvs. obovate, to 7 in. long, slightly pubescent beneath: fls. before lvs., white, fragrant, to 6 in. across: fr. brownish, to 5 in. long. China.

díscolor: *M. liliflora.*

exoniénsis: *M. grandiflora* var. *lanceolata.*

fœtida: *M. grandiflora.*

Fràseri (*M. auriculata*). Tree to 50 ft.: lvs. spatulate-obovate, to 1½ ft. long, the base cordate-auriculate: fls. with lvs., white, fragrant, to 10 in. across: fr. rose-red, to 5 in. long. Va. to Ga. and Ala.

fuscàta: *Michelia fuscata.*

glaùca: *M. virginiana.*

gloriòsa: *M. grandiflora* var.

grácilis: *M. liliflora* var.

grandiflòra (*M. fœtida*). Bull Bay. Noble evergreen variable tree to 100 ft.: lvs. obovate-oblong, to 8 in. long, very thick, shining above, mostly rusty-tomentose beneath at least when young: fls. white, fragrant, to 8 in. across: fr. rusty-tomentose, to 4 in. long. N. C. to Fla. and Tex. Var. **gallissoniénsis** is very hardy. Var. **gloriòsa** has larger fls., to 1 ft. or more across. Var. **lanceolàta** (var. *exoniensis*, var. *stricta*) has narrower lvs. and pyramidal habit. Var. **rotundifòlia** has very broad nearly blunt lvs.

Halliàna: *M. stellata.*

hypoleùca: *M. obovata.*

Kòbus (*M. Thurberi*). Tree to 30 ft.: lvs. obovate, to 4 in. long, pale beneath: fls. before the lvs., white, 4 in. across: fr. brown, to 5 in. long. Japan. Var. **boreàlis** is a pyramidal form with larger lvs.

Lénnei: *M. Soulangeana* var.

liliflòra (*M. purpurea. M. discolor*). Shrub to 10 ft.: lvs. obovate to oval, to 7 in. long, pale beneath: fls. before the lvs., purple outside, white inside, to 4 in. long: fr. brownish. China. Var. **grácilis** (*M. gracilis*), lvs. narrower, fls. dark purple, smaller. Var. **nìgra** (*M. Soulangeana* var. *nigra*) has larger fls. dark purple outside, pale purple inside.

macrophýlla. Large-leaved Cucumber-Tree. Tree to 50 ft.: lvs. oblong-obovate, to 3 ft. long, cordate-auriculate at base, glaucous and pubescent beneath: fls. with the lvs., white, fragrant, to 1 ft. across: fr. rose, to 3 in. long. Ky. to Fla. and La.

màjor: plants of this name may be *M. Thompsoniana.*

nìgra: *M. liliflora* var.

nígricans: catalogue name for dark rose-purple-fld. form.

Norbertiàna: *M. Soulangeana* var.

obovàta (*M. hypoleuca*). Tree to 100 ft.: lvs. obovate, 1 ft. and more long, glaucous and pubescent beneath: fls. with the lvs., white, fragrant, to 7 in. across: fr. scarlet, to 8 in. long. Japan.

parviflòra: *M. Sieboldii.*

purpùrea: *M. liliflora.*

rústica: *M. Soulangeana* var. *rubra.*

salicifòlia. Tree to 30 ft.: lvs. elliptic to oblong-lanceolate, to 5 in. long, glaucous beneath: fls. before the lvs., white or sometimes purplish at base, fragrant, to 5 in. across: fr. rose, to 3 in. long. Japan.

Sièboldii (*M. parviflora*). Tree to 30 ft.: lvs. elliptic to obovate, to 6 in. long, glaucous beneath: fls. with the lvs., white, fragrant, to 4 in. across, sepals pink: fr. crimson, to 1½ in. long. Japan, Korea.

Soulangeàna. Hybrid between *M. denudata* and *M. liliflora*, common in cult. in many forms and hardy N.: small tree: lvs. obovate: fls. before the lvs., purplish outside, white inside, to 6 in. across. Some of the hort. vars. are: **álba** (var. *alba superba*), fls. white; **Alexandrìna,** deep purple at base outside; **amábilis,** fls. white; **Candolleàna,** fls. white tinged with purple at base; **Lénnei** (*M. Lennei*), lvs. broader, fls. rosy-purple outside; **Norbertiàna,** late-blooming; **rùbra** (*M. rustica rubra*), fls. rose-red; **speciòsa,** fls. white striped outside with purple; **spectábilis,** fls. white.

speciòsa: *M. Soulangeana* var.

stellàta (*M. Halliana*). Starry M. Shrub or tree to 15 ft.: lvs. obovate-oblong, to 5 in. long, dull green above: fls. before the lvs., white, fragrant, 3 in. across: fr. red, 2 in. long. Japan. Var. **ròsea** has fls. pink outside.

strícta: *M. grandiflora* var. *lanceolata.*

subrotúnda: a form of *M. grandiflora.*

Thompsoniàna. Hybrid between *M. tripetala* and *M. virginiana*, with fragrant fls. to 6 in. across.

Thúrberi: *M. Kobus.*

tripétala. Umbrella-Tree. Tree to 40 ft.: lvs. oblong-obovate, to 2 ft. long, pale and pubescent beneath: fls. with the lvs., white, of unpleasant odor, to 10 in. across: fr. rose, to 4 in. long. Pa. to Ala. and Miss.

Veìtchii. Hybrid between *M. Campbellii* and *M. denudata*, having larger lvs. than latter and blush-pink fls. to 10 in. across.

Victòria: form of *M. grandiflora*, lvs. very red-rusty underneath.

virginiàna (*M. glauca*). Sweet Bay. Shrub or tree to 60 ft., half-evergreen in the S.: lvs. oblong or elliptic, to 5 in. long, glaucous-gray beneath: fls. with the lvs., white, fragrant, to 3 in. across: fr. red, to 2 in. long. Mass. to Fla. and Tex.

Wátsonii. Tree to 25 ft.: lvs. obovate, to 7 in. long, glaucous and pubescent beneath: fls. with the lvs., white with pink sepals, fragrant, to 6 in. across: fls. crimson, about 2 in. long. Habitat unknown, perhaps a hybrid.

Wìlsonii. Tree to 25 ft.: lvs. oblong, to 5 in. long, silky-tomentose beneath: fls. with the lvs., white, fragrant, to 5 in. across: fr. crimson, 2½ in. long. China.

MAGNOLIÀCEÆ. Magnolia Family. Trees, shrubs or vines, of 10 genera in N. Amer. and Asia, with entire or lobed lvs., usually bisexual fls. with 3 sepals, 6 or more petals, numerous stamens, 1-celled ovary, and fr. a follicle or samara often aggregated into cones. The family contains many ornamental genera, as Drimys, Illicium, Kadsura, Liriodendron, Magnolia, Michelia, Schizandra, Talauma, Tetracentron.

MA-HAI: *Eleocharis dulcis.*

MAHALA MAT: *Ceanothus prostratus.*

MAHÉRNIA. *Sterculiaceæ.* Herbs and sub-shrubs in Afr., with alternate usually deeply cut lvs., drooping bell-shaped fls., and capsular frs. One is an ornamental subject for the greenhouse, hanging-baskets, or out-of-doors in the S. Of easy cult. Propagated by cuttings.

odoràta: *M. verticillata.*

verticillàta (*M. odorata*). Honey-Bell. Straggly sub-shrub, mostly with an herbaceous appearance under glass, with branches to 1 ft. high: lvs. to 1 in. long, cut into linear divisions: fls. yellow, very fragrant, 2 on a st., in winter and spring. S. Afr.

MAHOBÉRBERIS. *Berberidaceæ.* Hybrid between *Mahonia Aquifolium* and *Berberis vulgaris.* **M. Neùbertii** (*Berberis Neubertii*). Shrub to 6 ft., evergreen or nearly so, without spines: lvs. simple, to 3 in. long, toothed or spiny, or sometimes of 3–5 lfts. all on same plant: not known to bloom. Var. **latifòlia** (*Berberis latifolia* and *ilicifolia*) has broader lvs. Hardy N.

MAHOE: *Hibiscus tiliaceus.*

MAHOGANY: *Swietenia.* **Bastard:** *Eucalyptus botryoides.* **Mountain:** *Cercocarpus.* **Red:** *Eucalyptus resinifera.* **Swamp:** *Eucalyptus robusta.*

MAHÒNIA (*Odostemon*). *Berberidaceæ.* Many evergreen thornless shrubs with alternate pinnate lvs. with mostly spiny-toothed lfts. (in which they are distinguished from the true barberries), yellow fls. in racemes or panicles, and fr. commonly a dark blue bloomy berry; native in Asia, N. and Cent. Amer.; by some writers included in Berberis.

Some of the mahonias are hardy in the northern states in sheltered places or with protection. They should be guarded from the wind and hot sun. They are excellent for ground-cover and similar uses wherever hardy, for the foliage is attractive and durable. Propagated by seeds, suckers, layers and cuttings of half-ripe wood under glass.

Aquifòlium (*Berberis Aquifolium. M. Murrayana*). Holly M. or Barberry. To 3 ft. or more: lfts. 5–9, ovate, to 3 in. long, the petioles to 2 in. long, glossy dark green above: racemes to 3 in. long. B. C. to Ore.; hardy in N. Y. and S. New England. Var. **dictyòta.** To 1 ft. or less: lfts. broad-ovate, netted, shining and yellow above, with 10–20 spines terminating teeth: racemes dense, 1 in. or less long. Calif. Var. **grácilis,** lfts. narrower and more cuneate at base.

Bèalei (*Berberis Bealei;* see *M. japonica*). To 12 ft.: lfts. 9–15, ovate, to 5 in. long, with few large teeth, stiff, petioles ¾ in. or less long: racemes to 6 in. long, fragrant. China; less hardy than *M. Aquifolium*, but roots persist.—Lvs. somewhat glaucous underneath.

fasciculàris: *M. pinnata.*

Fórtunei (*Berberis Fortunei*). To 6 ft.: lfts. 5–9, lanceolate, to 5 in. long: racemes to 6 in. long. China; adapted to Calif. and other mild climates.

Frèmontii (*Berberis Fremontii*). Desert M. To 12 ft.: lfts. 3–7, ovate-oblong to lanceolate, to 1½ in. long, with few large teeth, stiff, petioles very short: racemes few-fld. Colo. to Tex. and Calif; hardy in Va. region.

grácilis (*Berberis gracilis*). To 3 ft. or more: lfts. 3–5, to 1½ in. long, margins undulate, spiny-toothed: fls. on short pedicels in lax subfasciculate racemes. Mex.

hæmatocárpa (*Berberis hæmatocarpa*). To 12 ft.: lfts. 3–7, laterals lanceolate, to 2 in. long, terminal lft. to 3 in. long, petioles very short: racemes few-fld.: fr. red, to ⅓ in. across. Colo. and New Mex.

ilicifòlia: listed name, perhaps for *Berberis ilicifolia.*

japónica. The plant grown under this name is *M. Bealei;* the true *M. japonica* is probably not in cult. in N. Amer.; it has less stiff or rigid lfts. yellowish-green underneath, and longer lax racemes and drooping fls.

Murrayàna: *M. Aquifolium.*

napalénsis (*Berberis nepalensis*). To 10 ft. and more: lfts. 5–25, ovate-oblong, to 4 in. long, with few teeth: racemes to 1 ft. long. Himalayas; planted in Calif. and other mild climates.

nervòsa (*Berberis nervosa*). Oregon-Grape. To 2 ft.: lfts. 11–19, ovate to ovate-lanceolate, to 3 in. long, stiff, petioles to 5 in. long, shining, pale beneath: racemes to 8 in. long. B. C. to Calif; hardy in N. Y. and S. New England.

Nèvinii (*Berberis Nevinii*). To 8 ft.: lfts. 5, oblong, to 1¼ in. long, petioles very short: racemes few-fld. Calif., where it is now planted.

pinnàta (*M. fascicularis. Berberis fascicularis* and *pinnata*). To 12 ft.: lfts. 7–13, ovate or ovate-lanceolate, to 2½ in. long, petioles very short: racemes to 3 in. long. Calif. to Mex.; adapted to warmer parts of the country.

pùmila (*Berberis pumila*). To 1 ft., sts. erect, not stoloniferous: lfts. ovate, 1–5, coarsely toothed, prominent veins on both surfaces: fls. in short terminal and axillary racemes: fr. very small. Ore., Calif.

rèpens (*Berberis repens*). To 1 ft., stoloniferous: lfts. 3–7, ovate, to 2½ in. long, bluish-green, petioles to 1 in. long: racemes to 3 in. long. B. C. to Calif.; hardy in N. Y. and New England.

Swàseyi (*Berberis Swaseyi*). To 4 or 5 ft.: lfts. 5–11, oblong-lanceolate, rather thin, netted, to ¾ in. long: infl. bearing broad ovate bracts: fr. red. Tex.

trifoliolàta (*Berberis trifoliolata*). Agarita, Algerita. To 8 ft.: lfts. 3, oblong or lanceolate, coarsely toothed, stiff, petioles to 2 in. long: racemes few-fld.: fr. red. Tex., New Mex., Mex.; somewhat planted in Tex., etc., berries gathered for jelly; known to Mexicans as Agrito.

MAÍANTHEMUM (*Unifolium*). *Liliaceæ.* Humble per. herbs with slender roots and creeping rhizomes, simple 2–3-lvd. sts., and small white fls. in terminal racemes, the 4 segms. distinct; useful for colonizing in shady places and of easy cult. Propagated by division.

bifòlium (*M. Convallaria. Smilacina bifolia*). To 9 in., pubescent: st.-lvs. triangular-ovate, cordate with deep and open sinus, petiole to 1 in. long: racemes about 1 in. long. Eu., Asia. Var. **kamtscháticum** is listed.

canadénse. To 7 in., pubescent: lvs. 1–3, ovate, heart-shaped at base, very short-petioled: racemes to 2 in. long. Newf. to N. C. and S. D.

Convallària: *M. bifolium.*

dilatàtum. Prevailingly larger than the others, glabrous, with stouter rootstock: st.-lvs. often 3, broadly ovate-cordate, nearly or quite as broad as long, with very deep sinus, margins crenulate: fls. large, truncate or retuse at base. Calif. to Alaska and Japan.

MAIDENHAIR-TREE: *Ginkgo biloba.* **-Vine:** *Muehlenbeckia complexa.*

MAILE: *Alyxia olivæformis.*

MAIRANIA: *Arctous.*

MAIZE: *Zea Mays.*

MAJORÀNA. *Labiatæ.* Per. herbs or subshrubs with aromatic herbage, usually woolly or hairy, and 2-lipped fls. in whorls in thick clustered spikes; grown as sweet-herbs.

Sweet marjoram is grown as an annual as it winter-kills easily unless carefully protected. Propagated by seed; the young seedlings are tender and require shading. Successional plantings are usually made during the summer in hotbeds or coldframes. Plants should not be closer than 6 inches in rows 12 inches apart. They are harvested just before blooming.

horténsis (*Origanum Majorana*). Sweet or Annual Marjoram. Per. but cult. as an ann., to 2 ft.: lvs. oval, to 1 in. long, entire, petioled: fls. purplish or whitish. Eu.

Onites (*Origanum Onites*). Per.: lvs. ovate, sessile, slightly toothed: fls. a little larger than in *M. hortensis.* S. E. Eu., Asia Minor, Syria.

MALACHE: *Pavonia.*

MALACHODENDRON: *Stewartia pentagyna.*

MALÁCHRA. *Malvaceæ.* Trop. American hairy per. herbs or shrubs with toothed or lobed lvs. and fls. in heads; one species may be grown under glass or in the open far S. for ornament.

radiàta. To 8 ft., with stiff yellowish hairs: lvs. to 5 in. across, deeply 3–5-parted: fls. rose, subtended by involucre of narrow bracts. Trop. Amer., trop. Afr.

MALACOCÁRPUS. *Cactaceæ.* Short-cylindric or globose plants, simple or clustered, ribs usually straight, areoles felted: fls. from the center of the plant, short and broad, commonly yellow, the ovary bearing scales with wool and perhaps bristles in the axils: fr. soft, berry-like and not dehiscing at maturity as in Notocactus: S. American, about 15 species. Treatment as for Echinocactus. See *Cacti.*

catamarcénsis: *Parodia catamarcensis.*

chrysacánthion: *Parodia chrysacanthion.*

concínnus: *Notocactus concinnus.*

floricomus: *Notocactus floricomus.*

Gràessneri: *Notocactus Graessneri.*

Gróssei: *Notocactus Grossei.*

Háselbergii: *Notocactus Haselbergii.*

Hénnisii: listed name.

islayénsis: *Parodia islayensis.*

Léninghausii: *Notocactus Leninghausii.*

Maàssii: *Parodia Maassii.*

mammillarioìdes: *Pyrrhocactus centeterius.*

mammulòsus: *Notocactus mammulosus.*

microspérmus: *Parodia microsperma.*

Ottònis: *Notocactus Ottonis.*

pampeànus: *Notocactus pampeanus.*

pulchérrimus: *Frailea pulcherrima.*

Schumanniànus: *Notocactus Schumannianus.*

Scòpa: *Notocactus Scopa.*

Séllowii (*M. tephracanthus. Echinocactus tephracanthus* and *Sellowii*). Globular or depressed, to 6 in. across, woolly at top; ribs 18–22; spines 4–6 and to ¾ in. long, straight or recurved: fls. yellow, 1¾ in. long, at top of plant. Brazil, Argentina, Paraguay.

Strausiànus: *Pyrrhocactus Strausianus.*

submammulòsus: *Notocactus submammulosus.*

tabulàris: *Notocactus tabularis.*

tephracánthus: *M. Sellowii.*

Vorwerkiànus (*Echinocactus Vorwerkianus*). Depressed, to 2 in. high and 3 in. diam., white-woolly at top; ribs about 20, areoles densely woolly; radial spines 5 and ¼ in. long; central 1: fls. yellow, 1¾ in. long. Colombia.

MALACÓTHRIX. *Compositæ.* Herbs or woody-based plants of W. N. Amer. with mostly basal lvs. and heads of yellow, white or pinkish ligulate fls. on scape-like sts.; pappus of bristles. Sometimes grown for ornament.

arachnoídea. Per. to 2 ft., densely woolly-pubescent: lvs. broadly to linear-lanceolate, to 4 in. long, sessile: fls. white to pink, heads to 1½ in. across. Calif.

califórnica. Ann. to 1 ft.: lvs. all basal, woolly at least when young, pinnately parted into narrow-linear segms.: sts. not branched above: heads to 1¾ in. across, canary-yellow, Sonchus-like. Apr.–June. Calif.

glabràta (*M. californica* var. *glabrata*). Sts. usually branched above; plant glabrous except involucre. Nev., Calif., Ore.

MALANGA: *Xanthosoma.*

MALÁXIS (*Microstylis*). *Orchidaceæ.* A large genus of cosmopolitan terrestrial orchids, mostly low herbs commonly having a bulbous swelling at the base of the st., few membranaceous lvs., and terminal racemes of small fls. with linear or filiform petals and entire or lobed lip. Planted in the wild-garden or in woodsy places.

unifòlia (*Microstylis ophioglossoides* and *unifolia*). To 12¾ in. tall: lf. solitary at about the middle of st., round-ovate to ovate-lanceolate or oval, to 3½ in. long: infl. to 4¼ in. long, with a densely-fld. raceme of minute greenish fls. with a 3-lobed lip. Newf. to Fla. west to Minn.; Mex., W. Indies.

MALCÒMIA. Malcolm Stocks. *Cruciferæ.* Ann. and per. plants of the Medit. region and eastward, mostly grayish, with entire or pinnatifid lvs. and elongated pods or siliques. One or two of them grown as flower-garden subjects for the lilac, pink-purple or white small but profuse fls.; not scented. The genus is distinguished by technical characters. Propagated by seeds, either started indoors or sown where plants are to stand.

flexuòsa. Ann., with obovate or oblong entire lvs. and pedicels as thick as the pods which are fleshy and recurved. —Plants grown under this name are likely to be *M. maritima.*

littòrea. Per., white-tomentose, rather stiff, to 12 in.: lvs. very narrow, entire: fls. purple.—Will bloom first year from seed.

marítima (*Cheiranthus maritimus*). Virginian Stock. Diffuse ann., with broadened petioled entire obtuse oblong or elliptic lvs.: fls. lilac and reddish to white, about ½ in. long: pods erect or spreading, not fleshy.

MALE-BERRY: *Lyonia ligustrina.*

MALEPHORA: see *Hymenocyclus.*

MALLÒTUS. *Euphorbiaceæ.* Shrubs or trees native in trop. Asia and Afr., with mostly alternate simple lvs., diœcious apetalous fls. in panicles, racemes or spikes, and capsular frs.; sometimes planted in S. Calif. for ornament.

ricinoìdes. High shrub or spreading tree: lvs. broadly ovate, to 10 in. across: fls. in spikes 6 in. or more long: caps. densely tomentose, ½ in. across. Australia.

japónicus. Small tree, twigs scurfy: lvs. ovate, reddish often 3-lobed, glandular: fls. to ¼ in. across, in branched terminal spikes: caps. pubescent, weakly prickly, ½ in. across. China, Japan.

MALLOW: *Malva.* **False-:** *Malvastrum.* **Globe-:** *Sphæralcea.* **Jews-:** *Corchorus olitorius.* **Marsh-:** *Althæa officinalis.* **Musk-:** *Hibiscus Abelmoschus.* **Poppy-:** *Callirhoë.* **Prairie-:** *Malvastrum coccineum.* **Rose-:** *Hibiscus.* **Tree-:** *Lavatera.* **Virginia-:** *Sida hermaphrodita.*

MÁLOPE. *Malvaceæ.* Showy ann. herbs native in the Medit. region, having alternate simple lvs. and large fls. solitary in the axils; of simple cult. in the flower-garden. Propagated by seeds. The generic name is pronounced in three syllables.

grandiflòra: *M. trifida* var.

trífida. To 3 ft.: lvs. 3-lobed, toothed: fls. rose or purple, to 3 in. across. Spain, N. Afr. Var. **álba** has white fls.; **grandiflòra** large deep rose-red fls. with darker veins; **purpùrea** deep purple-red fls.; **ròsea** rose-colored fls.

MALORTÌEA. *Palmaceæ.* Diminutive pinnate-lvd. or -veined shade palms of Cent. Amer., allied to Chamædorea; monœcious; fl.-clusters in lower axils, near the ground, probably not in cult. in our territory unless under test.

MALPÍGHIA. *Malpighiaceæ.* Small trees and shrubs, in trop. Amer. and reaching the southernmost U. S., with opposite simple lvs., red, purple or white fls. usually in axillary umbels or corymbs, and fr. a drupe with 3 winged or crested seeds; grown for ornament and *M. glabra* for the edible fr. which is made into jam or preserves. Propagated by seeds and cuttings.

coccígera. Bush to 3 ft.: lvs. small, to ¾ in. long, with coarse spiny teeth resembling holly: fls. pink, solitary or 2 together: frs. red, about ⅓ in. diam. W. Indies.

glàbra. Barbados-Cherry. Variable shrub to 10 ft.: lvs. ovate to lanceolate, to 3 in. long, entire: fls. rose, in 3–8-fld. umbels: frs. red or scarlet. acid, size of a small cherry or less. S. Tex. and trop. Amer.

MALPIGHIÀCEÆ. Malpighia Family. Trees or shrubs or sometimes woody herbs, of about 55 genera widely distributed mostly in the tropics, characterized by usually opposite simple lvs., bisexual somewhat irregular polypetalous fls. with 5 sepals and mostly prominently clawed petals, 5 or 10 stamens, prevailingly superior 3-celled or -parted ovary, and fr. commonly of 3 nut-like parts or sometimes a samara or a drupe. The following genera are grown for ornament or the edible fr.: Malpighia, Stigmaphyllon, Thryallis, but the family has small hort. significance in the U. S.

MALTESE CROSS: *Lychnis chalcedonica.*

MALU CREEPER: *Bauhinia Vahlii.*

MÀLUS. Apple. *Rosaceæ.* About 35 low spring-blooming broad-headed trees and large bushes of the north temp. zone, insufficiently distinguished botanically from Pyrus by the more or less uniform joining of the styles at base, the mostly more globular fr. in which grit cells are commonly not present at maturity. In the pomological apples the styles form a solid stipe by their union at the base, but the stipe varies in length in different varieties. In the pears the styles are pressed together at base but not joined (Beal, Proc. Amer. Pom. Soc. xvii, xviii, 1880, 1882). Taxonomy in Malus is still confused. Cult. as for *Pyrus* and *Apple.*

The most important fruit-trees of cool temperate regions are the various descendants from *M. sylvestris*, the wild or original apple; the pomological crab-apples may be *M. baccata* or other derivatives, and *M. ioensis* has been amalgamated with cultivated apples. The native crab-apples, not pomologically ameliorated, are ornamental in stature, habit, pink-white flowers and fruits. The oriental crabs, of the *M. floribunda* group, are amongst the choicest of hardy decorative small trees; both bloom and fruit are produced in abundance and are satisfying to the eye. They may be grown directly from seeds or budded on closely related stocks.

Many of the binomials of cultivated races are difficult of determination, and supposed to represent hybrid forms; they may be clons in some cases, perpetuated asexually.

adstríngens (*Pyrus adstringens*). Major Crab-Apples. Many forms of crab- and semi- crab-apples, at least some of them hybrids with *M. sylvestris* as a base, comprising Transcendent, Martha, Hyslop, and the red-fld. Hopa which is assumed to be a cross with *M. sylvestris* var. *Niedzwetskyana:* lvs. pubescent underneath and larger than those of *M. baccata:* fr. large for a crab, the calyx-lobes often or usually persisting.

aldenhaménsis: *M. sylvestris* var.

angustifòlia (*Pyrus angustifolia*). Southern Crab-Apple. To 25 ft., partially evergreen: lvs. lance-oblong to narrow-obovate, closely serrate or entire, glabrous or sometimes slightly pubescent on veins underneath: fls. about 1 in. across, pink or rose, fragrant: fr. 1 in. or less diam., depressed both ends. Va. to Fla. and Miss.

Arnoldiàna: *M. floribunda* var.

astracánica: *M. sylvestris* var.

atrosanguínea: see under *M. Halliana.*

baccàta (*Pyrus baccata. M. baccata* var. *sibirica*). Siberian Crab-Apple. Glabrous tree to 40 ft., with hard wiry branchlets: lvs. oval to ovate-lanceolate, with callous serratures, long-petioled: fls. about ½ in. across, white, on slender pedicels: fr. ¾ in. or less diam., wax-like, yellow or red, calyx-lobes falling. Siberia, Manchuria, China.—Has supposedly entered into a number of hybrids. Var. **columnàris,** tree columnar in growth, lvs. large, glabrous. Var. **mandshùrica** (*M. cerasifera* in part) has pubescent calyx, pedicels and petioles, lvs. remotely serrulate, frs. mostly larger. Var. **Jáckii** is like var. *mandshurica* but glabrous, fr. red. **M. robústa** (*Pyrus robusta, M. cerasifera* in part) is probably a hybrid of *M. baccata* and *M. prunifolia:* vigorous plant with large oblong or oblong-ovate lvs. glabrous or pubescent underneath: fls. white or pinkish, on slender stalks: fr. about ¾ in. or less diam., yellow and red. Such pomological vars. as Red Siberian crab-apple belong here.

brévipes (*Pyrus brevipes*). Related to *M. floribunda*, perhaps a hybrid: small tree of dense habit: lvs. very closely serrate: fls. whitish, on pedicels ½ in. or less long: fr. about ½ in. diam., nearly globose, on short stalks.

calocárpa: *M. Zumi* var.

cerasífera: see under *M. baccata.*

commùnis: *M. sylvestris.*

coronària (*Pyrus coronaria*). Garland Crab-Apple. Wild Sweet Crab. Tree to 30 ft., soon becoming glabrous: lvs. ovate to oval, more or less acuminate, green underneath, sharp-serrate and perhaps notched, on shoots somewhat lobed toward apex: fls. 1 in. or less across, rose changing to white: fr. 1 in. diam., oblate, yellowish, hard and sour, long-stemmed. N. Y. and Ont. to Ala. and Mo.—There is a spotted-lvd. and a semi-double form and other departures.

cratægifòlia: *M. florentina.*

Dawsoniàna (*Pyrus Dawsoniana*). Slender tree, supposedly cross between *M. fusca* and *M. sylvestris:* lvs. oval to elliptic-oblong, seldom lobed: fls. 1 in. or more across, white, slender-pedicelled, with the lvs.: fr. 1 in. or more diam., yellow. Raised at Arnold Arboretum.

Èleyi: *M. sylvestris* var.

florentìna (*M. cratægifolia. P. florentina. Cratægus florentina*). Small close-headed crab-apple with lobed hawthorn-like sharp-toothed lvs. soft-pubescent underneath: fls. ¾ in. across, white, on slender pedicels: fr. about ½ in. long, red. Italy.

floribúnda (*Pyrus floribunda. P. pulcherrima*). Showy Crab-Apple. Profusely blooming, becoming nearly or quite glabrous, large bush or tree 25 ft. or more: lvs. ovate to oblong, acuminate, not lobed but sometimes angled on young shoots, sharp-serrate: fls. 1¼ in. or less across, rose-red changing to nearly white: fr. about ⅓ in. diam., red, calyx falling. Probably Japan or China, or perhaps a race of hybrids. Var. **Arnoldiàna** has larger lvs. and fls., the latter lighter colored, fr. larger and yellow; thought to be a hybrid of *M. floribunda* and *M. baccata.* Var. **Scheìdeckeri,** lvs. ovate, fls. pale pink and commonly semi-double, fr. ¾ in. diam., yellow, calyx usually persistent; supposed hybrid.

formosàna (*Pyrus formosana*). Tree to 50 ft.: lvs. elongated (to 6 in.), oblong or elliptic-oblong, acute, coarsely serrate, white-tomentose when young: fls. about 1 in. across, the pedicels white-tomentose; fr. to 2 in. diam., apple-like in shape, yellowish-red, the calyx persistent, rather astringent but eaten by natives of Formosa when cooked or pickled. Planted in Calif.

fúsca (*Pyrus fusca. P. rivularis*). Oregon Crab-Apple. Tree to 30 ft. or more: lvs. ovate-lanceolate, acute, sharply and perhaps glandular-serrate, pubescent underneath, slightly 3-lobed on young shoots: fls. ¾ in. across, white, with the lvs.: fr. ¾ in. or less long, yellow to reddish. N. Calif. to Alaska.

glabràta (*Pyrus glabrata*). A southern representative of *M. glaucescens*, the lvs. not glaucescent, glabrous, deeply lobed, cordate, lowest pair of lateral veins issuing from very base of blade. N. C. to Ala.

glaucéscens (*Pyrus glaucescens*). Small tree or large shrub distinguished from *M. coronaria* by broader lvs. somewhat glaucous underneath and all of them slightly lobed, the calyx somewhat hairy. N. Y. to Ala.

Halliàna (*Pyrus Halliana*). Hall Crab-Apple. Attractive essentially glabrous shrub or small tree to 18 ft., with somewhat purplish twigs and other parts: lvs. long-ovate to oblong, acuminate, closely crenate-serrate to entire, glossy above: fls. 1½ in. or less across, deep rose, calyx-lobes nearly obtuse, styles 4 or 5: fr. about ⅓ in. diam., purplish. Probably China; hardy N. Var. **Párkmanii** is double-fld. **M. atrosanguínea** is apparently a hybrid of *M. Halliana* and *M. Sieboldii:* fls. rose-purple not fading to white; calyx-lobes short, acute: lvs. nearly glabrous.

heterophýlla. Like *M. Soulardii* but lvs. broader and smoother, pedicels lightly pubescent; includes Matthew's crab-apple; hybrid between *M. coronaria* and derivative of *M. sylvestris.*

hupehénsis (*M. theifera. Pyrus hupehensis*). Small stiff-branched tree distinguished from *M. Halliana* by larger and broader ovate to elliptic-ovate thinner sharply serrate lvs., white or blush fls., calyx-lobes acute rather than obtusish, styles commonly 3, fr. about ⅓ in. long, pyriform. Himalayas to China; hardy N.

ioénsis (*Pyrus ioensis*). Prairie Crab-Apple. Tree to 30 ft., tomentose on young parts and mostly on under side of the oblong-ovate, short-acute, serrate and sometimes side-lobed lvs.: fls. 1–2 in. across, white or tinted: fr. about 1 in. long, short-oblong, slender-pedicelled. Ind. to Minn. and Mo.—Bechtel's crab is a double-fld. form. Var. **Pálmeri,** lvs. smaller, oblong, obtuse or nearly so, floral ones more or less crenate.

Kàido: *M. micromalus.*

kansuénsis (*Pyrus kansuensis*). Tree to 25 ft.: lvs. broad-ovate, serrate, 3–5-lobed, 3-nerved at base, more or less pubescent underneath: fls. about ½ in. across, white, styles 3: fr. about ½ in. long, reddish or yellow. China; hardy N.

lancifòlia (*Pyrus lancifolia*). Distinguished from *M. coronaria* by the narrow more acuminate lvs. which are ovate-lanceolate to oblong-lanceolate, and longer narrower calyx-lobes: fr. subglobose, about 1 in. diam., on slender drooping pedicels, green. Pa. and Va. to Mo.

Lemòinei: *M. sylvestris* var.

Màlus: *M. sylvestris.*

mandshùrica: *M. baccata* var.

micromàlus (*Pyrus Micromalus. P.* and *M. Kaido*). Kaido Crab-Apple. Small tree allied to *M. spectabilis* but distinguished by narrower lvs. attenuate at base, slender petiole, deeper pink fls. about 1½ in. across, pubescent pedicels and calyx, fr. subglobose and with cavity at base and calyx sometimes falling. Probably a hybrid, with *M. spectabilis* as one parent.

Niedzwetzkyàna: *M. sylvestris* var.

paradisìaca: *M. sylvestris* var.

platycárpa (*Pyrus platycarpa*). One of the *M. coronaria* kind of crab-apple, but lvs. broad and large, ovate to elliptic, rounded at base, short-acute, sharp-serrate, glabrous or pubescent on veins underneath, those on vigorous shoots with several pairs of triangular lobes: fls. about 1½ in. across, white: fr. about 2 in. diam., flattened or hollowed at ends. N. C. to Ga. Var. **Hoòpesii.** Lvs. only slightly if at all lobed: calyx and pedicels pubescent.

Práttii (*Pyrus Prattii*). Tree to 30 ft.: lvs. ovate to elliptic-lanceolate, acuminate, finely serrate, slightly pubescent on veins underneath: fls. about ¾ in. across, white: fr. about ½ in. long, red or yellow. China; hardy N.

prunifòlia (*Pyrus prunifolia*). Small tree: lvs. ovate to broad-oval, short-acuminate, serrate, pubescent underneath or at length glabrous: fls. about 1½ in. across, white, calyx mostly glabrous and lobes longer than tube: fr. about 1 in. diam., yellow or red, hanging long. Probably N. E. Asia, perhaps a range of hybrids. Var. **Rínkii** (*M.* and *Pyrus Ringo*). Ringo Crab-Apple. Lvs. pubescent underneath and fls. pink, calyx somewhat hairy.

pulchérrima: *M. floribunda.*

pùmila: *M. sylvestris* var. *paradisiaca.*

purpùrea. Accounted a hybrid between *M. sylvestris* var. *Niedzwetzkyana* and *M. atrosanguinea* (*Halliana* var.): lvs. small, shining, purple when young: fr. small, calyx sometimes deciduous.

Ríngo: *M. prunifolia* var. *Rinkii.*

Rínkii: *M. prunifolia* var.

Ríversii: *M. spectabilis* var.

rivulàris: *M. fusca.*

robústa: see under *M. baccata.*

Sárgentii (*Pyrus Sargentii*). More or less spiny shrub to 6 ft.: lvs. ovate to elliptic-oblong, short-pointed to acuminate, sharply serrate, pubescent at first but becoming nearly glabrous, those on shoots 3-lobed and broader: fls. 1 in. across, clear white: fr. about ½ in. diam., dark red, calyx falling. Japan; hardy N.

Scheìdeckeri: *M. floribunda* var.

Sièboldii (*Pyrus Sieboldii. P.* and *Malus Toringo*). Toringo Crab-Apple. Shrub, or a tree to 15 ft.: lvs. ovate to oblong-ovate, short-acuminate, sharp-serrate, becoming glabrous or nearly so underneath, those on shoots lobed or strongly notched at or below the middle: fls. ¾ in. across, pink to blush: fr. ⅓ in. diam., red or yellowish, calyx falling. Japan; hardy N. Var. **arboréscens.** Tree to 30 ft., with larger less deeply lobed less pubescent lvs.: fls. sometimes nearly white. For var. *calocarpa* see *M. Zumi.*

Soulárdii (*Pyrus Soulardii*). Soulard Crab-Apple. Much like the apple-tree: lvs. round-ovate to oblong-ovate, mostly blunt at apex, coarsely and bluntly toothed, more or less shallowly lobed along sides, densely pubescent underneath: fls. blush, in close clusters of woolly pedicels: fr. 2 in. more or less diam., flattened on ends, yellowish, fairly edible. Natural hybrid, west of Great Lakes, between *Malus sylvestris* and *M. ioensis.*

spectábilis (*Pyrus spectabilis*). Tree to 25 ft.: lvs. oval to elliptic or oblong, short-pointed, broad or often narrowing at base, crenate-serrate, glossy above and becoming glabrous or nearly so underneath: fls. showy, 2 in. or less across, rose to pink, lobes of calyx not longer than tube: fr. 1 in. or less diam., yellow, without basal cavity, calyx persistent. China, but not known native; hardy N. Var. **Ríversii** has large double pink fls. and large lvs.

sublobàta (*Pyrus sublobata*). Accounted a hybrid between *M. Sieboldii* and *M. prunifolia:* tree with narrow entire or only indifferently lobed lvs. pubescent underneath: fls. pinkish: fr. ¾ in. or less diam., yellow, calyx either persistent or deciduous.

sylvéstris (*Pyrus Malus. M. communis*). Apple. Tree to 40 ft. or more, with young branches and under side of lvs. tomentose or pubescent: lvs. oval or elliptic to broad-ovate, acute or nearly so, becoming smooth and often glossy above, obtusely serrate: fls. usually appearing with first foliage, 2 in. or less across, white and pink: fr. various, without grit cells, on thick pubescent stalks, calyx persistent. Eu., W. Asia. Cult. in many orchard vars. and in double-fld. and other forms. Var. **aldenhaménsis** (*M. floribunda* var. *aldenhamensis. M. purpurea* var. *aldenhamensis*). Small tree with ovate or ovate-oblong lvs. with purple rib and more or less pubescent underneath: fls. partially double, light red: fr. purple-red. Offshoot of *M. sylvestris* var. *Niedzwetzkyana*, perhaps hybrid with *M. atrosanguinea.* Var. **apétala,** the Bloomless apple, has fls. without good stamens and showy petals, styles 10–15 and ovary more than 5-celled, calyx end of fr. not closed. Var. **astracánica,** supposed to be a hybrid between *Malus sylvestris* and *M. prunifolia*, has sharply and coarsely serrate lvs. and long-stalked fr. Var. **Èleyi,** lvs. reddish when young, rib purple, fls. and small fr. purple-red. Var. **Niedzwetzkyàna** has bark and wood reddish, lvs. tinged red on nerves, fls. deep red, fr. purple-red inside and out. Var. **paradisìaca** (*M. pumila*) is the Paradise apple, a self-continuing race of very small stature. Var. **Lemòinei** has lvs. purple and fls. dark crimson.—There is no generally accepted Latin name for the apple when it is separated in the genus Malus. The earliest binomial is undoubtedly *M. sylvestris*, applied to the sour wild or spontaneous apple of Eu., presumably not specifically distinct from the common cult. apples. Probably the earliest name for the cultivated and wild apple together as a class or group is *M. communis.* The duplicate name, *Malus Malus*, is a recent combination and such repetitions are not allowed by the International Rules of Nomenclature, under which horticulturists dealing with world floras preferably work. The name *Malus pumila* is not only inapplicable but was applied by Miller, its author, to the Paradise apple; if the binomial *Malus pumila* is adopted, the species must be defined as a dwarf in terms of the Paradise apple and the common apples be made major or giant forms of it; this probably does not represent the facts in nature. Possibly the cultivated apples are not a single original species, but the initial elements are not known and the present forms are blindly confused, so that it is impossible as yet to represent the case exactly in binomial nomenclature.

theífera: *M. hupehensis.*

Toríngo: *M. Sieboldii.*

toringoìdes (*M. transitoria* var. *toringoides. Pyrus toringoides*). Tree to 25 ft. or shrub: lvs. ovate to oblong, serrate, mostly with two pairs of lobes, becoming glabrous underneath except on veins: fls. creamy-white, 1 in. or less across, styles glabrous at base, petals very broad and rounded: fr. ½ in. diam., yellow and reddish in sun. China; hardy N.

transcéndens: hort. name, probably for Transcendent and similar crab-apples, product apparently of *M. baccata* and forms of *M. sylvestris.*

transitòria (*Pyrus transitoria*). Smaller and more slender plant than *M. toringoides:* lvs. more deeply and more narrowly lobed: petals narrower, broad-oblong. China.

trilobàta (*Pyrus trilobata*). Shrub with strongly 3-lobed serrulate lvs. becoming glabrous and also glossy above: fls. more than 1 in. across, white: fr. ¾ in. or less diam., red, calyx persistent. W. Asia; hardy N.—Not to be confounded with var. *trilobata* (a lobed-lvd. form) of *Pyrus communis.*

Tschonóskii (*Pyrus Tschonoskii*). Erect tree to 30 or 40 ft.: lvs. ovate to elliptic, broad at base, acuminate, coarsely sharp-serrate, remaining pubescent underneath: fls. about 1 in. across, white tinged rose, on stout pubescent pedicels: fr. about 1 in. diam., globose or obovoid, yellow with rosy cheek, calyx persistent. Japan; hardy N.

Veìtchii: *M. yunnanensis* var.

yunnanénsis (*Pyrus yunnanensis*). Tree to 30 ft.: lvs. ovate to oblong, broad at base or subcordate, short-pointed, sharp-serrate, often 3–5-lobed on each side, thick-pubescent underneath: fls. small, about ½ in. across, white, many in a close cluster: fr. about ½ in. diam., nearly globose, red. China; hardy N. Var. **Veìtchii** (*Pyrus Veitchii*) has lvs. cordate at base and all more or less lobed and becoming nearly glabrous underneath.

Zùmi (*Pyrus Zumi*). Tree to 20 ft. or more, pyramidal: lvs. oblong to ovate-oblong, acute, crenate to entire or serrate and sometimes somewhat lobed on shoots, becoming glabrous underneath: fls. about 1 in. across, pink in bud but becoming white, the calyx-lobes acuminate: fr. about ½ in. diam., globose, red, calyx falling. Japan; hardy N.—Thought to be hybrid of a form of *M. baccata* and *M. Sieboldii.* Var. **calocárpa** (*Pyrus Sieboldii* var. *calocarpa*), of more spreading habit: lvs. on shoots more deeply lobed: fls. smaller.

MÁLVA. Mallow. *Malvaceæ.* Erect or spreading herbs with alternate lobed or dissected lvs. and rose or white fls. solitary or clustered in the axils.

Mallows are of easy cultivation in the flower-garden or border. Sow seed where plants are to stand. The perennials may also be propagated by division and cuttings.

Álcea. Per. to 2 ft., making a clump: st.-lvs. 5-parted, the lobes toothed or cut: fls. deep rose to white, to 2 in. across. Eu.; nat. in E. U. S. Var. **fastigiàta,** sts. more erect and usually closer together.

boreàlis. Ann. or bien. to 3 ft.: lvs. rounded, wavy-margined, slightly lobed: fls. pinkish, about ½ in. across. Eu.; nat. in Calif.

capénsis: *Malvastrum capense.*

chinénsis: *M. verticillata.*

críspa. Curled M. Unbranched thick-stemmed straight ann. to 8 ft.: lvs. rounded, 5–7-lobed or -angled, with crisped and curled margins: fls. whitish, ¼ in. across. Eu.

Dùriæi: the plant grown under this name is *M. sylvestris* var. *mauritiana.*

liménsis: *Malvastrum limense.*

mauritiàna: *M. sylvestris* var.

miniàta: *Sphæralcea cisplatina.*

moschàta. Musk M. Per. to 2 ft.: st.-lvs. 5-parted, the lobes again cut into narrow divisions: fls. rose or white, to 2 in. across. Eu.; nat. in N. Amer. Var. **álba** has white and **ròsea** rose-pink fls.

nicæénsis. Ann. to 1½ ft., sts. erect or ascending, setose to pubescent: lvs. entire and reniform to 3–5-lobed, the lobes sharply serrate and usually acute: fls. pale blue, small, in axillary fascicles. Medit. region.

parviflòra. Ann. or bien. to 3 ft.: lvs. round, shallowly 7-lobed: fls. pinkish, about ⅙ in. long. Eu.; nat. in N. Amer.

pulchélla: *M. verticillata.*

setòsa. Similar to *M. nicæensis,* differing in its slightly larger habit and more setaceous on lf. petioles and veins. Italy.

sylvéstris. Bien., usually grown as ann., to 3 ft.: lvs. rounded, with 5–7 wavy lobes: fls. purple-rose, 1 in. and more across. Eu.; nat. in N. Amer. Var. **mauritiàna** grows to 4 ft., with large more showy purple fls. sometimes having deeper lines.

verticillàta (*M. chinensis. M. pulchella*). Ann. or per. to 4 ft.: lvs. 5–6-lobed: fls. pink, sessile. Eu. to China.

MALVÀCEÆ. Mallow Family. Some 40–50 genera in temp. and trop. regions around the world, furnishing many ornamental subjects, a few food, fiber and medicinal plants, and one the cotton of commerce; it is a well-marked family. Herbs, shrubs or trees with alternate simple lvs. which are sometimes deeply palmately lobed or almost compound, regular polypetalous mostly bisexual fls. having 5 sepals and petals, many stamens that are united into a column around the pistil, superior several-celled ovary, and fr. sometimes berry-like but usually capsular or the carpels cohering and falling away as separates. The following genera are herein treated: Abutilon, Althæa, Anoda, Callirhoë, Cienfuegosia, Cristaria, Gaya, Gossypium, Hibiscus, Hoheria, Ingenhouzia, Kitaibelia, Kokia, Kosteletzkya, Lagunaria, Lavatera, Malachra, Malope, Malva, Malvastrum, Malvaviscus, Montezuma, Pavonia, Plagianthus, Robinsonella, Sida, Sidalcea, Sphæralcea, Thespesia, Thurberia, Wercklea.

MALVÁSTRUM. False-Mallow. *Malvaceæ.* Mallow-like herbs and subshrubs with alternate entire or lobed lvs. and purple, red or yellow fls. axillary or in terminal spikes; carpels falling away from the axis at maturity; cult. in the flower-garden or sometimes in the greenhouse. Propagated by cuttings under glass or by seeds.

capénse (*Malva capensis*). To 4 ft., shrubby: lvs. toothed, 3-lobed or angled: fls. purple, 1–2 in the axils. S. Afr.

coccíneum (*Sphæralcea coccinea*). Prairie-Mallow. Per., with woody tap-root, branching silvery-pubescent top to 6 or 10 in. high: lvs. parted into narrow divisions: fls. brick-red, to nearly 1 in. across, in short close terminal spikes or racemes. Man. to B. C. and to Tex. and New Mex.

fasciculàtum (*M. Thurberi. Sphæralcea fasciculata*). To 15 ft. and sometimes tree-like: lvs. entire or lobed, densely pubescent: fls. rose-purple, in spikes or clusters. S. Calif., Ariz. Var. **laxiflòrum** has fragrant fls. in a loose panicle.

hypomadàrum. To 10 ft.: lvs. variable, commonly 3-lobed and toothed: fls. white with rose-purple eye, solitary or few in axils. S. Afr.

liménse (*Malva limensis*). Erect ann.: lvs. orbicular-ovate, 7-lobed, rugose: fls. bluish-purple, many in secund axillary spikes: fr. glabrous. Peru.

Thúrberi: *M. fasciculatum.*

tricuspidàtum. Per. to 3 ft., somewhat woody at base: lvs. broadly ovate to lanceolate, to 2 in. long, toothed, pubescent, long-petioled: fls. yellow, axillary or clustered at ends of sts. Australia.

MALVAVÍSCUS (*Achania*). *Malvaceæ.* Trees and shrubs of trop. Amer. with alternate toothed or lobed lvs. and showy red fls. solitary in the axils or in racemes; planted in the greenhouse or out-of-doors in the S. Propagated by seeds and greenwood cuttings.

arbòreus (*Achania arborea*). The plants usually grown under this name are probably *M. mollis* from which *M. arboreus* differs in the smaller lvs. which are hairy but not velvety and the smaller fls. Trop. Amer.

cándidus. Shrub or tree to 20 ft.: lvs. 3–5-lobed: fls. white, to 3 in. long. Mex.

Conzáttii. Shrub: lvs. cordate-ovate or the upper ones oval, short-petioled, usually not lobed, crenate, nearly or quite obtuse, glabrous or with only a few scattered hairs on either side: fls. red, to 2 in. long. Mex., Guatemala.—Probably not in cult. in N. Amer., the plant so named being *M. grandiflorus.*

Drúmmondii. To 9 ft.: lvs. usually slightly lobed or angled, obtuse or acute: fls. to 1 in. long: fr. edible, red and berry-like. Mex., Tex.

grandiflòrus. To 15 ft.: lvs. toothed, sometimes indistinctly lobed, ovate-oblong, long-acuminate: fls. to 2½ in. long, red. Mex.; commonly planted in the S.

móllis. Low shrub: lvs. often angled or lobed, toothed or wavy-margined, velvety-pubescent beneath: fls. to 1½ in. long. Mex. to Colombia.

MAMEY: *Mammea americana.*

MAMILLÓPSIS. *Cactaceæ.* Small globular or short-cylindric cespitose cacti, the body hidden in a mass of soft white hair-like spines, separated from Mammillaria; 2 species. See *Cacti.*

senìlis (*Mammillaria senilis*). To 6 in. high and about half as thick; tubercles more or less conic and not in ribs; spines 30–40: fls. orange-yellow, about 2½ in. long and nearly as broad. Mex.

MÁMMEA. *Guttiferæ.* Trop. trees with opposite simple lvs., polygamous fls. solitary or few in the axils, and drupaceous fr.; widely cult. in the tropics for the edible fr. and a liqueur is also distilled from the fls.

The mamey will not stand more than two or three degrees of frost. Propagated by seeds and probably also by inarching and budding.

americàna. Mamey. Mammee-Apple. To 60 ft.: lvs. to 8 in. long, thick and glossy, with many cross-veins, blunt: fls. white, fragrant, 1 in. across: fr. to 6 in. across, with russet roughened skin and bright yellow juicy flesh. W. Indies, N. S. Amer.

MAMMILLÀRIA (*Neomammillaria*). *Cactaceæ.* Hemispherical or short-cylindric or depressed spiny cacti of about 215 species in Mex. and a few in the S. W. U. S., one in N. S. Amer., popular as fanciers' pot-plants for conservatory and house, many of which are in the collections: surface broken up into prominent tubercles standing more or less spirally that commonly bear wool or hairs or bristles and crowned by spine-areoles; spines all alike or differentiated as radials and centrals: fls. diurnal, small, from axils of old tubercles, somewhat bell-shaped, red, pink, yellow or white: juice milky in some kinds. Cult. as for Echinocactus. See *Cacti.*

By some writers the name is spelled *Mamillaria;* it was not so spelled by Haworth who founded the genus on *Cactus mammillaris* of Linnæus, who also wrote the double *m*. The two *m*'s are accepted by Britton and Rose in the standard monograph of the family, although they adopt the name Neomammillaria because of the existence of an older but unused Mammillaria amongst the algæ. The International Rules conserve Mammillaria as against Cactus.

The genus Mammillaria has been divided into two sections, *Hydrochylus* and *Galactochylus.* Sect. *Hydrochylus* is much the larger and contains those plants having a watery sap and a green stem. Sect. *Galactochylus* contains those plants whose sap is milky, although not always evident on wounding of the tubercles. The stems of these latter are usually gray-green or gray in color.

Section *Hydrochylus* is in turn subdivided into six smaller groups or series, named and characterized as follows:

Leptocladodæ: plants always cespitose (clustered), usually cylindrical, the different stems of a given cluster of unequal height; spines yellow or reddish, radiating.

Candidæ: plants cespitose or solitary, but when cespitose the stems of approximately equal height, cylindrical or globose; spines very numerous, of a uniform color, the centrals about as long as radials, all generally white, arranged horizontally in irregular manner, somewhat interwoven and often completely covering the stem.

Polyacanthæ: differs from Candidæ in spines reddish-brown and all obliquely pointed upward.

Heterochloræ: plants cespitose or solitary, but when cespitose the stems of nearly equal height, cylindrical or globose; spines less numerous than in the above series, the central spines distinct from the radials and usually erect, straight, both centrals and radials of same color.

Stylothele: differs from Heterochloræ in having one or more of the central spines hooked or recurved and differing in color from the radials; tubercles usually more or less slender cylindrical and occasionally to slightly globose.

Ancistracanthæ: similar to Stylothele, from which it differs in robust globose tubercles, and one or more of the central spines always hooked.

Section *Galactochylus* is divided into four series, as follows:

Elegantes: tubercles not exuding milky sap on wounding, as it occurs only in the inner parts of the stem.

Leucocephalæ: tubercles exuding milky sap on wounding; spines white, radials very numerous and radiating outwards.

Macrothele: differs from Leucocephalæ in having few radials which are never white nor do they radiate; tubercles large and angular, the axils naked or somewhat woolly, never setose nor bristly.

Polyedræ: similar to Macrothele from which it differs in its somewhat smaller tubercles, the axils woolly and setose or bristly.

To economize space in the following brief diagnoses, letters are employed to distinguish the section and series into which the plant falls according to the delimitations given above: A, Ancistracanthæ; C, Candidæ; E, Elegantes; G, Galactochylus; H, Hydrochylus; He, Heterochloræ; Lep, Leptocladodæ; Leu, Leucocephalæ; M, Macrothele; Pa, Polyacanthæ; Pe, Polyedræ; S, Stylothele.

acanthophlégma: *M. elegans.*

aggregàta: *Coryphantha aggregata.*

albéscens. H: cespitose, globose to ovoid, to 3½ in. high and 2 in. diam.; tubercles about ¾ in. long, areoles white, woolly; radial spines 5 or more, to ⅝ in. long, spreading, white; centrals rarely present: fls. white, stigma 5-lobed, yellow. Mex.

álbicans. H, Pa: globose or cylindric, to 8 in. long and 2½ in. diam., often clustered; radial spines numerous and white; centrals several. Lower Calif.

albícoma. H, Lep: clustered, globose, to 2 in. diam. or more, axils setose; spines white, straight, radials 30–40, hair-like to ½ in. long, glabrous, centrals 1–4, to ¼ in. long, brown tipped, but often absent: fls. white or yellowish, to ½ in. long. Mex.

álbida: *M. discolor.*

aljibénsis: listed name.

Ándreæ: *Coryphantha Andreæ.*

anguínea: *M. elongata.*

angulàris: *M. compressa.*

applanàta. G, M: plant much flattened endwise; tubercles somewhat angled and axils naked; radials 10–18; central 1: fls. cream-colored, inner segms. 1 in. long, green-striped in center. Tex.—Early-flowering.

árida. G, M: similar to *M. Brandegeei* from which it differs in its more slender longer spines, entire outer perianth-segms. and crimson-red fruit. Lower Calif.

arizónica: *Coryphantha arizonica.*

armillàta. H, A: clustered, cylindric, to 1 ft. high; tubercles bluish-green; radial spines 9–15 and to ½ in. long; centrals usually 2 and the lowest hooked: fls. greenish or pink, to ½ in. long. Lower Calif.

asperispìna: probably *Neobesseya asperispina.*

Astèrias: *Coryphantha Asterias.*

aurèiceps. H, He: globose or short-oblong, to 4 in. diam.; tubercles woolly and bristly in axils; radial spines 20, white and bristle-like; central spines several and yellow: fls. dark red. Mex.

aurihamàta. H, S: globose or ovoid, to 2½ in. high and 1½ in. diam.; tubercles shining; radial spines 15–20 and yellowish-white; central spines 4, the lower to 1 in. long: fls. yellow, ½ in. long. Mex.

Báchmannii. G, M: similar to *M. Orcuttii* from which it differs in its larger 4-sided tubercles, black central spines and smaller pale pink fls. Cent. Mex.

balsasénsis. H, A: solitary, globose, glossy, to 2½ in. diam.; tubercles about ¼ in. long; spines straight, stiff, radials spreading, usually 15, white, about ⅛ in. long, centrals 4, brown, the lowest hooked, to ½ in. long: fls. not seen. Mex.

barbàta. H, A: often clustered, sts. globose, to 1½ in. diam., axils glabrous; radial spines usually 20–30, straight, white often brown-tipped, centrals usually 3–6, brown, a few hooked: fls. pale greenish-yellow to nearly green, outer segms. ciliate. Mex.

Baùmii. H, C: clustered, sts. subcylindrical, to 3¼ in. tall and 2¼ in. diam.; tubercles soft, about ¼ in. long, axils glabrous; radials 30–35, to ⅝ in. long, unequal; centrals 5–6, to 1¾ in. long: fls. yellow within, outer segms. greenish-yellow with pink midrib, to 1 in. long. Mex.

Baxterìana. G, M: usually solitary, to 4 in. diam.; tubercles yellowish-green, axils briefly white-woolly; spines acicular, radials 8–10, to ½ in. long, centrals usually 1 occasionally 2, about ⅝ in. long: fls. yellow, marked reddish on outer perianth-segms.: fr. purplish-red, to ¾ in. long, club-shaped. Lower Calif.

béllla: probably *Escobaria bella.*

bícolor: *M. geminispina.*

Blossfeldiàna. H, A: cespitose, globose, to 1½ in. diam., axils somewhat but sparingly woolly; radials about 20, straight, to ¼ in. long; centrals 4, stiff: fls. reddish-pink, to ¾ in. across. Lower Calif.

bocasàna. H, S: cespitose, forming mounds, the individuals globose and to 1½ in. diam.; tubercles slender and terete, axils setose; radials 50 or more, hair-like and silky; central 1, hooked, brown: fls. white. Mex. Var. **inérmis** is said to be of the habit of *M. albicoma* with fls. of the type and is reported to be a sport.

Boedekeriàna. H, A: globose or becoming cylindric, to 6 in. tall, axils glabrous; radial spines 20 and white; central spines 3 and brownish-black, glabrous, not puberulent, one of them hooked: fls. white with brown stripes. Mex.

bogoténsis. H, He: usually solitary, globose to somewhat club-shaped, to 4 in. tall and 2 in. diam., axils not bristly; radials 20–30, to ¼ in. long, straight, white; centrals usually 6, bulbous at base, nearly ⅜ in. long: fls. not seen. Colombia.

Brándegeei (*M. Gabbii*). G, M: solitary or forking, st. depressed-globose, to 3¼ in. diam., axils white-woolly; tubercles elongated, usually rounded and not angular; spines slightly curved, radials 9–14, to ½ in. long, white to gray, centrals 3–7, less frequently 1 or 2, to ¾ in. long, reddish-brown: fls. to 1 in. long, outer segms. tan-colored, ciliate; inner segms. yellowish-green with rose stripe: fr. white. Lower Calif.

Brauneàna. G, Leu: usually solitary, globose, to about 3 in. diam., axils with numerous bristles; tubercles short, conical; radials 25–30, lower ones about ¼ in. long with upper ones shorter, radiating, glossy white; centrals 2–4, awl-like, red to nearly black: fls. reddish-violet, to ½ in. diam. Mex.

Broẁnii: *Coryphantha robustispina.*

Bullardiàna. H, A: cespitose, sts. narrowly cylindrical, to 5 in. tall and 1¾ in. diam., axils usually naked; tubercles conical, olive-green, about ¼ in. long; spines to ½ in. long, radials 20–30, white and often tipped brown, central 1, brown, usually hooked or recurved at tip: fls. pale rose-pink, to ¾ in. long. Mex.

bumámma: *Coryphantha bumamma.*

calacántha. H, He: solitary, globose to subcylindrical, to about 3 in. diam.; tubercles to ½ in. long; radials about 25, yellowish; centrals 2, rarely 4, to ⅝ in. long, brownish-red: fls. carmine, to ½ in. long or slightly more. Mex.

campótricha. H, S: cespitose, globose, 2 in. across; tubercles often curved with bristles in axils; spines 4–8, twisted, yellowish and bristle-like: fls. white, greenish outside, ½ in. long. Mex. Var. **senìlis** is listed.

cándicans: listed name.

cándida. H, C: cespitose, the individuals globose and 2 in. or more diam.; radials numerous, more than 50; centrals 8–12: fls. rose-colored, nearly 1 in. long. Cent. Mex. Var. **ròsea** is listed.

capénsis. H, A: cylindric, to 10 in. high and 2 in. diam., clustered; radial spines 13 and white tipped brown; central 1 and to 8 in. long and strongly hooked: fls. pink, ¾ in. long. Lower Calif. Var. **pállida** is listed.

Cáput-Medùsæ: *M. sempervivi.*

cárnea. G, M: solitary, cylindric, to 3½ in. high; tubercles 4-angled, to nearly ½ in. long, milky with woolly axils, areoles lacking bristles; spines 4, unequal in length: fls. flesh-colored, nearly or quite 1 in. long. Cent. and S. Mex.

Cárretii. H, A: solitary, globose and depressed, 2 in. or more diam.; tubercles cylindric and axils naked; radials 15; central 1: fls. 1 in. long, white and rose. Mex.

Celsiàna. G, E: subglobose and becoming cylindric, to 5 in. high; tubercles conic and woolly in axils; radials 24–26; centrals 4–7, yellow, about ½ in. long: fls. red. S. Mex.

centricìrrha: *M. magnimamma.*

cephalóphora. H, C: solitary, globose to subcylindrical, to 3 in. diam., dull green; tubercles cylindrical, axils glabrous; spines arranged in two series, about ½ in. long, silky and hair-like, centrals absent: fls. pale rose-pink, about ½ in. across. Mex.

ceratìtes: *Neolloydia ceratites.*

chinocéphala. G, Pe: solitary, becoming cespitose with age, globose, to 3 in. diam., nearly hidden by white spines; tubercles milky and axils woolly and bristly; radial spines 35–40, about ¼ in. long, almost pectinate; centrals 2–7, shorter and stiff: fls. rose, ½ in. long. Mex.

chlorántha: *Coryphantha chlorantha.*

cirrhífera: *M. compressa.*

clàva: *Coryphantha clava.*

clavàta: *Neolloydia clavata.*

collìna. H, He: globose, 5 in. diam.; tubercles woolly in axils; radial spines 16–18 and white; central spines 1–2: fls. rose, ½ in. long. Mex.

compréssa (*M. angularis. M. cirrhifera*). G, Pe: in clumps, individuals cylindric, bluish-green; tubercles short and axils woolly; principal spines commonly 4, to 2½ in. long, flexuous: fls. pinkish, to ½ in. long. Cent. Mex.

conoídea: *Neolloydia conoidea.*

conspícua. G, E: solitary, globose to subcylindrical, to 6 in. tall and 4½ in. diam., gray-green, axils woolly; radials 14–20, less frequently to 25, about ¼ in. long, white; centrals 2–4, pale brown, to ½ in. long: fls. carmine-red, to ¾ in. long. Mex.

córbula: *Lobivia corbula.*

cornífera: *Coryphantha cornifera.*

coronària. H, He: cespitose, globose to cylindrical, to 6 in. tall and 3 in. diam., axils bare; radials 12–18, to ½ in. long, white; centrals 6, to ⅝ in. long, dark crimson to yellow and gray: fls. crimson, inner segms. with darker midrib, stigma 4-lobed. Mex.

Craigiàna: listed name.

crassispìna: form of *M. rhodantha* with thick yellowish-brown central spines.

crocidàta. G, M: solitary, becoming cespitose, globose to subcylindrical and somewhat flattened on top, to 3 in. diam., bluish-green; tubercles short, at least not narrowly elongated, areoles bristly; spines 3–4, alike and usually equal in length, pale to dark brown: fls. carmine-red within, to ⅝ in. long. Mex.

crucígera. G, E: cylindric, to 6 in. high; tubercles woolly in axils; radial spines 20 or more and bristle-like; centrals 4 and yellowish: fls. crimson or purple. Mex.

dasyacántha: *Escobaria dasyacantha.*

dealbàta. G, E: globose or short-cylindric, glaucous; tubercles woolly in axils; radial spines 20, about ⅛ in. long, white; centrals 1–2, to ½ in. long: fls. carmine, stigma-lobes yellow. Mex.

decípiens. H, S: mostly cespitose, globose; tubercles soft and cylindric with 2 or 3 bristles in axils; radials 7–9, white; central 1, straight: fls. white tinged pink, about ½ in. long. Mex.

Delaetiàna: *Coryphantha Delaetiana.*

densispìna. H, He: globose, to 4 in. diam., hidden by spines; radial spines 25 or more, to ⅜ in. long, white or pale yellow; centrals 5–6, to ¾ in. long: fls. yellowish inside, purple outside, ½ in. long. Mex.

denudàta. G, C: globose, 1 in. diam.; spines 50–80 and short: fls. light purple margined with white, ½ in. long. W. Tex., Mex.

déserti: *Coryphantha deserti.*

didicàta: listed name.

Dìetrichiæ. G: solitary, depressed-globose, to 2 in. high and 3 in. diam., blue-green, white-woolly on top; tubercles 4-sided, areoles white-woolly when young; radial spines 30 or more, to ⅓ in. long, white, spreading and covering the st.; centrals 3–4, stouter than radials, 1–1¼ in. long, flesh-colored tipped brown: fls. not known. Mex.

diffícilis: *Coryphantha difficilis.*

dioìca. H, A: solitary or clustered, cylindric, to 10 in. or more high; tubercle axils woolly and setose; radials 11–22, white; centrals 3 or 4: fls. yellowish-white with purplish ribs, to about 1 in. long, somewhat diœcious, stigma-lobes yellow to greenish. S. Calif. and adjacent Lower Calif.

disciformis: *Strombocactus disciformis.*

díscolor (*M. albida*). H, He: globose, 3 in. diam., axils glabrous; radial spines 16–20, white and bristle-like; centrals 6, yellow to brownish: fls. white striped with rose, ½ in. across, stigma 6–7-lobed. Mex.

dolichocéntra: *M. tetracantha.*

Dònatii. G, E: globose, glaucous, sometimes cespitose; radial spines 16–18 and ⅓ in. long; centrals 2 and yellowish-black: fls. reddish, ½ in. long. Mex.

durispìna. H, He: globose or short-cylindric, to 12 in. high and 4 in. diam.; spines 6–8, radiating and star-like, central spines none: fls. carmine, green below, ½ in. long. Mex.

Dyckiàna: *Coryphantha Dyckiana.*

Echaussièri: listed name.

echinària (*M. gracilis*). H, Lep: cespitose, individuals short-cylindric and about 4 in. long; tubercles terete and with naked axils; spines light colored, the radials about 15 and central 1: fls. yellow with salmon-colored outer segms., to ½ in. long, stigma-lobes 4, yellow. Mex.

echinoídea: *Coryphantha echinoidea.*

Echìnus: *Coryphantha Echinus.*

Edmundtsiàna: listed name.

élegans (*M. acanthophlegma. M. Kunthii*). G, E: simple, obovoid to globose, 2 in. diam.; tubercles ovoid and axils somewhat woolly, rarely naked; radials 25–30, bristle-like, white, about ¼ in. long; centrals 1–3. Cent. Mex.—Different plants may pass as *M. elegans*.

elephántidens: *Coryphantha elephantidens*.

elongàta (*M. anguinea. M. stella-aurata. M. tenuis*). H, Lep: making dense small clumps, individuals erect or ascending or prostrate to 4 in. long, with many interlacing spines; tubercles short and axils naked; spines usually all radial: fls. white or nearly so, about ¼ in. long. E. Mex. Listed vars. include **aùrea, echinàta, longispìna, microthèle** and **Schmóllii**.

erécta: *Coryphantha erecta*.

erectohamàta. H, S: cespitose, globular, to 2½ in. diam., axils setose; radial spines 20–25, white, to ¼ in. long, bristly; centrals usually 2, dark red to brownish: fls. white, stigma 5–6-lobed, white. Mex.

eriacántha. H, He: solitary or cespitose, cylindric, to 6 in. high; tubercles spiral in 22 rows, compact; radials about 20, yellow to brown; centrals 2: fls. yellow, about ½ in. across. Cent. Mex.

erythrocárpa: listed name.

erythrospérma. H, A: by some considered synonymous with *M. Painteri*; by others it is reported to differ in having a few bristles in the axils, radial spines often less than 20, centrals rarely more than 3, and fls. carmine-red with red stigma. Mex.

Essaussièri: listed name.

exsùdans: *Coryphantha exsudans*.

fasciculàta. H, A: cespitose, cylindrical; radials 13–20, white; central usually 1, rarely 2–3, brown, hooked, to ¾ in. long: fls. pink, to 1½ in. across. S. Ariz.

férro-rùbra: *M. rhodantha* var.

fértilis. H, He: cespitose, globose or short-cylindric; tubercles rather woolly in axils; radial spines 7–10, white; centrals 1–2, to ⅓ in. long: fls. deep crimson, ¾ in. long, stigma red, 4-lobed. Mex.

Físcheri. G, Pe: by some considered a variety of *M. Karwinskiana* or synonymous with it; others state it to differ in its reddish radial spines and pale yellow fls., the segms. with pink midrib. Mex.

fissuràta: *Roseocactus fissuratus*.

flavóvirens. G, M: usually solitary, globose to subcylindrical, to 3½ in. tall, yellowish-green; tubercles slightly angular at apex, elongated, axils bare; radial spines 5, subulate, equal in length; central 1: fls. white with rose-red stripe on inner segms. Mex.

formòsa. G, E: body somewhat club-shaped and sunken at apex; tubercles 4-angled, axils bare; radials 20–22; centrals 2–6: fls. red. Mex.

fortispìna: listed name.

frágilis. H, Lep: globose, sprouting toward top and breaking off easily; radial spines 12–14, white and spreading; central spines usually none: fls. cream-colored, pinkish outside. Probably Mex. Vars. **cristàta** and **mínima** are listed.

Fraileàna. H, A: cylindric, to 6 in. high; central spines brown and one strongly hooked: fls. pink, 1 in. or more long. Lower Calif.

fulginòsa: probably referable to *M. mammillaris*.

fuscàta: form of *M. rhodantha* with yellowish spines.

Gábbii: *M. Brandegeei*.

Galeóttii. H, S: globose, often cespitose; radial bristles 8–14 and soon falling; centrals 4 and 1 in. long and yellowish: fls. rose. Mex.

Gàtesii. G, M: solitary becoming cespitose with age, globose to subcylindrical, to 8 in. tall and 6 in. diam.; tubercles to about ⅝ in. long, blue-green, axils woolly; radials 8, to ½ in. long, yellow becoming white; central 1, to nearly 1¼ in. long, stout: fls. golden- to greenish-yellow, campanulate, to ¾ in. across, stigma 5-lobed, green. Lower Calif.

geminispìna (*M. bicolor. M. nivea*). G, Leu: naturally cespitose, cylindric and somewhat glaucous; tubercles terete and axils woolly and setose, the bristles few; radials 16–20 and very short; centrals 2–4 and longer: fls. dark red. Cent. Mex.

Geórgii: see *Coryphantha Georgii*.

gigantèa. G, M: solitary or cespitose, depressed-globose, to 4 in. high and of great diam.; tubercles elongated, somewhat angular at apex, axils woolly; radials 12, nearly equal in length; centrals 4–6: fls. yellowish-green. Mex.

gladiispìna: *Coryphantha gladiispina*.

globòsa: *Dolichothele longimamma*.

glochidiàta. H, S: densely cespitose, globose, to nearly 1½ in. diam., few bristles in axils; radials 8–20, to ½ in. long, white; centrals 3–4, yellowish-brown, the lower one hooked: fls. pink or rarely white: seed black. Mex.

grácilis: *M. echinaria*.

Gràhamii: *M. microcarpa*.

grandiflòra: *Neolloydia grandiflora*.

Gréggii: *Epithelantha micromeris* var.

Guelzowiàna. H, A: globose, to 2½ in. high and diam., single or cespitose, axils bare; radial spines 60–80, white and hair-like; central spine 1: fls. purple, 2 in. long. Mex.

guirocobénsis: listed name.

gummífera. G, M: body depressed-globose, to 4 in. or more high; tubercles angled, elongated, rounded at apex; radials 10–12; centrals 1, 2 or 4: fls. brownish outside and reddish-white inside, about 1 in. long, outer segms. more or less fimbriated. N. Mex.

Haageàna. G, E: globose becoming cylindrical with age, cespitose, axils woolly; radial spines about 20, radiating and white; central spines 2, to ¼ in. long, black: fls. carmine-rose. Mex.

Hahniàna. H, Leu: globose, to 4 in. high and diam., cespitose, axils woolly, with about 20 white bristles to 1½ in. long which completely cover st.; radial spines 20–30 and of soft white curly hairs to ½ in. long; central spine usually 1: fls. rose-carmine. Mex. Var. **Giselàna** is listed.

Hàlei: *Cochemiea Halei*.

Hamiltonhoỳtea. G, M: usually solitary, depressed-globose, to 7 in. diam., axils bare; tubercles short and symmetrical; radials usually 5, about ⅜ in. long, white tipped brown; centrals 3, to 1¼ in. long, red to gray: fls. purplish-violet, to ¾ in. long. Mex.

Heeseàna: *M. Petterssonii*.

hemisphǽrica. G, M: hemispheric, to 5 in. diam.; tubercles elongated, somewhat angular but rounded at apex; radial spines 9–13 and to ⅓ in. long, yellowish; central spine 1: fls. cream-colored, ½ in. long. S. Tex., N. Mex.

Hérreræ. H, C: cespitose, globose, to 1½ in. diam., axils bare; spines all radial, about 90–100, radiating uniformly and star-like, to nearly ¼ in. long: fls. pink or purplish, to 1 in. long, with long tube. Mex. Var. **albiflòra** has larger white fls. and sts. less cespitose.

Heỳderi. G, M: globose or at apex somewhat flattened; tubercles conic and woolly in axils; radials 20–22; central 1: fls. pinkish. Tex. to N. Mex.

hidalgénsis: *M. polythele*.

Hildemanniàna: listed name.

Hoffmanniàna. G, M: globose to subcylindrical, to 12 in. tall and 5 in. diam.; tubercles short and symmetrical, axils woolly; radial spines usually 18, white, bristly; centrals 4–6, to ¾ in. long: fls. pale rose-pink. Mex.

Hoòkeri: unidentified name.

horrípila: *Neolloydia horripila*.

jaliscàna. A: cespitose, globose, to 2 in. diam.; tubercles in 13 rows, nearly ¼ in. high; radial spines 30–50; centrals 4–6, reddish-brown, one hooked: fls. pink to purplish-pink, about ½ in. across, fragrant. Mex.

Jóhnstonii. G, M: globose, to 8 in. tall, apex flattened; tubercles elongated, acutish, at least at apex, axils bare; radials 10–14, white to tan, somewhat unequal in length; centrals 2, larger and stouter than others: fls. white. Mex.

Karwinskiàna. G, Pe: globose or cylindric; tubercles milky, axils woolly and with long white bristles; spines 4–6 and all radial: fls. cream-colored, reddish outside, ¾ in. long. Mex.

Kelleriàna: listed name.

kewénsis. H, He: globose or cylindric, to 1½ in. diam.; tubercles woolly in axils; spines 5–6 and all radial and short: fls. reddish-purple, ½ in. long. Probably Mex.

Klissingiàna. G, Leu: globose, to 6 in. high and 3½ in. diam., densely covered with white spines; tubercles white-woolly in axils; radial spines 30–35, interlaced and completely hiding the st.; centrals 2–4, about ⅓ in. long: fls. rose, ½ in. long. Mex.

Knebeliàna. H, S: usually cespitose, short-cylindrical, to 2½ in. tall and 1½ in. diam., axils of tubercles setose; radial spines 20–25, about ¼ in. long; centrals 4–7, reddish-brown, the lower ones to ⅝ in. long, hooked: fls. yellow inside, rose-pink outside. Mex.—Not to be confused with *M. Knippeliana*, which is not known to be now in cult.

Kúnthii: *M. elegans*.

Kunzeàna. H, S: globose or cylindric, cespitose, tubercles with bristly axils; radial spines 25, white and bristle-like; central spines 3–4, brownish, one hooked: fls. white or yellowish-white, rose outside, ¾ in. long, stigma-lobes 4, cream-colored. Mex.

lanàta. G, E: short-cylindric; spines 12–14 and all radial, wide-spreading, white: fls. red, ¼ in. long, when young surrounded by long white hairs. Mex.

lasiacántha. H, C: globose, to 1 in. high; tubercles small and axils naked; spines 40–60 and puberulent: fls. whitish or pink, about ½ in. long. W. Tex.

lénta. H, C: cespitose, globose or short-cylindric, to 2½ in. diam., nearly hidden by white fragile spines, axils woolly; spines about 40, all radial: fls. whitish, ¼ in. long. Mex.

leòna: *M. Pottsii.*

Lesaunièri. H, He: plant simple, globose or a little elongated; tubercles conic with naked axils; radials 11–13, white; central 1 and short: fls. reddish, 1 in. long, stigma-lobes 4, red. Mex.

Llóydii. G, M: usually solitary, depressed-globose to subcylindric; tubercles short and symmetrical, areoles not silky; spines 4, all radial, equal in length, laterals whitish, upper one resembling a central and brown: fls. white with pink stripe inside, reddish outside, stigma red. Mex.

longícoma. H, S: somewhat cespitose, globose, to 2 in. diam.; tubercles with long white hairs in axils; radial spines 25 or more and hair-like; central spines 4 and ½ in. long, brown: fls. white, strongly suffused rose to clear rose. Mex.

longiflòra. H, A: globose, to 1¼ in. diam., often clustered, axils woolly and bristly; radial spines about 30 and yellow; central spines 4, ½ in. long, reddish-brown: fls. pinkish, 1½ in. long, with distinct tube, stigma-lobes yellowish. Mex.

longimámma: *Dolichothele longimamma.*

longisèta: probably *M. compressa.*

Louìseæ: listed name.

Macdoùgalii. G, M: globular or flattened, to 6 in. diam.; tubercles with woolly axils; radial spines 10–12; centrals 1–2: fls. cream-colored, 1½ in. long. Ariz.

macrántha (*M. centricirrha* var. *macrantha*). G, M: depressed-globose, about 1 in. high; tubercles elongated, angular at apex and the axils becoming naked; spines 1 or 2, alike, recurved: fls. dark pink. Mex.

macrocárpa: listed name.

macrómeris: *Coryphantha macromeris.*

macrothèle: *Coryphantha octacantha.*

magnimámma (*M. centricirrha. M. pachythele. M. pentacantha*). G, M: globose, to 4 in. diam., commonly cespitose, milky; tubercles elongated, conical and angular at apex, axils woolly when young; spines 3–5, alike, the lower curved: fls. cream-colored. Cent. Mex.

Màiniæ. H, A: globose or depressed, to 3 in. diam.; radial spines 10 and yellowish or white with brown tips; central spine strongly hooked at tip: fls. white with reddish central stripe, ¾ in. long, stigma-lobes purple. Mex.

mammillàris (*M. simplex*). G, M: globose or short-cylindric, to about 2½ in. high; tubercles conic and axils slightly woolly; radials 10–12; centrals 3 or 4: fls. cream-color, about ⅓ in. long. Venezuela and adjacent isls.

Marshalliàna. G, M: occasionally cespitose, depressed-globose, to 5 in. diam.; tubercles elongate, acute at apex; radials 8–13, to ½ in. long, unequal, white; central 1, white: fls. greenish-yellow, stigma 8–lobed. Mex.

Martinèzii: listed name.

mazatlanénsis. H, A: cespitose, sts. somewhat cylindrical, to 4 in. tall and 1½ in. diam., axils woolly and bristly; radial spines 12–15, bristly, white; centrals 3–6, reddish, stouter than radials: fls. rose-carmine. Mex.

meiacántha. G, M: somewhat depressed, to 5 in. diam.; tubercles angled and milky with naked axils; spines 5–9: fls. white with pink stripes. Tex., New Mex.

melaleùca: *Dolichothele longimamma.*

melanocéntra (*M. valida*). G, M: short-cylindric and glaucous-green; tubercles elongate, angled at apex; radial spines 6, unequal, grayish-black; central 1, black: fls. pinkish-red, segms. linear. Mex.

Mendeliàna. G, Pe: solitary, globular, to 3½ in. diam., dark olive-green, axils woolly and bristly; tubercles roundish to somewhat angular; spines 4, alike, pubescent, reddish to black becoming gray-white: fls. rose-pink: fr. club-shaped, purple, to ¾ in. long. Mex.

microcárpa (*M. Grahamii*). H, A: globose to cylindric, sometimes clustered, to 3 in. high; tubercles small and axils naked; radial spines 15–30; centrals 1–3, to 1¼ in. long, hooked: fls. purplish and perhaps with whitish margins, to 1 in. long. Tex., Ariz. (perhaps Utah and Calif.), Mex.

microhèlia. H. Lep: cylindric, to 6 in. long and 1½ in. diam., white-woolly at top; radial spines about 50 and radiating horizontally; central spines 1–4: fls. white, ½ in. long. Mex.

microheliópsis. H, Lep: short-cylindric, to 2½ in. high and 2 in. diam., densely woolly at top; radial spines 30–65, to ⅓ in. long; centrals 6–8: fls. purple, ½ in. long. Mex.

micrómeris: *Epithelantha micromeris.*

microthèle. G, E: allied to *M. elegans:* cespitose, the joints small and globose, axils usually woolly; radials 22–24, about ⅛ in. long; centrals 2: fls. about ⅛ in. long, flesh-colored outside and white inside. Mex.

Miehiàna. H: cespitose, cylindrical, to 6 in. high and 2 in. diam., dark green, areoles white-woolly; radial spines 18–20, to ⅝ in. long, needle-like, bright yellow; centrals 3–6, equal, brownish-yellow: fls. yellow, to ⅝ in. long. Mex.

Mílleri. H, A: globose or cylindric, to 8 in. high and 3 in. diam.; radial spines 20, white tipped brown; centrals 2-4, hooked at tip: fls. purple or pink, 1 in. across. Ariz.

mínima: probably *M. elongata.*

missouriénsis: *Neobesseya missouriensis.*

Moelleriàna. H, A: globose, to 2½ in. diam., hidden by spines; radial spines 30–40 and white; central spines 8–10, wide-spreading to ¾ in., yellow or red-brown: fls. rose or brownish, ½ in. long. Mex.

montàna: probably *Coryphantha vivipara.*

Muehlbaueriàna: see *Coryphantha Muehlbaueriana.*

Múlleri: listed name, perhaps for *M. Milleri.*

múlticeps (*M. pusilla*). H, S: globose, ¾ in. diam., cesiptose; tubercles hairy in axils; radial spines white and hair-like; centrals several, straight: fls. yellowish-salmon, ½ in. long. Mex.—By some authors said to be synonymous with *M. prolifera.*

multifórmis. H, L: clumps of 25 or more globose to subcylindrical plants; tubercles to ⅓ in. long, white-woolly; radial spines 30–40, to ⅓ in. long, ascending; centrals 4, to ½ in. long, one strongly hooked: fls. deep purplish-red, to ½ in. long and ⅝ in. across, filaments red. Mex.

multihamàta. H, S: globose, to 2 in. diam., dark green, axils bristly, not woolly; radials 25, about ¼ in. long, bristly, slender, straight; centrals 7–9, to ½ in. long, stout, brownish: fls. pale rose inside with purplish stripe, to ⅝ in. long. Mex.

Múndtii. H, He: depressed-globose, to 3 in. diam., woolly on top; tubercles not compact, conical; radials 10–12, tan when young, becoming white, to ¼ in. long; centrals 2, brown, to ⅝ in. long, straight: fls. red, stigma 6–7-lobed, green. Mex.

mutábilis: *M. mystax.*

mýstax (*M. mutabilis*). G, Pe: globose to short-cylindric, flat-topped, to 6 in. high; radials 8–10 and white; centrals 4, flexuous, about ⅓ in. long, red becoming gray, one of them elongated: fls. dark red, about ¾ in. long. S. Cent. Mex.

napìna. H, He: depressed-globose, to 2½ in. diam., axils slightly woolly; spines all radial, 10–12, stiff, pectinate, white with yellowish base: fls. pink. Tex.

neo-mexicàna: *Coryphantha neo-mexicana.*

Níckelsiæ: *Coryphantha Nickelsiæ.*

nìgra, nigrispìna: names of doubtful standing but perhaps vars. of *M. elegans.*

nívea: *M. geminispina.*

nivòsa. G, M: globose or cylindric, 7 in. diam., cespitose, very spiny; tubercles milky and white-woolly in axils; spines 14, ½ in. long, bright yellow: fls. cream-colored, ½ in. long. W. Indies.

Nunèzii. H, He: globose to cylindrical, to 6 in. long and 3½ in. diam.; tubercles short with bristly axils; radial spines 25–35, bristly, white; centrals 2–4, stout, about ½ in. long, brown with blackish tip: fls. not known: fr. white, tinged red, club-shaped, to 1 in. long. Mex.

Núttallii: *Neobesseya missouriensis.*

occidentàlis. H, A: cespitose, cylindrical, to 4 in. tall, axils naked; radials about 12, pale yellow; centrals 3–6, reddish-brown: fls. rose-pink, about ½ in. long: fr. red. Mex.

Ochoterènæ. H, He: solitary, depressed-globose, to 3½ in. diam., top spiny, axils naked; radial spines about 17, bristly, white, about ⅜ in. long; centrals 5, to ¾ in. long, straight, brown with black tip becoming paler: fls. pale rose-pink. Mex.

octacántha: *Coryphantha octacantha.*

Óliviæ. H, C: solitary becoming cespitose with age, st. globose to subcylindric, to 4 in. tall and 2½ in. diam., axils naked; radials 25–35, to ¼ in. long, covering the entire surface, white to tan; centrals 1–3, white, tipped brown: fls. purplish-red, to 1¼ in. across. Ariz.

Órcuttii. G, M: solitary, globose to somewhat club-shaped, dark blue-green; tubercles short, round, axils and areoles woolly; spines all alike, usually 4–5, black to gray: fls. pale carmine, segms. with darker stripe. Mex.

Órtiz-Rubiòna. H, C: cespitose, depressed-globose, to 3½ in. diam., axils silky, areoles white-woolly; radial spines numerous, ½ in. long, white; centrals 4–6, about ½ in. long: fls. yellowish-red, ¾ in. long. Mex.

Ottònis: *Coryphantha Ottonis.*

pachythèle: *M. magnimamma.*

pacífica. G, M: cespitose, sts. depressed-globose, to 6 in. diam.; tubercles elongated, angular basally but rounded at apex; radials 7–12, white; central 1, about ½ in. long, tipped brown: fls. yellowish-green, outer segms. entire, about ½ in. long. Lower Calif.

Pàinteri. H, S: solitary, globose, to ¾ in. diam., axils naked; radials 20, minutely puberulent, white; centrals 3–5, puberulent, dark brown, one or more hooked: fls. white, to ⅝ in. long. Mex.

pállida: see *Coryphantha pallida.*

Pálmeri. H, He: cespitose, sts. small, axils woolly and bristly; radials 25–30, about ¼ in. long, white; centrals 3–5, to ⅜ in. long, brownish with black tips: fls. cream-colored: fr. club-shaped, scarlet. Mex.

Párkinsonii. G, Leu: cespitose, parts depressed to cylindric, to 6 in. high, glaucous; tubercles short, axils woolly and bristly, the latter not numerous; radials 25–30, bristly, white, pectinate; centrals 2 or 4 or 5: fls. yellowish and small. Cent. Mex.

pectinàta: *Coryphantha pectinata.*

peninsulàris. G, M: solitary becoming cespitose, depressed-globose; tubercles elongated, acutely angular at apex, axils woolly becoming naked with age; spines 4–8, all radial, with one occasionally more central, yellowish-brown, darker tipped: fls. yellowish-green. Mex.

pentacántha: *M. magnimamma.*

perbélla. G, E: depressed-globose, glaucous-green, solitary or more or less cespitose; tubercles conic and axils woolly; radials 14–18; centrals none: fls. reddish, nearly ½ in. long. Mex. Vars. **lanàta** and **mìnor** are listed.

petrophìla. G, M: solitary becoming cespitose, sts. globose, to 6 in. diam.; tubercles short, rounded, axils woolly when young; radials 10, about ½ in. long, pale chestnut-brown; central 1, to ¾ in. long: fls. greenish-yellow, to ¾ in. long. Mex.

Pétterssonii (*M. Heeseana*). G, Pe: cylindric, to 8 in. or more and very spiny; tubercles terete and axils bristly; radials 10–12, white with black tips; centrals 4: fls. not described. Mex.

Pfeìfferi: form of *M. rhodantha* with lemon-yellow central spines.

phæacántha. Probably H, He: depressed-globose; tubercles conical, somewhat angled, axils woolly; radials 16–20, bristly, white; centrals 4, awl-shaped, black: fls. dark red. Mex.

Phellospérma: *Phellosperma tetrancistra.*

phitauiàna. H, A: solitary, occasionally cespitose, sts. cylindrical, to 6 in. tall and 1¾ in. diam.; tubercles to ¼ in. long, conical, axils woolly; radials about 24, to ½ in. long, bristly, white; centrals 4, about ¼ in. long, white tipped brown: fls. white, to ¾ in. long. Mex.

pilispìna: *Neolloydia pilispina.*

plumòsa. H, C: clusters to 6 in. across, covered with white spines; tubercles very small and axils somewhat woolly; spines all radial and about 40, plumose: fls. white, nearly ¼ in. long. N. Mex.

polyédra. G, Pe: solitary, cylindric or somewhat club-shaped; tubercles flattened and angled and axils bristly; spines 4–6, all alike, short, grayish-white tipped reddish: fls. reddish and inconspicuous. S. Mex.

polýgona. G, Pe: solitary, somewhat club-shaped, about 4 in. tall; tubercles large, more or less angular, axils woolly and setose; radials 8, the 2 upper ones very small; centrals 2: fls. pale rose-pink. Mex.

polythèle (*M. hidalgensis*). G, M: cylindric, to 8 in. high and 4 in. diam.; tubercles short, symmetrical, usually rounded and when young densely woolly in axils; spines all radial, 2–4, unequal, to 1 in. long, reddish: fls. reddish, ⅓ in. long. Mex.

Posélgeri: *Cochemiea Poselgeri.*

potosìna. In the lists the name represents a plant allied to *M. geminispina:* resembles *M. Celsiana* in the spines but st. is elongated and tubercles milky. The true *M. potosina* is probably *Neolloydia clavata.* Mex.

Póttsii (*M. leona*). H, He: somewhat cespitose, individuals cylindric to about 5 in. long; tubercles nearly hidden by spines; radials white and about 30; centrals 6–12 and stouter: fls. light purple, less than ½ in. long. Tex., Mex.

Pràelii. G, Pe: globose; tubercles woolly and bristly in axils; radial spines 4 and forming a cross: fls. pale yellow, to 1½ in. long. Guatemala.

Prínglei. H, He: globose or depressed, to 6 in. high and 3 in. diam.; tubercles with woolly and bristly axils; radial spines 18–20 and yellow; centrals 5–7, to 1 in. long and curved: fls. deep red, ⅓ in. long. Mex.

prolífera (*M. pusilla*). H, S: in low colonies, individuals globose or cylindric and 2 in. or more diam.; tubercles conic and axils bristly; radials many and hair-like; centrals 5–12 and stouter: fls. yellowish-white, small. Cuba, Hispaniola.

pseudocrucígera: listed name.

pseudechìnus: probably *Coryphantha pseudechinus.*

pseudoperbélla. G, Leu: globose or short-cylindric, very spiny, axils woolly, not bristly; radial spines 20–30, white and bristle-like; central spines 2, one of them recurved: fls. purple. Mex.

pubispìna. H, S: solitary, globose, to 1¾ in. diam.; tubercles to ⅓ in. long, cylindrical; radial spines about 15, almost hair-like, spreading with recurved hairs mixed among them; centrals 3–4, white to dark brown, minutely pubescent, lower ones hooked: fls. white, segms. with pink midvein. Mex.

Púrpusii: *Pediocactus Simpsonii.*

pusílla: plants so listed may be *M. prolifera* or *M. multiceps.*

pygmæa. H, S: globose or cylindric, 1 in. diam.; radial spines about 15 and white; central spines 4 and golden-yellow, glabrous, the upper ones about ¼ in. long, the lower hooked: fls. cream-colored tinged red outside, ½ in. long. Mex.

ràdians: *Coryphantha radians.*

radiòsa: *Coryphantha vivipara.*

recurvàta: *Coryphantha recurvata.*

recurvispìna: *Coryphantha recurvata.*

Rettigiàna. H, A: globose or depressed, to 1½ in. diam.; radial spines 18–20, white and spreading; centrals 3–4, ½ in. long: fls. rose, ½ in. across. Mex. Var. **flavispìna** has yellow spines becoming grayish-white.

retùsa: *Coryphantha retusa.*

rhapidacántha: *Neolloydia clavata.*

rhodántha. H, He: sts. cylindric and erect, to 1 ft. long; tubercles terete and axils sometimes bristle-bearing; radials 15–20 and white; centrals 4–6: fls. rose-colored, about ½ in. across. Mex.—Grown under many names; among the vars. offered are **campacántha, chrysacántha, férro-rùbra, gigantèa, rùbra** and **sulphùrea.**

robustispìna: *Coryphantha robustispina.*

Roseàna: *Cochemiea Poselgeri.*

roseoálba. G, M.: depressed-globose, to 2½ in. high and 3 in. diam.; tubercles 4-angled and white-woolly in axils; spines 4–5, white tinged rose at base: fls. white, 1¼ in. long. Mex.

rubrispìna: listed name.

Rúestii. H, He: globose to subcylindrical, to 4 in. tall and 3 in. diam., pale green, white-woolly and crimson-spined on top, axils woolly and bristly; radials 16–24, white; centrals 4, awl-shaped, about ⅓ in. long: fls. pale pink with darker midrib. Honduras, Guatemala.

Rúnyonii. G, M: solitary, depressed-globose; tubercles elongate, angular at apex, axils woolly becoming naked with age; radials 6–8, brown to white; central 1, about ½ in. long, erect, dark brown: fls. purple, to ¾ in. long, segms. oblong: fr. red, club-shaped. Mex.

sætígera. G, Leu: solitary, subglobose, apex white-woolly; tubercles conical, angular with truncate apex, axils woolly and setose; radials 15–20, about ¼ in. long, spreading, white; centrals 2, to ⅜ in. long, white brown tipped: fls. white, segms. striped rose-pink, to ¾ in. long. Mex.

Sáffordii. H, S: globose or short-cylindric, to 2 in. high, nearly hidden by spines, axils naked; radial spines 12–14; central 1, brown, to ½ in. long and hooked: fls. rose, 1 in. long. Mex.

Sálm-Dyckiàna: *Coryphantha Salm-Dyckiana.*

sanguínea: *M. spinosissima.*

Sártori. G, M: globose or short-cylindric, to 5 in. diam., cespitose; tubercles 4-angled, axils woolly becoming naked; radial spines 4–6, to ⅓ in. long, brownish; central 1 or sometimes absent: fls. carmine, to ¾ in. long. Mex.

Scheèri: *Coryphantha Muehlenpfordtii.*

Scheidweileriàna. H, He: cespitose, globose to subcylindrical, bright green, axils bristly; tubercles in 8–13 rows; radials 9–11, about ½ in. long, bristly, white; centrals 1–4, brownish, 1–2-hooked: fls. rose-pink, to ½ in. long. Mex.

Schelhàsei. H, S: forming large mound, individuals globose to short-cylindric; tubercles cylindric, angular, axils somewhat woolly but not bristly; radials 14–16, bristle-like and white; centrals 3, brown, one of them hooked: fls. salmon or rose-color, 1 in. long. Mex.

Schiedeàna. H, C: densely cespitose, globose, to 2¼ in. diam.; tubercles white-bristly in axils; radial spines 30, white and bristle-like; centrals 6–10, pubescent: fls. white, ½ in. long. Mex.

Schmóllii. H, Pa: solitary, depressed-globose, to 3 in. diam., olive-green; tubercles conical, axils naked; radials 23–25, nearly ¼ in. long, white; centrals 11–15, slightly longer: fls. yellow. Mex.

Schùmannii: *Bartschella Schumannii.*

scolymoìdes: *Coryphantha cornifera* var.

Seideliàna. H, S: solitary to cespitose, sts. globose to subcylindrical, about 3 in. tall and 2 in. diam., axils naked, areoles somewhat woolly; radials 18–25, stout, white; centrals 3–4, yellow, pubescent, one of them hooked: fls. pale yellow. Mex.

Seitziàna. G, M: solitary or proliferous, cylindric, 4 in. or more high; tubercles conical, somewhat elongate, remotely angular at apex, axils woolly; spines 4: fls. rose-color, about 1 in. long. Mex.

sempervìvi (*M. Caput-Medusæ*). G, M: solitary or more or less cespitose, flattened above and narrowed below; tubercles short, symmetrical, axils very woolly; radials 3–7 and shedding; centrals 2, about ⅛ in. long, brown: fls. dull white with reddish lines. Cent. Mex.

senìlis: *Mamillopsis senilis.*

setispìna: *Cochemiea setispina.*

Shéldonii. H, A: cylindric, 3 in. high; radial spines 12–15 and reddish; central 1, hooked at end: fls. light purple. Mex.

Shurliàna: listed name.

símplex: *M. mammillaris.*

Símpsonii: *Pediocactus Simpsonii.*

sinistrohamàta. H, A: solitary, globose, about 3 in. diam., apex woolly and spiny; tubercles short-cylindrical, axils naked; radials 20, to ½ in. long, needle-like, covering the sts.; centrals 4, to ⅝ in. long, amber-yellow: fls. very pale greenish-yellow, to about ⅝ in. long. Mex.

Sneèdii: see *Escobaria Sneedii.*

Sòlisii. H, A: solitary, globose, about 2½ in. diam., green, tinged red; tubercles ovoid, axils silky-woolly; radials 10–20, about ¼ in. long, bristly-white; centrals 3–4, stouter than radials, one or more hooked: fls. rose-pink. Mex.

sphacelàta. H, S: cespitose, forming clusters to 1½ ft. diam., sts. cylindrical, to 8 in. tall and 1¾ in. diam.; tubercles hemispherical, axils with woolly and silky hairs, bristly; radials 14–20, about ⅜ in. long, reddish-brown; centrals 1–4, grayish-white: fls. rose-purple, to ⅝ in. long. Mex.

sphǽrica: *Dolicothele sphærica.*

spinosíssima. H, Pa: cylindric, to 12 in. long and 4 in. diam., densely covered with spines; tubercles very short and axils bristly; radials about 20; centrals 7 or 8: fls. purplish, about ½ in. long. Cent. Mex.—Known under many names. Var. **sanguínea** does not differ from the type.

Stándleyi. G, Pe: usually solitary, globose, to 4 in. diam., axils bristly and woolly; radials about 16, whitish; centrals 4, stout, reddish-brown: fls. dark rose-purple, to ½ in. long. Mex.

stélla-auràta: *M. elongata.*

strobilifórmis: a name of various applications; see *Neolloydia conoidea, Coryphantha sulcata* and *Escobaria tuberculosa.*

sulcàta: *Coryphantha sulcata.*

sulcolanàta: *Coryphantha sulcolanata.*

tarajaénsis: listed name.

ténuis: *M. elongata.*

tetracántha (*M. dolichocentra*). H, He: nearly globular, to 3 in. diam.; tubercles obscurely angled and axils woolly; spines 4 and all central: fls. pink to rose-color, small. Mex.

tetrancístra: *Phellosperma tetrancistra.*

trichacántha. H, A: globose or short-cylindric, axils woolly and bristly; radial spines 15–18 and white; centrals 2, ½ in. long, one hooked: fls. red or yellow, ½ in. long, lobes white. Mex.

Trohártii. G, M: solitary becoming cespitose, sts. globose, somewhat flattened on top, glaucous, to 2½ in. diam.; tubercles short, axils naked; radials 4–6, about ¼ in. long, usually white; centrals 1, rarely to 3, brown, hooked: fls. pale pink, to ¾ in. long. Mex.

tuberculòsa: *Escobaria tuberculosa.*

uberifórmis: *Dolicothele uberiformis.*

umbrìna. H, He: solitary or occasionally cespitose, sts. cylindrical, to 5 in. tall and 2½ in. diam.; tubercles conical, axils naked; radials 18–25, radiating, about ¼ in. long; centrals 2–4, to ⅜ in. long, brownish-red: fls. rose-purple, stigma green, 5-lobed. Mex.

uncinàta. G, M: globose or somewhat depressed and partly buried in soil, to 4 in. diam.; tubercles short and milky and finally naked; radials 4–6; central mostly 1, brown, uncinate: fls. reddish-white, nearly 1 in. long. Cent. Mex.

válida: *M. melanocentra* or *Coryphantha Poselgeriana.*

Vaupeliàna: *Coryphantha Vaupeliana.*

Vieréckii. H, S: globose, 1½ in. diam.; spines 9–11 and ½ in. long, areoles with 6–7 whitish spines below: fls. cream-colored with greenish central stripe, ½ in. long. Mex.

villífera. G, Pe: cespitose, depressed-globose; tubercles angular, axils woolly and bristly; spines 4, alike, dark red: fls. pale rose, stigma-lobes 4–5. Mex.

viperìna. H, S: cylindric, to ¾ in. diam., decumbent and cespitose; spines numerous and very short: fls. carmine-red. Mex.

viridiflòra. Probably H, A: solitary, globose to subcylindrical, to 4 in. tall and 3 in. diam.; tubercles terete, axils naked; radials 20–30, to ½ in. long, white tipped brown; centrals several, to ¾ in. long, one hooked: fls. greenish-yellow with light-green midrib, to 1½ in. long, stigma pale green, 7-lobed. Ariz.

vivípara: *Coryphantha vivipara.*

Wagneriàna. G, M: solitary, depressed-globose, to 2 in. tall and 4 in. diam., woolly on top; tubercles short, conical, angular, axils woolly; radials 9–10, awl-shaped, brown tipped darker; centrals 2–4, to 2 in. long, unequal, the longer ones twisted: fls. white, striped rose, about ⅝ in. long, stigma pale green, 5–6-lobed. Mex.

Wáltheri. H, S: globose, to 3 in. diam.; radial spines 12–14 and horizontally spreading; centrals usually 2: fls. white, ½ in. long. Mex.

Wérdermannii: see *Coryphantha Werdermannii.*

Wilcoxii: *M. Wrightii.*

Wildii. H, S: somewhat cespitose, cylindric to globose; tubercles slender with rose-colored hairs and bristles in axils; spines pubescent, the radials 8–10 and centrals 4: fls. white, ½ in. across. Mex.

Wínteriæ. G, M: solitary, depressed-globose, to 4 in. diam., dark green; tubercles to ¾ in. long, 4-angled, axils white-woolly; spines all radial, 4, to ½ in. long, whitish, dark tipped, straight: fls. pale sulfur-yellow, stigma pale green, 8–10-lobed. Mex.

woburnénsis. G: cespitose, globose to cylindrical, dull green; tubercles angular, axils woolly and setose; radials 5–9, yellowish-white; centrals 1–8, reddish to yellow: fls. yellow, about ⅜ in. long. Guatemala.

Woòdsii: listed name.

Wrìghtii (*M. Wilcoxii*). H, A: simple and depressed-globose; tubercles terete with axils naked; radials 8–15, white; centrals 1–3 and stouter: fls. purple, 1 in. long. New Mex.

Zachariniàna: catalogue name for *M. Zuccariniana.*

Zahniàna. G, M: solitary, globose, to 2½ in. diam.; tubercles to ¾ in. long, conical, angular; spines 4, all radial, the lower ones stouter and longer, to ⅝ in. long: fls. white with rose-pink stripe, stigma green, 6–10-lobed. Mex.

Zeilmanniàna. H, S: usually solitary, globose to subcylindrical, covered with spines; tubercles cylindrical, in 13–21 compact rows; radials 15–18, stiff, straight, white; centrals 4, lower one hooked, red: fls. violet-purple, stigma yellow, 4-lobed. Mex.

zephyranthoìdes. H, A: depressed-globose to short-cylindric, to 3 in. high; tubercles nearly 1 in. long; radials 14–18 and white; centrals 1 or 2: fls. white with red stripes, to 1½ in. across. S. Mex.

Zeyeriàna. G, M: globose or short-cylindric, to 4 in. high, glaucous; radial spines 10, white; central spines 4, ½ in. long: fls. unknown. Mex.

Zuccariniàna. G, M: usually solitary, globose to cylindrical, to 8 in. tall, glaucous blue-green, axils and areoles white-woolly when young; radials lacking or only stout bristles present; centrals 2–4, black: fls. magenta-red, stigma purple, 3–4-lobed. Mex.

MAMONCILLO: *Melicocca bijuga.*

MANDEVÍLLA. *Apocynaceæ.* More or less woody vines from trop. Amer., one grown in the greenhouse, or out-of-doors in the S., with opposite lvs., funnelform fls. in racemes, and fr. of 2 follicles; the genus differs from Dipladenia only in technical features.

The mandevillas are grown in soil consisting of equal parts of peat and loam, with sand; they should not be planted in pots. Propagated by cuttings over bottom heat.

suavèolens. CHILEAN-JASMINE. Lvs. oblong-cordate, to 3 in. long, glaucous beneath: fls. white or pinkish, fragrant, 2 in. across. Argentina.

MANDRÁGORA. MANDRAKE. *Solanaceæ.* Herbaceous perennials with thick or tuberous roots often having a human-like form of branching, lvs. undivided, and rather large bell-shaped fls. solitary or clustered among the foliage, whitish, blue-violet or purple; native Medit. and Himalayan region. Seldom cult. but interesting for the medicinal qualities and for the old superstitions connected with it. The name mandrake is incorrectly applied also to *Podophyllum peltatum*. Propagated by seeds and division.

autumnàlis. Similar to *M. officinarum*, but with smaller roots and lvs. and violet fls. S. Eu., N. Afr.

officinàrum. To 1 ft., with spindle-shaped often branching root: lvs. ovate, sinuate-toothed, to 1 ft. long: fls. greenish-yellow, to 1 in. long. S. Eu.

MANDRAKE: *Mandragora.*

MANÉTTIA (*Lygistum*). *Rubiaceæ.* Evergreen herbs or shrubs of twining habit with mostly opposite lvs. and white, yellow or red attractive fls. with tubular corolla and 4–5-lobed limb; native in trop. Amer.

Manettias are grown as trellis and rafter vines in the greenhouse, or planted out in the summer and in southern United States. They need a night temperature of 55° and above. Propagated by cuttings of young growth over heat, and by seeds when available.

bícolor. Lvs. lanceolate, glabrous: fls. red with upper part yellow, ¾ in. long, solitary, calyx-lobes erect or spreading, style exserted. Brazil.

cordifòlia: *M. glabra.*

glàbra (*M. cordifolia*). Lvs. cordate-ovate, glabrous: fls. crimson, 1½ in. long, lobes revolute, solitary, stamens exserted. S. S. Amer.

inflàta. Lvs. lanceolate, pubescent on veins beneath: fls. red tipped yellow, ¾ in. long, solitary, calyx-lobes leafy and reflexed, style included. Paraguay, Uruguay.—Sometimes mistaken for *M. bicolor.*

MANFRÈDA. *Amaryllidaceæ.* Segregate from Agave; fleshy bulbous herbs with basal lvs. and large nocturnal fls. in terminal spikes or racemes, the perianth-segms. united into a tube below. For cult. see *Agave.*

brachýstachys (*Agave brachystachys*). To 6 ft.: lvs., to 14 in. long and 1½ in. wide: fls. green, 2 in. long, stamens long-exserted. Mex. to Guatemala.

maculòsa (*Agave maculosa*). To 3 ft.: lvs. to 1 ft. long and ¾ in. wide, mottled: fls. fragrant, greenish or whitish, 2 in. long. S. Tex.

variegàta (*Agave variegata*). To 4 ft.: lvs. to 1½ ft. long and 1½ in. wide, mottled: fls. brownish-green, to 1½ in. long, stamens long-exserted. S. Tex., N. Mex. Var. **gigantèa** is listed.

virgínica (*Agave virginica*). To 6 ft.: lvs. to 2 ft. long and 2½ in. wide: fls. fragrant, greenish-yellow, about 2 in. long. Md. to Fla. and Tex.

MANGEL: *Beta vulgaris.*

MANGÍFERA. *Anacardiaceæ.* Asian trees with leathery simple lvs., small polygamous fls. in terminal panicles, 1–5 stamens but often only 1 fertile, large fleshy drupaceous fr. with a compressed fibrous stone, edible and widely grown in the tropics.

The genus is known mostly for the mango, planted in southern Florida, warmest parts of California, and tropics for the large edible fruit; well marked pomological varieties are now prized. Trees should be planted 35 by 35 feet, in well-drained soil in regions free from frost, and in which there is dependable supply of moisture. Propagated by seeds, but budding, grafting and inarching are employed for named varieties.

índica. MANGO. Evergreen tree to 90 ft. and sometimes with a spread of 125 ft.: lvs. stiffish, lanceolate, to 16 in. long: fls. pinkish-white, in Fla. blooming from Dec. to Apr.: fr. variable in size, shape and color, mostly ovoid-pointed or heart-shaped, commonly 3–5 in. long but may be shorter or longer, smooth, mostly yellow and reddish when ripe, containing 1 very large flat adhering stone or seed. N. India, Burma, Malaya.

MANGO: *Mangifera indica.*

MANGOSTEEN: *Garcinia Mangostana.*

MANGROVE: *Rhizophora.*

MÁNIHOT. *Euphorbiaceæ.* Several trop. American herbs, shrubs or trees with alternate mostly lobed lvs., monœcious fls. without petals borne in racemes, and capsular fr.; *M. esculenta* is extensively grown in trop. regions for the starchy roots which yield tapioca, cassava, and other food products, obtained by manufacturing processes; other species are a source of rubber.

Cassava thrives on rich sandy land. Propagated by cuttings of the stem into 4–6-inch pieces and planted 4 feet apart each way. In the United States the canes should be buried until spring and then cut into lengths. Some early-maturing races may be grown from seed. Roots should not be dug until ready for use, as they decay readily.

carthaginénsis. Tree or tree-like, to 20 ft., with fleshy roots: lvs. to 5 in. long, 5–7-lobed, some of the lobes fiddle-shaped, lyrate or pinnatifid. Tex., Lower Calif. to N. S. Amer.

dúlcis. Differs from *M. esculenta* in lvs. sometimes as much as 13-lobed, fr. cylindrical and not winged. S. Amer.—Has tuberous edible roots.

esculénta (*M. utilissima. Jatropha Manihot*). CASSAVA. MANIOC. TAPIOCA-PLANT. Shrub to 9 ft., with long tuberous edible roots: lvs. usually digitately parted into 3–7 lobes: fr. ½ in. across, 6-angled and narrowly winged. Brazil.—Of great importance in many countries as a food plant.

Glaziòvii. Tree to 40 ft.: lvs. peltate, deeply 3–5-lobed into entire lobes to 4 in. long: caps. not wing-angled. S. Brazil.

utilíssima: *M. esculenta.*

MANIOC: *Manihot esculenta.*

MAN-ROOT: *Echinocystis oregana.*

MANULÈA. *Scrophulariaceæ.* S. African or trop. African ann. or per. herbs or subshrubs with mostly opposite entire or dentate lvs. or sometimes all radical, tubular fls. with 5-lobed limb borne in spikes, racemes or panicles, and capsular frs. Confusion exists between the genera Chænostoma, Manulea and Sutera and their interpretation.

violàcea. Ann. to 1 ft.: lvs. ovate to oblong, to 1 in. long, toothed: fls. violet, ½ in. long. S. Afr.—The proper name of this plant may be *M. antirrhinoides.*

MANZANITA: *Arctostaphylos.*

MAPLE: *Acer.* **Flowering:** *Abutilon.*

MAPLEWORT: *Aceranthus diphyllus.*

MARAH: *Echinocystis.*

MARÁNTA. *Marantaceæ.* Attractive per. herbs native in trop. Amer. having basal and st.-lvs. sheathing at base and fls. in panicles or branched racemes; grown for the ornamental foliage and one species for the roots which furnish arrowroot and tapioca. Cult. as for *Calathea*, from which the genus differs in technical not obvious characters. Most of the plants grown as marantas are calatheas.

arundinàcea. ARROWROOT. To 6 ft., having starchy roots: lvs. to 1 ft. long and 4 in. across: fls. white. Trop. Amer. Var. **variegàta** has lvs. variegated with yellow, and var. **aùrea** may not be different.

bélla: *Calathea bella.*

bícolor (*Calathea bicolor*). To 15 in., tuber-bearing: lvs. to 6 in. long and 4 in. broad, wavy-margined, glaucous above spotted with brown and with light central stripe, light purple beneath: fls. white spotted and striped with violet. Brazil, Guiana.

Binòtii: *Calathea zebrina* var.

Chantrièri: *Calathea Chantrieri.*

Clòsonii. Lvs. dark green variegated with pale yellow. Brazil.—Botanical position uncertain.

conspícua: *Calathea Lietzei.*

exímia: *Calathea eximia.*

fasciàta: *Calathea fasciata.*

Goùletii: *Calathea Vandenheckei.*

Goveniàna. Lvs. light green with dark markings. Botanical position uncertain.

illústris: *Calathea illustris.*

insígnis: *Calathea insignis.*

Kegeliàna: *Calathea Bachemiana.*

Kerchoveàna: *M. leuconeura* var.

Kummeriàna: *Ctenanthe Kummeriana.*

Legrelliàna: *Calathea Legrelliana.*

leopardìna: *Calathea leopardina.*

leuconeùra. To 1 ft.: lvs. to 7 in. long and 3½ in. wide, light green above with white along midrib and veins and spotted toward margins, purple or glaucous beneath: fls. white striped purple. Brazil. Var. **Kerchoveàna** has larger lvs. glaucous or spotted with red beneath. Var. **Massangeàna** has smaller lvs. purple beneath.

Liètzei: *Calathea Lietzei.*

Líndenii: *Calathea Lindeniana.*

Louìsæ: *Calathea Louisæ.*

Lúbbersi: *Ctenanthe Lubbersiana.*

Luciàna: *Calathea Luciana.*

Makoyàna: *Calathea Makoyana.*

Massangeàna: *M. leuconeura* var.

mìcans: *Calathea micans.*

Móssellii: hort. name.

musàica: *Calathea musaica.*

Oppenheimiàna: *Ctenanthe Oppenheimiana.*

Porteàna: *Stromanthe Porteana.*

prínceps: *Calathea princeps.*

pulchélla: *Calathea pulchella.*

regàlis: a hort. variant of *Calathea ornata.*

ròseo-lineàta: probably a cult. form of *Calathea ornata.*

ròseo-pícta: *Calathea roseo-picta.*

Sanderiàna: probably a variant of *Calathea ornata.*

smarágdina: *Monotagma smaragdinum.*

spléndida: *Calathea splendida.*

tubispàtha: *Calathea Pavonii.*

undulàta: *Calathea undulata.*

Vandenhéckii: *Calathea Vandenheckei.*

Veitchiàna: *Calathea Veitchiana.*

vittàta: *Calathea vittata.*

Wállisii: *Calathea Wallisii.*

Warscewíczii: *Calathea Warscewiczii.*

zebrìna: *Calathea zebrina.*

MARANTÀCEÆ. Maranta Family. Per. monocotyledonous herbs having tubers or rootstocks, forming clumps or colonies, mostly large sheathing lvs. and bisexual irregular fls. in clusters surrounded by spathe-like bracts, composed of 3 free sepals, 3 united petals, 1 fertile stamen and 5 petal-like sterile stamens or staminodia, inferior 1–3-celled ovary, and fr. a caps. or berry. A few genera are grown for the ornamental foliage, and tapioca is obtained from the root of one species of Maranta. The cult. genera are Calathea, Ctenanthe, Maranta, Monotagma, Stromanthe, Thalia. They are well-known greenhouse subjects.

MARÁTTIA. *Marattiaceæ.* Trop. ferns with thick rootstocks and large 2–3-pinnate fronds; sori near margins of segms. Sometimes seen in greenhouse collections. For cult. see *Ferns.*

attenuàta. Fronds to 4 ft. long, on stipes to 4 ft. long, 3-pinnate, segms. to 6 in. long. New Caledonia.

Doúglasii. Fronds dark green, glossy, to 8 ft. long, on stipes to 5 ft. long, 3-pinnate, segms. ovate or oblong, to 1 in. long, toothed. Hawaiian Isls.

erécta: probably *Angiopteris evecta.*

fraxínea. Fronds dark green and glossy, to 15 ft. long, on stipes to 2 ft. long, 2-pinnate, the thick fine-toothed lfts. to 6 in. long. S. Afr., Malaya, New Zeal.

pruinòsa: probably *Angiopteris pruinosa.*

MARATTIÀCEÆ. Marattia Family. Seven genera of trop. ferns with large mostly pinnate fronds and sori separated or united on under side of lvs. Angiopteris and Marattia are grown in greenhouse collections.

MARCGRAVIA PARADOXA: *Monstera dubia.*

MARCHÁNTIA. *Marchantiaceæ.* A liverwort (cryptogam), **M. polymórpha,** offered for colonizing in rock-gardens. The leaf-like flat thallus is 4–5 in. long and 1 in. wide. A frequent plant in moist places, of wide distribution.

MARGOSA: *Melia Azadirachta.*

MARGUERITE: *Chrysanthemum frutescens.* **Blue:** *Felicia amelloides.* **Golden:** *Anthemis tinctoria.*

MARGYRICÁRPUS. *Rosaceæ.* Evergreen shrubs native in the Andes and suitable for the rock-garden but not hardy in northern states: lvs. alternate, pinnate, the rachis spiny: fls. inconspicuous, without petals: fr. a berry or achene.

setòsus. Pearl-Fruit. Prostrate, branches to 1 ft. high: lvs. 1 in. or less long, the lfts., linear and revolute at margins: fr. a white berry about ⅕ in. across. Ecuador to Patagonia.

MARIA: *Calophyllum antillarum.*

MARICA: *Cipura* and *Neomarica.*

MARIGOLD: *Tagetes.* **Bur-:** *Bidens.* **Cape-:** *Dimorphotheca.* **Corn-:** *Chrysanthemum segetum.* **Fig-:** *Mesembryanthemum.* **Marsh-:** *Caltha palustris.* **Pot-:** *Calendula officinalis.*

MARIJUANA: see *Cannabis.*

MARJORAM: *Origanum, Majorana.*

MARKET-GARDENING, as now prevailingly understood, is the raising of vegetables and perhaps small-fruits and other garden products for a market within driving distance. Truck-gardening or trucking is now defined to be the growing of a few products, as sweet potatoes, kale, spinach, in larger areas and on cheaper land so far from market as to require shipping facilities by rail or boat; yet the term truck-gardening was at first the same as market-gardening, denoting the raising of products that were hauled to market on trucks or wagons. There is no sharp line of demarcation between market-gardening and truck-gardening; but they are well set off from home-gardening, in which the garden is a scene of personal satisfactions and the products are intended for the family table.

MARKHÀMIA. *Bignoniaceæ.* Trop. African and Asiatic trees and shrubs with large persistent pinnately compound lvs. and tubular-funnelform fls. in large terminal or axillary panicles, usually yellow with red or purple stripes within and a spathe-like calyx splitting down one side: fr. a linear loculicidally dehiscent caps.

lùtea. Shrub or tree to 20 ft.: lvs. to 20 in. long, lfts. 7–11, ovate to elliptic-obovate, to 7½ in. long, stalked: fls. yellow, to 2¼ in. long, stamens 4, included: caps. curved, to 22 in. long, seeds winged at the ends, to 1¼ in. long. Upper Guiana, Afr.—Planted in S. Fla.

MARLBERRY: *Ardisia paniculata.*

MARMALADE-BOX: *Genipa americana.* **-Plum:** *Achras Zapota.*

MARRAM: *Ammophila arenaria.*

MARRÙBIUM. Hoarhound. Horehound. *Labiatæ.* Ann. and per. herbs, mostly silky or woolly, the lvs. wrinkled and toothed or cut; fls. small, 2-lipped, purplish or white, in many-fld. axillary whorls; one species is extensively used in confections and medicines, and a few others occasionally planted.

Propagated by division or by seeds sown in early spring; the latter method should give good plants for cutting the following year.

candidíssimum. Differs from *M. vulgare* chiefly in the stiff spreading rather than recurved calyx-teeth. S. Eu.

catariæfòlium. Ann. to 1 ft., pubescent: lvs. oblong, to ¾ in. long: fls. rose. Caucasus.

libanóticum. Much branched per. to 1 ft., yellow-tomentose: lvs. oval or orbicular, to ½ in. long: fls. pale pink. Asia Minor.

vulgàre. COMMON H. Aromatic per. to 3 ft., white-woolly: lvs. ovate, to 2 in. long: fls. whitish, in summer. Eu., Asia; nat. in N. Amer.—An old-time sweet herb.

MARSDÈNIA. *Asclepiadaceæ.* Shrubs, upright or twining, of warm and trop. regions in Old and New Worlds, one of which is sometimes planted for ornament and hardy N.: lvs. opposite: fls. mostly small, paniculate or umbellate; corolla bell-, urn- or salver-shaped, with 5 scaly crown-lobes: follicles thick, often fleshy.

erécta (*Cynanchum erectum*). Erect more or less twining deciduous shrub, or the branches sometimes lopping: lvs. broad-ovate, 2–3 in. long, short-acuminate, base truncate or cordate: fls. white, fragrant, about ¼ in. across, mostly in axillary clusters. S. E. Eu. and W. Asia.

MARSHÁLLIA. *Compositæ.* Per. tufted herbs of N. Amer., with entire lvs. and solitary long-stalked heads of purple, pink or white disk-fls.; pappus of scales; no close relatives in general cult.

cæspitòsa. To 15 in.: lvs. mostly basal, linear, to 4 in. long: heads 1 in. across, pink or white, bracts of involucre acute. Mo. to Tex.

grandiflòra. To 2 ft., rarely to 3 ft.: lvs. elliptic-spatulate, acute, to 7 in. long, the upper ones linear-elliptic: heads to 1 in. across, the florets to ¾ in. long, involucral bracts obovate. Pa. to N. C.

trinérvia. To 2½ ft., usually less: lvs. mostly basal, spatulate-elliptic, obtuse, to 5 in. long: heads about ¾ in. across or less, florets to ⅓ in. long, involucral bracts ovate-lanceolate, strongly ribbed. Va. to Ala.

MARSÍLEA. PEPPERWORT. WATER-CLOVER. *Marsileaceæ.* Aquatic or paludose herbs with 4-parted clover-like floating lvs.; widely distributed.

Propagated by pieces of the runners. *M. Drummondii* requires moderate greenhouse temperature if grown in the North.

Drúmmondii. Lfts. covered with whitish hairs, wavy-margined. W. Australia.

quadrifòlia. Lfts. glabrous, entire. Eu., Asia, and nat. in U. S.; likely to become a pest in ponds.

MARSILEÀCEÆ. MARSILEA FAMILY. Three genera of per. herbs rooting in mud of ponds and ditches, having 2–4-parted or thread-like long-petioled lvs. and spores borne in bodies known as sporocarps. Marsilea is grown in ponds and tanks. The family is classified with the ferns.

MARTINEZIA: *Aiphanes.*

MARTÝNIA. *Martyniaceæ.* A monotypic genus allied to Proboscidea, differing in sepals fused marginally into a spathe-like calyx and fertile anthers 2, not 4. **M. ánnua,** of wide distribution throughout Mex., Cent. Amer. W. Indies, India to Malasia. Herbaceous ann. to 10 ft. high, becoming woody at maturity, clammy and sticky-hairy especially when young: lvs. opposite, broadly ovate to deltoid, blade to 15 in. long, with petiole about 1 ft. long, palmately veined, coarsely dentate: fls. cream-white to reddish-purple, usually yellow spotted and blotched purplish, campanulate, to 1¾ in. long, in racemes of 10–20: fr. to 1½ in. long, ovoid, 8-ribbed, horns shorter than body.—For cult. and other names see *Proboscidea.*

MARTYNIÀCEÆ. MARTYNIA FAMILY. American sticky-hairy more or less succulent herbs of 5 genera in the latest monographic treatment, with opposite or alternate lvs., irregular gamopetalous fls. having 5-lobed corolla-limb, usually 4 stamens, superior 1-celled ovary, and fr. a curved long-beaked caps. Ibicella, Martynia and Proboscidea are grown in N. Amer. for ornament and curiosity, and the frs. for food.

MARVEL-OF-PERU: *Mirabilis Jalapa.*

MASCARENHÀSIA. *Apocynaceæ.* Shrubs or small trees of Afr. and Madagascar, one planted experimentally as a source of rubber: lvs. opposite: fls. pink or purple, salverform, solitary or clustered: fr. of 2 linear follicles.

elástica. Tall tree: lvs. oblong, to 10 in. long: fls. ½ in. long, in few-fld. cymes: fr. purplish-black, to 3½ in. long. Trop. Afr.

MASDEVÁLLIA. *Orchidaceæ.* Epiphytic or terrestrial orchids native in trop. Amer., without pseudobulbs but with very short sts.; fls. mostly solitary but sometimes 8 in a raceme, the sepals united and the lobes often prolonged into long tails, the petals small, lip small and attached to base of column. They require coolhouse treatment, with frequent watering; see *Orchids.*

bélla. Lvs. to 9 in. long: infl. 1-fld., shorter than the lf.; fls. large, pale yellow spotted with brownish-crimson, with tails to 4 in. long. May–July, Nov. Colombia.

Chimæra. Lvs. to 9 in. long: infl. 1–5-fld.; fls. large, successive, brownish-yellow spotted with brownish-purple, the tails to about 7 in. long. Jan.–Sept. Colombia.

coccínea (*M. Harryana*). Lvs. to 10 in. long: fls. solitary, violet-red, the dorsal sepal prolonged into a tail; petals and lip white. Apr.–June. Colombia.

coriàcea. Lvs. very leathery, to 8 in. long: fls. solitary, greenish-white spotted along nerves with crimson, all sepals with short tails. Dec., July. Colombia.

Harryàna: *M. coccinea.*

Houtteàna. Lvs. to 10 in. long: scapes to 5 in. long; fls. solitary, cream-white spotted with purple, with long reddish-purple tails. Colombia.

ígnea: *M. militaris.*

macrùra. Lvs. to 1 ft. long: fls. solitary, on stalks to 1 ft. high, brownish-yellow spotted with purple, with yellow tails to 4¾ in. long. Dec.–June. Colombia.

militàris (*M. ignea*). Lf. to 10½ in. long: scape 1-fld.; fls. orange to scarlet, dorsal sepal extended into a long tail. Feb.–June. Colombia.

Reichenbachiàna. Lvs. to 6 in. long: scapes to 7 in. high, 1–4-fld.; fls. dark red outside, pale yellow or whitish striped with reddish nerves inside, with recurved tails about 1½ in. long. Apr.–July, Dec. Costa Rica.

Schlímii. Lvs. to 1 ft. long: scapes longer than lvs., 3–8-fld.; fls. yellow densely spotted with reddish-brown, with yellow tails to 2½ in. long. Jan.–Mar., Aug. Venezuela, Colombia.

tovarénsis. Lvs. to 6 in. long: scapes equalling or surpassing lvs., 2–5-fld.; fls. white, with tails to 1¾ in. long. Nov.–Dec. Venezuela.

Veitchiàna. Lvs. to 10 in. long: scapes to 1½ ft. tall, 1–2-fld.; fls. large and showy, orange-red, closely studded with purple hairs, with short tails. May–July. Peru.

MASK-FLOWER: *Alonsoa.*

MASTERWORT: *Astrantia.*

MASTIC-TREE, PERUVIAN: *Schinus Molle.*

MATAI: *Podocarpus spicata.*

MATCHWEED: *Gutierrezia Sarothræ.*

MATHÌOLA. *Cruciferæ.* Ann. and per., or subshrubs, grayish-pubescent, two in cult. for ornament under the name of stocks, native mostly in Medit. region: lvs. long, entire or sinuate or pinnatifid: fls. lilac, purple, to white, in terminal racemes: fr. long narrow pods or siliques.

bicórnis. EVENING STOCK. PERFUME-PLANT. Ann., low and much branched: lvs. lanceolate or narrower, to 3½ in. long, entire or only small toothed: fls. scattered, lilac or purple, very fragrant at evening and closed by day, about ¾ in. long. S. E. Eu., Asia.

incàna. Stock. Brampton Stock. Gilliflower. Bien. or per., stiffly erect, to 2½ ft.: lvs. oblong to oblanceolate, to 4 in. long: fls. in terminal racemes, about 1 in. long, purple or reddish varying to white, blush and yellowish, fragrant, often full double. S. Eu., nat. in S. Calif. Var. **ánnua,** Ten Weeks Stock, is ann. or so grown, blooming earlier. See *Stock.*

MATRICÀRIA (incl. *Chamomilla*). Matricary. *Compositæ.* Herbs with finely dissected foliage, ann., bien., per., often strongly scented, disk-fls. yellow, ray-fls. white or sometimes wanting, the center or receptacle very high or conical; pappus none; native in S. Afr., Medit. region and Orient, a few cult. as ornamentals. The distinctions between Matricaria and Chrysanthemum are technical and are not clear. Matricarias require only the usual treatment for annuals and perennials, indicated under *Chrysanthemum.*

álba: *Chrysanthemum Parthenium.*

aùrea (*Cotula aurea*). Ann., erect, to 12 in.: lvs. finely pinnatisect: heads globular, about ⅜ in. across, dull yellow, on long peduncles. Spain, N. Afr., Caucasus.—Sometimes raised in flower-garden.

capénsis: *Chrysanthemum Parthenium.*

Chamomílla. Sweet False Chamomile. Ann. to 2 ft., glabrous, much branched: lvs. 2–3-pinnate into linear segms.: heads 1 in. across, with 10–20 white rays. Eu., N. Asia; escaped in E. U. S.

discoídea: *M. matricarioides.*

exímia: *Chrysanthemum Parthenium.*

grandiflòra of hort.: *M. inodora* var. *plenissima.*

inodòra (*Chrysanthemum* and *Pyrethrum inodorum*). Scentless False Chamomile. Ann. to 2 ft., diffusely branching, glabrous, scarcely scented: lvs. 2–3-pinnate into linear segms.: heads 1½ in. across, with 20–30 white rays. Eu. Var. **pleníssima** (*M. grandiflora*) has very double heads, sometimes known as "Bridal-Rose."

matricarioìdes (*M. discoidea*). Ann. to 1½ ft.: lvs. 2–3-pinnate into linear segms.: heads ⅛ in. across, without ray-fls. N. Amer.

nàna: hort. name.

oreàdes. Per., pubescent, sts. ascending: lvs. oblong, bipinnatisect, segms. linear, acute: heads to 1½ in. across, ray-fls. white. Syria.

parthenoìdes: *Chrysanthemum Parthenium.*

Tchihátchewii (*Chrysanthemum* and *Chamæmelum Tchihatchewii*). Turfing Daisy. Mat-forming per., sending up sts. 6–12 in. high terminated by white-rayed attractive daisy-like heads 1 in. or less across: lvs. finely cut. Asia Minor.

MATRIMONY-VINE: *Lycium.*

MATTEUCCIA: *Pteretis.*

MATUCÀNA. *Cactaceæ.* One species, from Peru, **M. Hàynei.** St. globose to cylindrical, to 6 in. tall and 4 in. diam., covered with spines; ribs 25–30, low, tubercled; spines 30–50, radial, to 1⅜ in. long, stiff, needle-like, spreading irregularly, white to gray: fls. orange-red with violet margin, to 2½ in. across, stamens pink, stigma 4-lobed, yellow.

MAURÁNDIA. *Scrophulariaceæ.* Bright-flowered per. herbs mostly climbing by means of coiling petioles, with axillary showy irregular trumpet-shaped fls. in white, rose, purple and blue, and triangular or halberd-shaped lvs.; Mex. and adjacent U. S.

Maurandias flower freely in winter in a cool greenhouse, but if the seed is sown early they bloom the first summer and may then be used in baskets or vases in the open. For seed sowing, a soil of 4 parts new loam, 2 parts leaf-mold, 1 part sand may be employed; cover with glass and keep at a temperature of 60°. Under glass maurandias may also be propagated from cuttings taken any time after the middle of January.

álba: probably a color form of *M. Barclaiana.*

antirrhiniflòra (*Antirrhinum antirriniflorum* and *A. maurandioides*). Plant glabrous: lvs. arrow- or halberd-shaped, to 1¾ in. long: fls. purple or white, to 1 in. long, the sepals lanceolate. Tex., Calif., Mex.; now widely spread.

Barclaiàna. Lvs. glabrous, halberd-shaped, entire, about 1 in. long, the petioles long and twining: fls. 1½ in. long, purple-downy outside, the sepals glandular-hairy and long-attenuate. Mex.

erubéscens. Plant glandular-hairy: lvs. triangular, toothed, 3 in. and more long: fls. rose-red, 3 in. long, the sepals broad and leafy, to 1 in. long, corolla-lobes obtuse or notched. Mex.—Commonly grown under the name *M. scandens.*

Lophospérmum (*Lophospermum scandens*). Often confused with *M. erubescens* but the corolla-tube straight rather than ventricose and glabrous outside, the lobes more acute, the sepals oblong and attenuated. Mex.—Infrequent. Most of the material cult. as *M. scandens* is *M. erubescens.*

purpùrea grandiflòra: probably a color form of *M. Barclaiana.*

Púrpusii. To 2 ft., lopping but not climbing, slightly pubescent, the rootstock tuberous: lvs. arrow-shaped, to 2 in. long, slightly toothed or entire: fls. violet, 2 in. long; sepals broad-ovate, purplish, ½ in. long. Mex.

scándens. Plant glabrous: lvs. arrow-shaped, to 1½ in. long: fls. purple, 1 in. long; sepals lanceolate, about half length of corolla-tube. Mex.—The plant commonly cult. as *M. scandens* is *M. erubescens.*

MAXILLÀRIA. *Orchidaceæ.* Epiphytes native in trop. Amer., usually with pseudobulbs clustered or on elongate sts., and small or large mostly dull colored sometimes fragrant solitary fls., the lateral sepals united to foot of column forming a chin, the lip mostly 3-lobed. Grown after the manner of Lycaste; see *Orchids.*

Cólleyi: *Xylobium Colleyi.*

dénsa: *Ornithidium densum.*

grandiflòra. Pseudobulbs 1-lvd., to 3 in. high: fls. 4–6 in. across, among the largest of the genus; sepals and petals milk-white; lip buff-yellow, side lobes streaked with wine-purple. Peru, Ecuador.

Houtteàna. Rhizome creeping: pseudobulbs to 3 in. long, 1-lvd.: lf. to about 10 in. long and ⅞ in. wide: fls. nearly 2 in. across; sepals and petals red-purple or cinnamon with narrow yellow margins within; lip golden-yellow spotted with red-brown or purple. Dec.–May. Mex., Guatemala.

hyacínthina: *Xylobium hyacinthinum.*

lùteo-álba. Pseudobulbs clustered, 1-lvd.: lf. to 20 in. long: fls. large, fragrant; sepals and petals brownish-yellow, whitish at base; lip white with purple-streaked side lobes and yellow in center of mid-lobe. Feb.–June. Venezuela.

pícta. Pseudobulbs clustered, with 2 lvs. to 15 in. long: fls. to 2¾ in. across; sepals and petals orange- or brown-yellow spotted with purple within, whitish spotted with purple without; lip white or cream-color spotted with purple. Oct.–Aug. Brazil.

porphyrostèle. Pseudobulbs clustered, to about 1¼ in. high, with 2 lvs. to 8 in. long and ½ in. wide: fls. about 1¼ in. across, yellow with purple median stripe on petals and purple streaks on side lobes of lip. Feb. Brazil.

ruféscens. Pseudobulbs clustered, up to 2 in. high, with 1 lf. to 13¾ in long and 1½ in. wide: fls. small, fragrant; sepals brownish-yellow or reddish-brown; petals yellow; lip yellow with red spots. Sept.–June. Cent. Amer., W. Indies, S. Amer.

Sanderiàna. Pseudobulbs clustered, to 2 in. long, with 1 lf. to 23½ in. long and 2¼ in. wide: fls. large, nodding, to about 6 in. across; sepals and petals white blotched with purple at base; lip dark purple near base, cream-color to yellow above. May–July, Oct.–Dec. Ecuador, Peru.

sanguínea. Rhizome more or less elongate: pseudobulbs ellipsoid-oblong, to 1 in. long, often subcompressed, 1-lvd.: lf. narrowly linear, to 15 in. long and scarcely ⅛ in. wide, acute: sepals dull reddish-brown, oblong, to ¾ in. long; petals pale yellow with reddish-brown spots and blotches; lip carmine to purple-crimson with darker crest. Cent. Amer.

setígera. Pseudobulbs clustered, up to 2 in. high, with 1 lf. nearly 1 ft. long: fls. large, fragrant; sepals and petals milk-white with light yellow upper part; lip white with purple streaked side lobes and large yellow patch on mid-lobe. July. Colombia, Venezuela.

tenuifòlia. Rhizome creeping: pseudobulbs to 2 in. long, with 1 linear lf. to about 2 ft. long and ¼ in. wide: fls. small, to 2 in. across; sepals and petals dark red speckled with yellow; lip red in lower half, yellow with red spots above. Feb.–June, Dec. Cent. Amer.

variábilis. Rhizome creeping: pseudobulbs to 1½ in. long, with 1 lf. to 9¼ in. long and ⅞ in. wide: fls. small; sepals and petals dull- or bronzy-yellow; lip purple at base, yellow above. Blooming all year. Cent. Amer.

venústa. Pseudobulbs clustered, to 3 in. long, with 1 lf. to 15 in. long: fls. 5–6½ in. across, white; lip short, yellow bordered with red. Colombia, Venezuela.

MAXIMILIANEA: *Cochlospermum.*

MAYBERRY: *Rubus palmatus.*

MAYENIA: *Thunbergia erecta.*

MAYFLOWER: *Epigæa repens.*

MAYPOP: *Passiflora incarnata.*

MAYTÈNUS. *Celastraceæ.* Evergreen trees and shrubs bearing alternate simple leathery lvs., small polygamous fls., and leathery capsular fr.; grown for ornament in warm climates. Propagated by seeds or suckers.

Boària. Mayten. Tree to 25 ft. and more: lvs. lanceolate, to 2 in. long, finely toothed: fls. greenish, in axillary clusters: seeds with scarlet aril. Chile.

MÀZUS. *Scrophulariaceæ.* Mat-forming herbs grown as ground-cover or in rock-gardens: lvs. toothed or cut: fls. blue or white, short-tubular, 2-lipped, in terminal more or less one-sided racemes; native in Asia, Australia and Malaya. Increased by division or seeds, and of simple requirements.

japónicus (*M. rugosus*). Trailing per., fl.-sts. to 1 ft. high: lvs. obovate, to 2½ in. long, coarsely toothed: fls. to ¾ in. long, blue, the ridges of the lower lip brown-spotted and bearded with club-shaped hairs. E. Asia.

Pumílio. Per. with creeping underground sts.: lvs. obovate, to 3 in. long, entire or coarsely toothed: fls. white or bluish with yellow center, to ⅓ in. long. New Zeal., Australia.

radìcans. Creeping per. to 3 in., sts. stout, rooting at nodes: lvs. obovate, often narrowly so, to 2 in. long, obtuse, usually pilose, petioled, mostly entire: fls. white with yellow center, to ¾ in. long, 1–3 on terminal peduncles. New Zeal.

rèpens: *M. reptans.*

réptans. Tufted per. to 2 in., the sts. rooting at nodes: lvs. lanceolate to elliptic, to 1 in. long, coarsely toothed: fls. purplish-blue, lower lip spotted white, yellow and purple, to ¾ in. long. Probably Himalayas.—Material in the trade as *M. rugosus* probably belongs to this species.

rugòsus: *M. japonicus.*

stolonífera. Spreading per. to 3 in., sts. prostrate and said to root at nodes: lvs. spatulate, tapering into somewhat winged petiole, to 1½ in. long, margins with 3–5 coarse sharp serrations: fls. to ¼ in. long, lower lobes rounded, upper ones acute. Japan.

MEADOW-BEAUTY: *Rhexia.* **-Foam:** *Limnanthes Douglasii.* **-Rue:** *Thalictrum.*

MEADOWSWEET: *Filipendula, Spiræa alba.*

MECONÉLLA. *Papaveraceæ.* Ann. herbs with opposite or basal entire lvs. and solitary fls. with deciduous petals; allied to Platystemon.

lineàris. To 8 in.: lvs. basal, linear, to 2¼ in. long: fls. light yellow, to ¾ in. long. Calif., Ore. Var. **pulchéllum** has outer petals yellow and inner white.

MECONÓPSIS. *Papaveraceæ.* Per. and bien. poppy-like herbs with yellow juice, entire, lobed or dissected lvs. and yellow, reddish or blue fls. solitary or in racemes or panicles; grown in the flower- and rock-garden.

The plants are hardy or semi-hardy, but different species require special treatment. In general they require a soil sufficiently well drained to be dry during the winter and yet moist during the growing season. A mixture of equal parts of leaf-mold, granulated peat and sharp coarse sand to a depth of one foot or more is sometimes recommended. They should be planted in a somewhat shaded situation where they are protected from excessive summer heat and strong winds. The plants are deep-rooted and long-lived and are best not disturbed after becoming established. They are best grown from seed.

Bàileyi: *M. betonicifolia* var.

bélla. Stemless per.: lvs. pinnately cut, to 4 in. long: fls. pale blue, to 2 in. across, solitary on scapes to 3 in. high. Himalayas.

betonicifòlia (*Cathcartia betonicifolia. M. betonicifolia* var. *Franchetii*). To 6 ft.: lvs. ovate to oblong, to 6 in. long, cut-toothed or nearly lobed, glaucous beneath: fls. blue-violet or purple, about 2 in. across, in cymes. China. Var. **Bàileyi** (*M. Baileyi*) differs only in having ovary covered with yellowish bristles rather than glabrous.

cámbrica. Welch-Poppy. Per. to 1½ ft.: lvs. pinnate, to 6 in. long, glaucous beneath: fls. pale yellow, to 3 in. across, solitary. W. Eu. Var. **flòre-plèno** has double fls. Var. **aurantiàca,** fls. orange.

Dhwòjii. To 2 ft.: lvs. pinnatifid, to 1 ft. long, bristly on both surfaces: fls. yellow, on axillary branches, to 3 in. across. Nepal.—A woodland plant requiring well-drained soil, especially at surface, and full shade.

grándis. Per. to 3 ft.: lvs. entire or coarsely toothed, to 7 in. long: fls. brown-purple, to 5 in. across, in 3-fld. cymes. Himalayas.

heterophýlla: *Stylomecon heterophylla.*

horrídula (*M. Prattii. M. rigidiuscula. M. rudis*). Bien. to 5 ft.: lvs. elliptic to linear-oblong, to 10 in. long, entire or irregularly lobed, covered with yellow or purple spines: fls. light blue or claret-colored, rarely white, solitary in axils of lvs. Cent. Asia.

integrifòlia. Yellow Chinese-Poppy. Bien. to 3 ft.: lvs. linear-lanceolate, entire, to 8 in. long: fls. yellow, to 6 in. across, in 3–7-fld. cymes. Cent. Asia. Var. **máxima** is listed as a large form.

latifòlia. To 3½ ft.: lvs. entire, oblong to broadly lanceolate, to 8 in. long, margin pinnate to crenulate, covered on both surfaces with spines: fls. pale blue to white, to nearly 3 in. across. Kashmir.—Adapted to rock-garden, in gritty soil and partial shade.

napaulénsis (*M. Wallichii*). Satin-Poppy. Per. to 6 ft.: lvs. pinnately cut: fls. pale blue, satiny, to 2 in. across, in panicled cymes. Cent. Asia.

paniculàta. Per. to 5 ft.: lvs. lobed or toothed, rarely pinnately cut, to 1½ ft. long: fls. yellow, 2 in. across, in racemes to 2 ft. long. Cent. Asia.

Práttii: *M. horridula.*

quintuplinérvia. Harebell-Poppy. To 1 ft.: lvs. obovate to lanceolate, to 10 in. long, in basal rosettes, usually 3–5 longitudinal nerves, both surfaces bristly: fls. lavender-blue to purplish, to 3½ in. across. N. E. Tibet.—Adapted to stony ledges of rock-garden in stony scree.

règia. Bien. to 2 ft.: lvs. to 16 in. long and 3½ in. wide, toothed, hairy: fls. yellow, to 3 in. across. Himalayas.

rigidiúscula: *M. horridula.*

rùdis: *M. horridula.*

simplicifòlia. Per. to 2 ft.: lvs. usually entire, to 8 in. long: fls. purple or blue, nodding, to 3 in. across, solitary. Cent. Asia.

sinuàta. Ann. or bien. to 2 ft.: lvs. irregularly lobed, to 7 in. long: fls. pale bluish-purple, to 3 in. across, in raceme-like cymes. Cent. Asia. Var. **latifòlia** is *M. latifolia.*

supérba. To 3½ ft.: lvs. oblanceolate to ovate, to 16 in. long, basal lvs. with petiole to 2 in. long, upper cauline lvs. sessile, basal lvs. persistent in rosette: fls. white, to 5½ in. across, single in axils of upper lvs. on pedicels to nearly 5 in. long. Tibet.—Suited to woodland planting with good drainage especially at crown; shade.

villòsa (*Cathcartia villosa*). To 2 ft., tomentose: basal lvs. cordate-ovate, 3–5-lobed and the lobes cut, long-stalked: fls. yellow, 2 in. across, in cymes: caps. to 2½ in. long. Himalayas.

violàcea. To 6 ft.: lvs. to nearly 10 in. long, pinnatifid with lanceolate segms., basal lvs. with petiole to 3 in. long, in dense rosette, upper cauline lvs. smaller and sessile: fls. bluish-violet to purple, to 3½ in. across, on 2½ in. pedicels, single on lf. axils, anthers orange. Burma and Tibet.—Moist shaded woodland.

Wállichii: *M. napaulensis.*

MEDÈOLA. *Liliaceæ.* One per. herb with tuberous root which is sometimes eaten, native in E. N. Amer. **M. virginiàna.** Indian Cucumber-Root. To 2 ft. or more: lvs. in two whorls, to 5 in. long and 2 in. wide: fls. small, greenish-yellow, in a terminal umbel, the perianth-segms. distinct: berries dark purple. *M. asparagoides* and *M. myrtifolia* are *Asparagus asparagoides.*

MEDICÀGO. Medick. *Leguminosæ.* Ann. and per. herbs or rarely shrubs with lvs. of 3 small lfts., small papilionaceous fls. in short axillary racemes or heads, and curved or spirally twisted pods; one species (*M. sativa*) is extensively grown for hay, and others are sometimes planted for forage or ornament.

Alfalfa should be grown on deep well-drained non-acid soil. Propagated by seeds sown in drills or broadcasted. The annual species grown for ornament and interest require no special handling.

arábica. Spotted Bur Clover. Ann.: fls. yellow: pods compactly coiled, spiny. Eu.; nat. in N. Amer.

arbòrea. Tree Alfalfa. To 8 ft.: fls. orange-yellow: pods spiral, not spiny. S. Eu.

aûrea: listed name, perhaps *M. arborea.*

denticulàta: *M. hispida.*

Echìnus. Calvary Clover. Ann.: fls. yellow: pods spiny. S. France.

híspida (*M. denticulata*). Toothed Bur Clover. Ann.: fls. yellow: pods loosely coiled, spiny. Eu., Asia; nat. in N. Amer.

intertéxta. Ann.: fls. yellow: pods coiled, spiny. Medit. region.

lupulìna. Hop Clover, Yellow Trefoil or Black M. Ann.: fls. yellow: pods curved, nearly glabrous. Eu., Asia.; nat. in N. Amer.

orbiculàris. Ann.: fls. yellow: pods spirally coiled, not spiny, glabrous. S. Eu. to W. Asia.

rigídula. Tifton Bur Clover. Ann., procumbent: fls. yellow: pods coiled, spiny, pubescent. Eu.

satìva. Alfalfa. Lucerne. Per.: fls. purplish: pods loosely spiral, pubescent, not spiny. Eu.; nat. in N. Amer.

scutellàta. Snail M. Ann.: fls. yellow: pods resembling a snail shell, not spiny. Eu.

MEDICK: *Medicago.*

MEDINÍLLA. *Melastomaceæ.* Trop. Old World shrubs with simple entire lvs., white or rose fls. in panicles or cymes, and fr. a berry crowned by the calyx-lobes; grown in hothouses.

The plants should be given plenty of light but shaded from the direct rays of the sun. Propagated by cuttings potted singly in a mixture of finely sifted peat and sand, kept close and fairly moist.

amábilis: *M. Teysmannii.*

magnífica. Striking evergreen when in bloom, with angled or winged sts.: lvs. ovate or ovate-oblong, sessile, to 1 ft. long: fls. coral-red, 1 in. across, in pendulous panicles to 1 ft. long and with great showy pinkish bracts. Philippines.—A striking plant, once frequent in greenhouses.

Téysmannii (*M. amabilis*). Sts. 4-winged: lvs. oblong, sessile, to 1 ft. long: fls. rose, to 2 in. across, in erect panicles without bracts. Celebes, New Guinea.

MEDIOCÁCTUS. *Cactaceæ.* Mostly or often epiphytic, with long procumbent usually 3-winged branches that bear aerial roots: fls. nocturnal, large, funnelform, the tube scaly: 2 species, S. Amer. See *Cacti.*

coccíneus (*Cereus coccineus. C. setaceus. C. Hassleri*). Usually climbing on trees or clambering over rocks, joints to 3 in. broad; spines commonly 2 or 3 or only 1, pinkish then brown or yellowish: fls. white, outer segms. green, to 1 ft. long. Brazil, Argentina.

MEDIOLOBÍVIA. *Cactaceæ.* A small genus of cespitose Argentinian cacti intermediate between Lobivia and Rebutia, resembling the former genus in shape and size of fls. which are yellow and self-sterile and the latter in the shape and coloration of the seeds.

aureiflòra (*Rebutia aureiflora*). Sts. dark green tinged reddish; tubercles in about 12–16 rows; radial spines 15–20, to ¼ in. long, white to tan; centrals 3–4, to ½ in. long: fls. golden-yellow with white throat, to 1½ in. across. Var. **longisèta** has spines bristly, golden-brown, to 1½ in. long, fls. tinged orange. Vars. **albispìna, brunispìna, leucolùtea** and **lilacinóstoma** are listed.

Boedekeriàna. Depressed-globose, gray-green; ribs about 14, tubercled; radial spines 11–12, short, bristly, white; central 1, shorter than radials: fls. pale orange with white throat, to 2 in. across.

Duursmaiàna (*Rebutia Duursmaiana*). Globose to subcylindrical, about 1⅝ in. diam., dark green tinged reddish; tubercles in about 15–17 rows, spiralled, the lower ones stout and tinged violet-black; radial spines about 10, to ⅛ in. long, bristly, white; central 1, slightly longer: fls. orange-yellow with white throat, about 1¼ in. diam.

élegans (*Rebutia elegans*). Globose, pale green; ribs many, in spirals; radial spines about 14, to ⅛ in. long, bristly, whitish-yellow; centrals 3–4, to nearly ¼ in. long, darker: fls. bright yellow. Var. **grácilis** is listed.

MEDLAR: *Mespilus germanica.*

MEDUSAS HEAD: *Euphorbia Caput-Medusæ.*

MEGACLINIUM: *Bulbophyllum falcatum.*

MEGAPTERIUM: *Œnothera.*

MEGASEA: *Bergenia.*

MEGOTIGEA: *Helicodiceros.*

MEIBOMIA: *Desmodium.*

MELALEÙCA. Bottle-Brush. *Myrtaceæ.* Shrubs and trees native in Australia, freely planted in Calif., and somewhat in Fla., with mostly alternate simple lvs., red, white or yellow fls. in spikes or heads, the long-exserted stamens making the infl. resemble a bottle-brush, and capsular frs. For cult. see *Callistemon,* from which Melaleuca differs in having the stamens united in bundles opposite the petals.

acuminàta. Lvs. mostly opposite, lanceolate, to ⅓ in. long, often pungent-pointed: fls. whitish, in lateral clusters.

álba: *M. armillaris.*

armillàris (*M. alba*). To 30 ft.: lvs. to ¾ in. long and 1/16 in. or less wide: fls. white, the spikes to 2 in. long.

decussàta. To 20 ft.: lvs. opposite, to ½ in. long and ⅛ in. wide: fls. lilac, the spikes to 1 in. long.

ellíptica. Lvs. opposite, oval, to ½ in. long, somewhat glaucous: fls. red, in spikes to 3 in. long.

ericifòlia. Shrub or tree: lvs. narrowly linear, ½ in. or less long: fls. yellowish-white, the spikes to 1 in. long.

genistifòlia. To 40 ft.: lvs. linear-lanceolate or lanceolate, flat, to ½ in. long, stiff: fls. white.

Huegèlii. To 6 ft.: lvs. ovate or ovate-lanceolate, to ¼ in. long, spirally overlapping: fls. white, the spikes to 5 in. long.

hypericifòlia. Tall shrub: lvs. mostly opposite, to 1½ in. long and ¼ in. wide: fls. rich red, the dense spikes 2–3 in. long.

imbricàta. Tall shrub or tree: lvs. linear, obtuse, punctate-dotted beneath, to 4 in. long and 1 in. across: fls. white, small. Australia.

incàna. Tall shrub: lvs. linear or lanceolate, to ½ in. long, crowded and spreading, usually hoary: fls. yellowish-white.

laterítia. Tall shrub: lvs. linear, to ¾ in. long: fls. scarlet, in spikes to 3 in. long.

Leucadéndra. Cajeput-Tree. Punk-Tree. Tree, bark shredding in broad strips: lvs. to 4 in. long and ¾ in. wide: fls. creamy-white, the spikes to 6 in. long. Name commonly but not originally spelled *Leucadendron.* A conspicuous tree.

linariifòlia. Tall tree: lvs. mostly opposite, to 1¼ in. long and ⅛ in. wide: fls. white, the spikes to 1½ in. long.

longícoma. Tall shrub: lvs. oblong-lanceolate, to 2 in. long: fls. rich red, in spikes to 2 in. long.

micromèria. Tall shrub: lvs. scale-like and overlapping, 1/24 in. long: fls. small, diœcious, in globular heads.

microphýlla. Shrub: lvs. linear, to ¼ in. long: fls. white.

nesóphila. To 8 ft.: lvs. to 1 in. long and ¼ in. wide: fls. pink or rose, in dense heads.

nodòsa. Shrub or small tree: lvs. linear, to 1 in. long, stiff and spiny-pointed: fls. pale yellow, in small heads.

parviflòra (*M. Preissiana*). Tall shrub or tree: lvs. lanceolate, to ½ in. long: fls. white or yellowish, the spikes to 2 in. long.

Preissiàna: *M. parviflora.*

rádula. Tall shrub: lvs. opposite, linear, to 2 in. long, the margins rolled in: fls. pink or white, in distant pairs.

rhaphiophýlla. To 50 ft.: lvs. narrow-linear, to 1 in. long, mostly cylindrical: fls. yellowish-white.

styphelioìdes. To 80 ft.: lvs. ovate, to ¾ in. long and

¼ in. wide, sometimes twisted: fls. creamy-white, the spikes to 2 in. long.

tenélla. To 4 ft.: lvs. narrow-linear, to ¼ in. long, scattered or in 3's: fls. white, small.

teretifòlia. Tall shrub: lvs. linear, to 2 in. long, cylindrical: fls. white, in sessile heads.

thymifòlia. To 2 ft.: lvs. mostly opposite, lanceolate to linear, to ½ in. long, stiff: fls. red.

Wílsonii. Tall shrub: lvs. opposite, linear, to ½ in. long: fls. red.

MELAMPÒDIUM. *Compositæ.* American small herbs or shrubs with opposite lvs. and heads of ray- and disk-fls.; pappus none; sometimes transplanted to the rock-garden.

cinèreum. Per. to 1 ft., gray- or silvery-pubescent: lvs. linear or lanceolate, entire or undulate, sometimes pinnatifid: rays white, to ½ in. long. Tex., N. Mex.

leucánthum. Per. to 1 ft., hairy: lvs. linear to spatulate, to 2 in. long, mostly entire: heads to ¾ in. across, rays white. Kans. to Colo. and Tex.

MELANDRIUM: *Lychnis, Silene.*

MELÁNTHIUM. Bunch-Flower. *Liliaceæ.* Per. herbs with stout rootstocks, mostly basal lvs. and monœcious or polygamous, greenish or white fls. borne in large terminal panicles, the perianth-segms. distinct; sometimes transplanted to the wild- or bog-garden.

latifòlium. Lvs. oblanceolate. Conn. to D. C.

virgínicum. Stout plant to 5 ft.: lvs. linear, to 1 ft. long: fls. greenish-yellow, ⅓ in. across, in long panicles to 1½ ft. long. June–Aug. R. I. to Fla. and Tex.

MELASPHÆRULA. *Iridaceæ.* A S. African cormous herb, grown like ixias. **M. gramínea.** To 2 ft.: lvs. in basal rosette, to 1 ft. long and ½ in. wide: fls. yellowish-green veined with purplish-black, ½ in. long, in loose panicles, the perianth-tube very short.

MELÁSTOMA. *Melastomaceæ.* Old World and Pacific trop. shrubs with opposite entire lvs., purple, rose or white fls. solitary or clustered at ends of branches, and fr. a berry. Grown in the greenhouse or out-of-doors in warm regions. Propagated by cuttings in spring over bottom-heat.

malabáricum: probably a catalogue error for *M. malabathricum.*

malabáthricum. To 8 ft.: lvs. to 2½ in. long and 1¼ in. wide, hairy: fls. mauve-purple, 2 in. across. India.

Mólkenboeri. To 20 ft.: lvs. about 4 in. long and 1½ in. wide, pubescent: fls. mauve, about 2 in. across. Java. Var. **álbum** has white fls.

MELASTOMÀCEÆ. Melastoma Family. Mostly trop. herbs, shrubs and trees in both hemispheres, of about 175 genera, with simple opposite or whorled lvs., commonly with 3–9 strong longitudinally parallel nerves, bisexual regular polypetalous fls. having 4–5-lobed calyx, 4–5 petals, as many or twice as many stamens that are prevailingly unequal and declined or bent, inferior 2–many-celled ovary, and fr. a berry or caps. The following genera are grown for ornament, mostly in greenhouses: Bertolonia, Centradenia, Heterocentron, Medinilla, Melastoma, Miconia, Phyllagathis, Rhexia, Schizocentron, Sonerila, Tibouchina, Tococa.

MÈLIA. Bead-Tree. *Meliaceæ.* Trees or shrubs with pinnate lvs., white or purple fls. in axillary panicles, and fr. a small somewhat fleshy drupe; native in trop. Asia and Australia; one species widely cult. in warm regions and withstands several degrees of frost. Propagated by seeds sown as soon as ripe, and by cuttings under glass.

Azadiráchta. Margosa. Evergreen tree to 50 ft. with 1-pinnate lvs. near ends of branches, small white fls., and oblong frs. to ¾ in. long, from India, may occur far southward in test plantations.—It is better retained in a separate genus, as *Azadirachta indica.*

Azédarach (*M. sempervirens. M. japonica*). China-Berry. China-Tree. Pride-of-India. Indian Lilac. Spreading mostly deciduous tree to 50 ft.: lvs. 2-pinnate, the lfts. toothed or lobed: fls. purplish, fragrant: frs. globose, yellow, to ¾ in. across, hanging after lvs. fall. Asia; nat. in trop. Amer. and planted in warm-temp. and trop. regions around the world; sometimes run wild. Var. **umbraculifórmis,** Texas Umbrella-Tree, has drooping foliage and radiating branches which give an umbrella-like effect. Var. **floribúnda** is a bushy very floriferous form; *M. semperflorens* is probably the same.

japónica: *M. Azedarach.*

sempérvirens: *M. Azederach.*

MELIÀCEÆ. Mahogany Family. Trees and shrubs, or seldom woody herbs, of about 40 genera largely in trop. regions, with usually alternate pinnate or digitate lvs., commonly bisexual polypetalous fls. in panicles, the sepals and petals 4 or 5, mostly 8–10 stamens, 2–5-celled ovary, and fr. a caps. or drupe or berry. The genera known to hort. are Cedrela, Dysoxylum, Melia, Swietenia, Trichilia, Turræa. With the exception of Melia, the species are little grown within the U. S., but the mahoganies (Swietenia) are always of interest.

MELIANTHÀCEÆ. Melianthus Family. Three genera of African trees or shrubs with alternate often large and showy lvs., bisexual mostly striking polypetalous fls. in racemes having 4–5 sepals and petals, 4, 5 or 10 stamens, superior 4–5-celled ovary, the essential organs often prominently protruded, and capsular not prominent fr. Greyia and Melianthus are grown for ornament.

MELIÁNTHUS. Honey-Bush. *Melianthaceæ.* Evergreen shrubs, often with herb-like sts., bearing alternate pinnate lvs. and large stipules, very irregular showy nectar-bearing fls. in racemes, 4 exserted stamens, and fr. an inflated caps.; planted in warm regions for decorative purposes; native in S. Afr.

The plants are very strong-scented and in Africa are valued for medicine. They do well in southern California. Propagated by seeds and cuttings in heat.

comòsus. Lvs. to 6 in. long, the lfts. lanceolate and toothed, white-tomentose beneath, with winged petiole and 2 stipules about ½ in. long: fls. orange spotted with red, green at base, in nodding racemes to 3 in. long.

màjor. To 10 ft.: lvs. 1 ft. or more long, of 9–11 toothed lfts., with winged petiole and stipules united into one piece 2 in. long: fls. red-brown, about 1 in. long, in racemes 1 ft. long.

mìnor. Lvs. to 6 in. long, the lfts. lanceolate, with 2 free stipules: fls. dull red, in erect racemes to 1 ft. long.

MÉLICA. Melic-Grass. *Gramineæ.* Per. grasses with flat lvs. and spikelets borne in narrow or open panicles; native in temp. regions and sometimes cult. for ornament. See *Grasses.*

altíssima. To 4 ft., with creeping rhizomes: lvs. flat, to 1 in. broad: panicles to 8 in. long, narrow, loose and interrupted. S. Eu. Var. **atropurpùrea** is listed as having panicles of a purple hue.

ciliàta. Tufted, to 3 ft., with creeping rhizomes: lvs. mostly narrow and involute: panicles to 8 in. long, spike-like, the spikelets silky. Eu.

MELICÓCCA (*Melicoccus*). *Sapindaceæ.* Two trop. American trees, one of which is grown in warm regions for its edible frs. **M. bíjuga.** Mamoncillo. Spanish-Lime. Genip. To 60 ft.: lvs. of 4 elliptic-lanceolate lfts. to 4 in. long: fls. small, greenish-white, fragrant, polygamous or diœcious, in racemes to 4 in. long borne in terminal panicles: fr. round, 1 in. or more across, the large stone surrounded by yellowish juicy edible pulp.—When well established will stand several degrees of frost. Propagated by seeds.

MELICÒPE. *Rutaceæ.* A few species of trees and shrubs, mostly from southern hemisphere, having alternate or opposite lvs. which are usually trifoliolate but when simple have winged petioles, fls. 4-merous, small, often unisexual, in few- to many-fld. cymes or panicles: fr. a 1-seeded 2-valved schizocarp. Propagated by seeds or cuttings. Name in four syllables.

ternàta. Tree to 20 ft.: lvs. opposite, trifoliolate, lfts. linear-obovate to elliptic-ovate, to 4 in. long, entire, finely covered with pellucid dots: fls. greenish, to ⅓ in. across, in axillary trichotomous panicles: seeds black and glossy. New Zeal. Var. **Mantéllii,** not known to be in cult. here, is smaller and often has entire lvs. which are rounder and somewhat crenate and panicles only 3–6-fld.

MELICỲTUS. *Violaceæ.* Diœcious trees and shrubs native from New Zeal. to Fiji Isls.: lvs. alternate: fls. small, in clusters: fr. a berry. One species is sometimes planted in Calif.

ramiflòrus. To 30 ft., bark white: lvs. oblong-lanceolate, to 5 in. long, toothed: fls. greenish, ⅛ in. across: berries blue, ⅕ in. across.

MELILÒTUS. Melilot. Sweet Clover. *Leguminosæ.* Sweet-smelling ann. and bien. herbs with trifoliolate lvs., small papilionaceous fls. in slender axillary and terminal racemes, and short straight very small pods; grown as bee-plants, forage and green-manure crops, and also nat. Propagated by seeds.

álba. White S. Bokhara Clover. Bien. to 10 ft.: fls. white. Eu., Asia; nat. in N. Amer. Var. **ánnua,** Hubam Clover, matures in one year.

altíssima. Yellow S. To 8 ft.: fls. yellow, on long peduncles, calyx about ¼ as long as fl.: pod smooth or nearly so. Eu., Asia; nat. in N. Amer.—Forage crop.

cærùlea: *Trigonella cærulea.*

grácilis. Ann. to 4 ft.: fls. yellow, calyx less than ½ as long as fl., peduncles not greatly exceeding lvs.: pod reticulate. S. Eu.

índica. To 3 ft.: fls. yellow, on long peduncles, calyx about ½ as long as fl.: pod smooth or nearly so. Eu., Asia; nat. in N. Amer.—Cover-crop in Calif.

officinàlis. Yellow M. To 8 ft.: fls. yellow, on long peduncles, calyx about ¼ as long as fl.: pod with strong transverse ridges. Eu., Asia; nat. in N. Amer.

MELÌNIS. *Gramineæ.* One African grass widely intro. in western hemisphere and cult. for forage far S. **M. minutiflòra.** Per. to 3 ft. from a branching base, herbage with sweetish odor: lvs. viscid-pubescent, flat, 6 in. long and ¼ in. or more broad: panicle 4–8 in. long, loosely bearing many awned spikelets.

MELIÓSMA. *Sabiaceæ.* Trop. Asian trees or shrubs, evergreen or deciduous, bearing alternate simple or pinnate lvs., small not showy fls. in panicles, and fr. a small drupe; grown in Calif. Propagated by seeds, layers, and cuttings of young wood under glass.

cuneifòlia. To 20 ft.: lvs. obovate, to 7 in. long, wavy-toothed: fls. yellowish-white, fragrant, in panicles to 10 in. long, in July: fr. black, about ¼ in. diam. China.

myriántha. Tree to 30 ft.: lvs. obovate-elliptic to oblong-obovate, to 8 in. long, toothed, acute: fls. greenish-yellow, in erect panicles to 8 in. long: fr. red, about ¼ in. diam. Japan.

Stèwardii. Tree to 18 ft., twigs glabrous: lvs. oblong-elliptic, to 5 in. long, olive-brown above, paler beneath with midrib ciliate to pilose, margins with incurved mucronate teeth: fls. scattered in erect terminal panicles to 4 in. long. Kuling, China.

MELÍSSA. Balm. *Labiatæ.* Erect herbaceous perennials, with broad toothed lvs. and white or yellowish 2-lipped fls. in axillary clusters; only one cult. for the lemon-flavored lvs. used in seasoning, especially in liqueurs, and also as a medicine; one of the sweet herbs. Propagated by seeds sown in a hotbed or coldframe, also by division.

officinàlis. Lemon B. Bee B. Aromatic, to 2 ft.: lvs. ovate, to 3 in. long: fls. white, ½ in. long, in late summer. Eu., Asia; nat. in N. Amer. Var. **aùrea** is listed. Var. **variegàta** is sometimes used in borders.

MELÍTTIS. *Labiatæ.* One per. herb to 1½ ft., native in Cent. and S. Eu. and W. Asia, and sometimes planted in the open. **M. Melissophýllum.** Lvs. cordate-ovate, toothed: fls. pink and variegated, 2-lipped, to 2 in. long, in axillary whorls.

MELOCÁCTUS (*Cactus*). *Cactaceæ.* As now defined (particularly under the genus Cactus, a name rejected by the International Rules), a group of some 18 small species: plant-body solitary or clustered, globular to short-cylindric or even depressed; ribs 9–20 and bearing clusters of spines: fls. small, pinkish, opening in mid-afternoon, close together in a terminal hairy and bristly mass or cephalium. See *Cacti.*

amœnus. To 8 in., with 10–15 ribs; radial spines 9; central 1 and 1 in. long: fls. red, the cephalium to 3 in. across. Colombia.

Ántonii. Similar to *M. intortus* but has longer more slender spines and paler pink fls.: fr. white at base and not uniformly pink. W. Indies.

bahiénsis. Depressed-globose, to 4 in. tall and 6 in. diam., dull green; ribs 10–12, narrowing toward edge, areoles 6–7 on each rib; spines brown, radials usually 10, to 1 in. long, subulate, slender, stiff, centrals 4, to 1½ in. long, straight: fls. pink, about 1 in. long or less. Brazil.

Bésleri: *Discocactus placentiformis.*

Broàdwayi. To 8 in., with 14–18 ribs; radial spines 8–10 and ½ in. long; central usually 1: fls. purplish, the cephalium to 3 in. across and with brown bristles and white wool. W. Indies.

cæsius (*M. humilis*). Globose and depressed, to 8 in., with 10–15 ribs; radial spines 8; centrals ¾ in. long: cephalium of brown bristles and white wool. Venezuela, Colombia, Trinidad.

commùnis (*Cactus Melocactus*). Turks-Head or Turks-Cap Cactus. Body short-cylindric, to 12 in. and more, with 10 or 11 ribs and awl-like spreading radial spines: fls. to 1½ in. long, red. Jamaica.

depréssus: *M. melocactoides.*

hùmilis: *M. cæsius.*

intórtus. Body globose to cylindric and 3 ft. or more tall with a long woolly head; ribs 14–20; spines 10–15, yellow or brown, stout, to nearly 3 in. long: fls. about ¾ in. long, pinkish. W. Indies.—Known under many names

Lemàirei (*Echinocactus Lemairei*). Conical, to 12 in. tall; ribs 9–12, wavy, obtuse, areoles about 1½ in. apart; spines wine-red to brown to white, radials 11–14, to 1¼ in. long, stout, somewhat angular, centrals 3–4, to 1½ in. long: fls. pink, to ¾ in. long. Haiti.

macrocánthus. Globular or perhaps broader than high, sometimes 1 ft. diam., the cephalium becoming 8 or 9 in. high; radial or outer spines needle-like, appressed, unlike the stouter awl-like central ones: fls. about ¾ in. long. Curacao and adjacent isls. of the southern Caribbean Sea.—Known under a great number of names.

matanzànus. Solitary or cespitose, depressed-globose, to 3½ in. high and slightly wider; ribs 8–9, to ⅝ in. high, areoles about ⅓ in. apart; spines yellowish when mature, radials 7–8, to ⅝ in. long, curved, reddish when young, central 1, to ¾ in. long: fls. rose-pink, to ¾ in. long. Cuba.

Máxonii. Depressed-globose, to 6 in., with 11–15 ribs; radial spines 7–11, ½ in. long, pale red; central usually 1: fls. rose. Guatemala.

melocactoìdes (*M. depressus. M. violaceus*). Conical, to 3½ in. tall and 6 in. diam. at base, light green; ribs 10, obtuse, areoles ¾–1 in. apart, white-woolly; spines all radial, about 5–8, to ¾ in. long, white to gray: fls. pink, segms. dentate: fr. white to pale pink, to 1 in. long. Brazil.

Miquélii. Ovoid, to 10 in. tall and 8 in. diam., dark green; ribs 14, obtuse, crenate, areoles about 1¼ in. apart, woolly becoming naked; spines dark brown, radials 8, to ⅝ in.

long, somewhat curved, centrals 1-3, to ¾ in. long, straight: fls. white. St. Croix Isl.

missouriénsis: *Neobesseya missouriensis.*

Néryi. Depressed-globose, to 4½ in. tall, dark green; ribs 10, acute; radials 7–9, about 1 in. long; centrals 1–2 or absent: fls. pale pink, to ¾ in. long: fr. carmine-red. Brazil.

obtusipétalus. Globose to conical, to 9 in. tall and 6 in. diam., gray-green; ribs 10, acute, straight, to 1½ in. high; spines white to brownish, radials 9–11, ringed, stiff, centrals usually 2: fls. pink, segms. oblong, obtuse. Colombia.

òreas. Globose, to 1¾ in. diam., white-woolly on top; ribs 10–12, to ¾ in. high, acute; radials 10–14, brown, subulate; centrals 4–6, to ½ in. long: fls. pink. Brazil.

peruviànus. Globose, to 6 in. diam.; ribs 12–13, areoles to ⅝ in. apart; spines brown, radials 7–8, central 1 when present, to 1½ in. long: fls. pink, to 1 in. long: fr. red. Peru.

Townséndii. Globular, ½ in. diam., often clustered, with 12–13 ribs; spines 8–9 and brown: fls. pinkish, 1 in. long, the cephalium to 3 in. high and with brown bristles and white wool. Peru.

unguispìnus is reported as a new species from N. Peru.

violàceus: *M. melocactoides.*

Zuccarìnii. Conical, to 9 in. tall, dark green; ribs 16, obtuse, to 1½ in. high, tubercled; radials 18–20, lowermost to 1¾ in. long, all yellowish-gray; centrals 4–6, to 2¾ in. long, base bulbous: fls. pale pink, to ¾ in. long. Curacao Isl.

MELON, MUSKMELON (*Cucumis Melo* and varieties); not including the watermelon (which see), which is a very different fruit.

The melons commonly known in this country are of two types or groups,—the netted or nutmeg melons, and the cassaba or winter melon. The culture of the two is similar except that the cassaba requires a longer season and is not grown to any extent in the northern and central melon regions. The cantaloupe is a form of melon seldom grown in North America and practically unknown among the people, although the name is commonly but inaccurately applied to varieties of the netted melon class.

All the melons are alike in requiring open fertile soil and sunny location, continuous rapid growth, and all are frost-tender. They are grown to some extent in the home garden in nearly all regions of the United States, except where the growing season is too short. The commercial supply is produced in special regions such as the Imperial Valley of California, and other warm and relatively dry areas. Most of the commercial crop is started directly in the field in drills 4 to 6 feet apart or in hills 5 or 6 feet apart each way. When the drill method is followed, the plants are thinned to about 3 feet apart, while in the hill method several seeds are planted in each hill and all but two or three plants are removed after the danger of loss from the cucumber beetle is past. In some regions, plants are started in greenhouses or hotbeds four or five weeks before it is safe to set in the open, by planting the seed in small flower pots, plant bands, or other containers. Many growers apply a liberal quantity of manure in each hill and, in addition, use some chemical fertilizer, but a large portion of the commercial crop is grown without manure. Shallow clean tillage should be practised until the plants begin to run. Three or four good fruits is a good yield to the vine.

The striped cucumber beetle is likely to be troublesome: plant liberally to allow for losses, cover young plants with mosquito-netting in the home garden, or apply various repellents now on the market.

The melon is an interesting crop to grow regularly under glass, but if ripened to full quality in midwinter much heat and constant care are required. There are special forcing or winter melons of the English type that yield fruits of particular excellence and beauty. Whether grown for late autumn crop or for spring or for midwinter, the plants are raised preferably on benches to insure sufficient bottom heat. The plants may be set about 2½ feet apart (having been started in pots) on 4-foot benches, and trained high so that the fruits hang; but the fruits must be suspended in netting, raffia slings or other support. Pollination is performed by hand. The air should be kept on the dry side at ripening time. About four months is required from seed-sowing to midwinter fruit in northern climates, depending much on soil, season, adaptability of the house, skill of the grower, and variety of melon. For early November crop, seeds may be started by the middle of July for the regular forcing melons.

MELON, PRESERVING: *Benincasa hispida, Citrullus vulgaris* var. *citronis.*

MELÒTHRIA. *Cucurbitaceæ.* Diffuse slender climbing or prostrate monœcious or diœcious herbaceous vines in the warm parts of both hemispheres, about 70 species, a few native in the U. S.: lvs. entire or lobed: fls. small and not conspicuous, pistillate solitary or clustered, staminate racemose or corymbose: fr. small, berry-like, smooth or warty. Two species are somewhat grown for ornament.

punctàta (*Pilogyne suavis*). Per. from a thick root: lvs. cordate-ovate, angled or lightly 3–5-lobed: fr. about ¼ in. diam., slightly pitted, brown. Afr.—Raised from seeds; the roots may be brought in for the winter, the tops cut back and grown in window-gardens, or they may be stored till spring or carried over by means of green cuttings.

scàbra. Ann. or grown as such: lvs. triangular-ovate and lobed: fr. to 1 in. long, glabrous and more or less spotted with green. Mex.—Blooms in latter part of summer from seeds sown in Apr.

MENISPERMÀCEÆ. Moonseed Family. Woody or herbaceous plants, largely twining vines, of 63 genera mostly in the tropics, having alternate simple but sometimes lobed lvs., small inconspicuous diœcious polypetalous fls. with usually 6 sepals and 6 petals, 6 or more stamens, 3 or more separate carpels, and fr. a drupe. A few genera are grown for ornament over arbors or walls, as Cocculus, Menispermum, Sinomenium, the foliage being the chief consideration, although the berries may be attractive.

MENISPÉRMUM. Moonseed. *Menispermaceæ.* Two woody twining vines with peltate lvs. and white or yellowish fls. in racemes or panicles, suitable for outdoor cult. in the N. for trellises and arbors; the foliage is attractive. Propagated by seeds or cuttings of ripe wood.

canadénse. Lvs. broad-ovate, to 8 in. long, entire or shallowly lobed, pubescent beneath when young: fr. black. Que. to Ga. and Ark.

daùricum. Resembles the above, but the lvs. are smaller, more distinctly peltate, and glaucous and glabrous beneath. E. Asia.

MENODÒRA. *Oleaceæ.* Subshrubs with opposite simple or pinnate lvs. and yellow or white fls. in terminal racemes or cymes or solitary; native in N. and S. Amer. and S. Afr. and one species intro. to cult. in Calif.

integrifòlia. To 2 ft.: lvs. lanceolate or linear-lanceolate, to 1 in. long, entire, margins recurved: fls. ½ in. long, bell-shaped, in terminal cymes. Brazil, Argentina.

MÉNTHA. Mint. *Labiatæ.* Odorous herbs mostly cult. for the aromatic oil obtained from all parts of the plant, a few in the garden for ornament and fragrance; well-known sweet herbs: sts. square: lvs. simple: fls. small, purplish, pink or white, crowded in axillary clusters in terminal spikes or heads.

Mints are easily propagated by cuttings and division, in some cases by stolons or runners; also by seeds when available. They tend to become established and to run wild.

anisàta: listed name.

aquática. Water M. Per. to 2½ ft., hairy: lvs. ovate, to 3 in. long, toothed: fls. in dense terminal spikes to 1 in. long, and in the upper axils. Eu.; nat. in E. U. S.

arvénsis. Per. of wide distribution over the world, in several forms or subspecies, producing runners: to 2 ft.: lvs. oblong to ovate, 1–2 in. long, more or less pubescent or hairy, rounded at base. Eurasia, N. Amer. Var. **canadénsis** (*M. canadensis*). Lvs. narrower, tapering at base. Me. to Calif. Var. **globòsa** is listed. Var. **piperáscens.** Japanese M. Plant larger, to 3 ft., lvs. larger; an oil-producing plant.

austrìaca: *M. sylvestris.*

canadénsis: *M. arvensis* var.

Cardìaca. Per. to 2 ft. and more, with ascending upper branches, more or less pubescent: lvs. lanceolate to oblong, sharp-serrate: infl. interrupted or in detached leafy whorls and thus differing from *M. spicata*, with which it has been confused in cult. Eu.; nat. in N. Amer.

Catària: see *Nepeta Cataria.*

citriodòra: hort. name; possibly *Monarda pectinata.*

citràta. Bergamot M. Per. by leafy stolons, st. decumbent, to 2 ft. long, glabrous: lvs. ovate, to 2 in. long, toothed: fls. in the uppermost axils and in dense terminal spikes to 1 in. long. Eu.; nat. in N. Amer.

críspa. Per., with weak hairy sts. to 3 ft. long: lvs. ovate, crisped and sharp-toothed: fls. in terminal spikes to 1½ in. long. Eu.; nat. Conn. to Pa.

géntilis. Tall, branched at base: lvs. ovate, narrowly ovate, to somewhat obovate, short-stalked, serrate: fls. in small dense axillary heads. Eu., sometimes nat.—Forms of *M. spicata* have been grown under this name.

gibraltárica: *M. Pulegium* var.

lanàta. To 2 ft., villous-pubescent: lvs. lanceolate to ovate, to 3 in. long, short-petioled: fls. pink to white, in axillary whorls. Ida. to B. C. and Calif.

lanuginòsa: listed name, perhaps *M. lanata.*

piperìta. Peppermint. Per. by runners and rootstocks, having strong pungent or pepper-like oil, to 3 ft.: lvs. lanceolate, to 3 in. long, toothed: fls. in thick terminal spikes to 3 in. long, purple seldom white. Eu. Var. **Cúrtisii** is listed. Var. **vulgàris,** Black M., has purple sts. and dark foliage.

Pulègium. Pennyroyal. Prostrate: lvs. oval, ½ in. long, entire: fls. in dense axillary whorls, bluish-lilac. Eu., W. Asia. Var. **gibraltárica** has deep green sometimes variegated lvs.

Requiènii (*Menthella Requienii*). Small creeping herb, used for ground-cover: lvs. round, very small: fls. mauve or pale purple, in loose few-fld. whorls. Corsica.

rotundifòlia. Apple M. Per. by leafy stolons, to 30 in., pubescent: lvs. sessile, oval, to 2 in. long, toothed: fls. purple, in dense or interrupted spikes to 4 in. long. Eu.; nat. in N. Amer. Var. **variegàta** has variegated lvs.

spicàta (*M. viridis* of trade lists). Spearmint. Per. by leafy stolons, to 2 ft., glabrous: lvs. sessile, lanceolate, to 2½ in. long, toothed: fl.-whorls in narrow not leafy spikes to 4 in. long. Eu.; nat. in N. Amer.

sylvéstris (*M. austriaca*). Lvs. sessile, lanceolate, toothed, white-tomentose beneath: fls. purplish, pubescent, in dense spikes or interrupted at base. Eu., Asia.

tomentòsa: a confused name, plants so listed are usually referable to *M. Pulegium* or *M. sylvestris.*

víridis of hort.: *M. spicata.*

MENTHELLA: *M. Requienii.*

MENTOCALYX: see *Gibbæum velutinum.*

MENTZÈLIA. *Loasaceæ.* American herbs or shrubs armed with barbed hairs, often with shredding bark, having mostly alternate lvs., white or yellow often very showy fls., and capsular frs.; cult. in the flower-garden. Propagated by seeds sown where the plants are to grow.

albéscens (*Bartonia albescens. Nuttallia albescens*). Ann. or bien. to 3 ft., sts. white-hairy: lvs. pinnately lobed, ovate-lanceolate to linear-lanceolate: fls. pale yellow, to ¾ in. across, in corymbose cymes; stamens 20–40. Okla., Mex. to Argentina.

aùrea: *M. Lindleyi.*

decapétala (*M. ornata. Nuttallia decapetala*). Bien. to 4 ft.: lvs. pinnately lobed: fls. white or yellowish, to 5 in. across, opening in evening, fragrant; petals 10. S. D. to Tex.

gronoviæfòlia: *Eucnide bartonioides.*

involucràta. Ann. or bien. to 1½ ft., sts. very white: lvs. coarsely toothed: fls. cream-color, to 2½ in. long, subtended by large white bracts with deeply toothed green margins. Calif.

lævicaùlis. Blazing Star. Bien. to 3½ ft., sts. shining white: lvs. wavy-toothed: fls. light yellow, to 4 in. across. Wyo. to Calif.

Líndleyi (*Bartonia aurea*). Ann. to 4 ft.: lvs. pinnately cut or toothed: fls. golden-yellow, to 2½ in. across, opening in evening, fragrant; petals 5. Calif.

multiflòra (*Bartonia multiflora. B. pumila. Nuttalia multiflora*). Per. to 2½ ft.: lvs. pinnately-lobed, narrowly lanceolate: fls. yellow, to 1 in. across, usually 3–4 in corymbose cluster. Wyo. to Calif., and Mex.

nùda. Bien. or per. to 5 ft.: lvs. toothed or pinnatifid: fls. creamy-white, to 2½ in. across, usually without bracts, opening toward evening; petals 10. Mont. to Tex.

ornàta: *M. decapetala.*

stricta (*Nuttallia stricta*). Per. to 3½ ft., st. not much branched at base: lvs. linear-lanceolate, to 4 in. long, sinuate: fls. yellow, subtended by toothed bracts. Neb. to Wyo. south to Colo. and Tex.

MENYÁNTHES. *Gentianaceæ;* by some authors separated in the family *Menyanthaceæ.* A per. herb with creeping rootstocks, native around the world in the cooler parts of the northern hemisphere in wet places and shallow water, sometimes planted in bog-gardens. **M. trifoliàta.** Bogbean. Buckbean. Lvs. of 3 oblong or obovate entire lfts. with petioles to 10 in. long sheathing at base: fls. white or purplish bearded inside with white hairs, ½ in. long, in 10–20-fld. racemes borne at the end of long scapes.

MENZIÈSIA. *Ericaceæ.* Low deciduous shrubs with alternate entire lvs., bell-shaped or urn-shaped fls. in terminal clusters, and capsular frs.; suitable for rock-gardens. For cult. see *Andromeda.*

álba: probably a form of *Daboëcia cantabrica.*

ciliícalyx. Lvs. ciliate, elliptic: fls. yellowish-green tipped with purple, ½ in. long; stamens pubescent. Japan. Var. **multiflòra** (*M. multiflora*) has 6–10-fld. clusters.

ferrugínea. To 8 ft., often straggling: lvs. glandular-ciliate, with rusty hairs above, to 2½ in. long: fls. greenish-purple, ½ in. long; stamens pubescent. Alaska to Calif.

globulàris: *M. pilosa.*

multiflòra: *M. ciliicalyx* var.

pentándra. Lvs. ciliate, to 1¾ in. long: fls. whitish, ¼ in. long; stamens glabrous. Japan.

pilòsa (*M. globularis*) To 6 ft.: lvs. ciliate, hairy, to 2 in. long: fls. yellowish-white or pinkish, ¼ in. long; stamens glabrous. Pa. to Ga. and Ala.

polifòlia: *Daboëcia cantabrica.*

purpùrea. Lvs. elliptic to obovate, to 1½ in. long, pubescent beneath on midrib: fls. bright red, ½ in. long, campanulate. Japan.

MERATIA: *Chimonanthus.*

MERCURIÀLIS. *Euphorbiaceæ.* Herbs or subshrubs native in Medit. region, one of which is sometimes grown for medicinal purposes, having opposite simple lvs., diœcious fls. without petals, and capsular frs.

ánnua. Herb-Mercury. Ann. to 2 ft.: lvs. ovate to lanceolate, toothed: male fls. in spikes, female clustered in axils. Eu., Afr.; nat. in N. Amer.

MERCURY ("Markery"): *Chenopodium Bonus-Henricus.* Herb: *Mercurialis annua.*

MERIANA: *Watsonia.*

MERIDIANA: *Gazania.*

MERIOLIX: *Œnothera.*

MERTÉNSIA. BLUEBELLS. *Boraginaceæ.* Attractive per. herbs, smooth or pubescent, often glaucous, with alternate entire often punctate lvs. and blue, purplish or white erect or drooping fls. in racemes or panicles; corolla funnelform, sometimes crested in the throat; a few species are planted in wild- or rock-gardens; native in northern hemisphere, largely in woods and thickets. Propagated by seeds sown as soon as ripe and with difficulty by division.

alpìna. To 8 in., glabrous: lvs. spatulate to lanceolate, 2 in. long: fls. dark blue, ¼ in. long. Rocky Mts.

Bàkeri. To 1 ft.: lvs. spatulate to lanceolate, grayish-pubescent: fls. ½ in. long. Mts. of Colo.

ciliàta. To 2 ft., pale and glaucescent: lvs. oval to lanceolate: fls. bright blue, ½ in. or more long. Rocky Mts.

coriàcea: *M. lanceolata.*

echioìdes. To 1 ft., soft-hairy: lvs. oblong: fls. deep blue, ⅓ in. long. Himalayas.

elongàta. To 8 in., sts. pubescent: lvs. oblong-spatulate, to 2 in. long: fls. blue, calyx nearly as long as corolla-tube, lobes spreading. Kashmir.

foliòsa. Cespitose to 16 in., glabrous, roots not tuberous: lvs. oblong-spatulate to lanceolate or ovate, to 3 in. long, rather thick: fls. bluish-purple, corolla-tube twice as long as limb and throat. Wyo., Utah.

Hórneri. To 5 in., glaucous, with small black tuberous root: lvs. oblong: fls. turquoise-blue, drooping. Mts., Ida.

hùmilis. To 8 in., sts. glabrous, ascending or decumbent: lvs. elliptic to ovate, to 1⅔ in. long, somewhat fleshy and pustulate above: fls. blue, to ⅜ in. long. Wyo.

lævigàta. To 3 ft., glabrous and somewhat glaucous: lvs. ovate, 5 in. long: fls. blue, ½ in. long. Wash.

lanceolàta (*M. coriacea*). To 1 ft., glabrous: lvs. oblong or lanceolate: fls. blue, ¼–½ in. long. Sask. to Colo.

longiflòra. Per. to 10 in., rootstock tuberous-thickened: lvs. elliptic-spatulate to obovate or ovate, to 2½ in. long, all but basal ones sessile: fls. about 1 in. long, tube twice as long as limb. Mts. of Mont. to B. C. south to Ida. and Wash.

macedónica variegàta: catalogue name of unknown botanical standing.

moltkioìdes. Differs from *M. elongata* in lvs. more softly hairy, racemes shorter peduncled, calyx larger and corolla-tube ⅓ and not ⅙ in. long. Kashmir.

nùtans. To 8 in., glabrous: lvs. oblanceolate, to 3 in. long: fls. ½ in. long, in drooping panicles. Wash. and Mont. to Nev.

oblongifòlia. To 8 in., glabrous, with thick root: lvs. spatulate to linear, to 2 in. long: fls. with purple tube and blue bell, to ¾ in. long. B. C. to Nev.

paniculàta (*M. pubescens*). To 3 ft., rough-pubescent: lvs. ovate: fls. purple-blue, ½ in. long. N. N. Amer. Var. **álba** is listed with white fls. Var. **subcordàta** (*M. subcordata*) has lvs. glabrous above.

platénsis. To 16 in.: lvs. ovate to lanceolate, 2½ in. long, glabrous except ciliate margins, pale beneath. Colo.

platyphýlla. Per. to 2½ ft., sts. weak and slender: lvs. broadly ovate-acuminate, to 10 in. long and 4 in. wide at cordate base: fls. bright blue fading to rose, to ⅜ in. across. Wash.

praténsis. To 3 ft.: lvs. oval-lanceolate, hairy above: fls. blue varying to white, ⅔ in. long. Colo. to Ariz.

primuloìdes. To 3 in., rough-hairy: lvs. oval, to ⅓ in. long: fls. deep blue varying to white and yellow, ¼ in. across. Himalayas.

pubéscens: *M. paniculata.*

pulchélla. To 8 in., glabrous, with thick root: lvs. obovate or ovate, to 2½ in. long: fls. ¾ in. long. Ida.

pulmonarioìdes: *M. virginica.*

sibírica (*Lithospermum sibiricum*). To 5 ft., glabrous: lvs. ovate: fls. purplish-blue varying to white, ¼–½ in. long. Siberia.

speciòsa: listed name.

subcordàta: *M. paniculata* var.

virgínica (*M. pulmonarioides*). VIRGINIA-BLUEBELLS or COWSLIP. To 2 ft., glabrous: lvs. elliptic to oblong: fls. with purple tube and blue bell, 1 in. long, the clusters somewhat nodding. N. Y. to Tenn. Var. **rùbra** has pink fls.

MÉRYTA. *Araliaceæ.* Small diœcious trees, one of which may be grown in Calif.: lvs. alternate or crowded at ends of branches, leathery: fls. in panicles or heads: fr. a drupe: native in Pacific Isls., New Zeal., Australia.

Sínclairi. PUKA. To 25 ft., evergreen, making a dense head: lvs. oblong, to 2 ft. long, on stalks to 1 ft. or more long, entire, shining: fls. greenish-white, in panicles to 1½ ft. long: fr. black and shining, ½ in. long. New Zeal.

MESEMBRYÁNTHEMUM. FIG-MARIGOLD. *Aizoaceæ.* A re-defined group: more than 1,000 species have been described under this genus, mostly from S. Afr. In recent years the group has been re-studied and special attention has been given to fruit characters, which were mostly overlooked or unavailable in former descriptions. Such marked differences exist that the plants can be best defined and understood by making separate genera, placing closely related kinds together. The systematic studies of the group are still in progress and further changes in nomenclature are likely to occur.

The plant-forms in the general group are of great variety and absorbing interest to the naturalist. Some are branching plants with leaves of more or less usual form, but other species have a very condensed structure, some of them so closely simulating stones as to be overlooked at their native places, as in Pleiospilos. As a whole, the Mesembryanthemum relatives have the grotesqueness of xerophytic vegetation. The herbage of many of them is provided with glistening points, pimples or vescicles that give them the name of "ice-plants." In botanical collections under glass the odd forms are sometimes grown as curiosities, but these kinds are little known to the general cultivator; they are likely to be grown by fanciers of cacti and similar plants.

The cultivation of all the genera is conditioned on the fact that the plants are native in hot or semi-arid regions. Some of them grow in barren rocky places and others on sandy plains. A few of them frequent sea-coasts. They are succulent plants, and are therefore able to withstand heat and dryness. If grown in pots, care should be taken to have them properly drained, and the plants should be given full sun when well established. None of them can be carried over winter in the open in the North, but may be placed in a cool dry greenhouse with good ventilation. The stemless condensed species should be watered on top with caution, the better plan being to stand the pots in water or moist ground until the soil is moistened. In climates like Florida and southern California, many of them do well as open-air subjects, particularly in the latter state where the dryness suits them. The perennial species are propagated by cuttings as well as by seeds. The common ice-plant, *Cryophytum crystallinum*, which is an annual, comes quickly from seeds, as does also the showy *Dorotheanthus gramineus* (formerly known as *M. lineare*, *M. pyropæum* and *M. tricolor*), and *Carpanthea pomeridiana*. In window-gardens the commonest species are the ice-plant and *Aptenia cordifolia*.

A relatively small number of South African species is now retained in the genus Mesembryanthemum, and few of them are grown in North America. This genus is now defined to include mostly branching plants with 2 or more pairs of distinct leaves and prominent internodes, calyx lobed down to the ovary, petals nearly or quite free to the base, stamens collected into a column or cone, stigmas and cells of ovary normally 5 or 6; these marks distinguish the genus as characterized by Linnæus in combination with the species named by him.

aberdeenénse: *Delosperma aberdeenense.*

abyssínicum: *Delosperma abyssinicum.*

acinacifórme: *Carpobrotus acinaciformis.*

acùtum: *Cephalophyllum subulatoides.*

æquilateràle, æquiláterus: see *Carpobrotus chilensis.*

agnìnum: *Agnirictus agninus.*

Aitònis: *Cryophytum Aitonis.*

albàtum. To 1 ft.: lvs. densely imbricated, about 2 in. long and ½ in thick, united, grayish: fls. solitary, white, 1 in. across, short-stalked.

álbidum: *Machairophyllum albidum.*

albinòtum: *Rabiea albinota.*

albipúnctum: *Rabiea albipuncta.*

alboròseum. To 5 in., shrubby: lvs. dense, keeled, to 1 in. long and ⅙ in. wide and ⅛ in. thick, glaucous: fls. solitary, white turning rose, 1 in. across.

álbum. To 8 in.: lvs. to ¾ in long, ⅛ in. wide and ¼ in. thick, glaucous: fls in cymes, white.

aloìdes: *Nananthus aloides.*

Álstonii: *Cephalophyllum Alstonii.*

anemoniflòrum: *Cephalophyllum anemoniflorum.*

angulàtum: *Cryophytum Aitonis.*

Astridiæ: *Titanopsis Hugo-Schlechteri.*

aurantìacum: *Lampranthus aurantiacus.*

aùreum: *Lampranthus aureus.*

austràle: *Disphyma australe.*

Axthelmiànum: *Ruschia Axthelmiana.*

barbàtum: *Trichodiadema barbatum.*

bellidiflòrum: *Acrodon bellidiflorus.*

bellidifórme: *Dorotheanthus bellidiformis.*

béllum: *Lithops bella.*

bidentàtum: *Glottiphyllum semicylindricum.*

bifoliàtum. Sts. branching underground: lvs. 2, united, 1½ in. long: fls. solitary, rose-purple, 1 in. across, short-stalked.

bigibberàtum: *Glottiphyllum semicylindricum.*

bílobum: *Conophytum bilobum.*

blándum: *Lampranthus blandus.*

Bòlusii: *Pleiospilos Bolusii.*

Busscheànum: *Faucaria Bosscheana.*

brévipes: *Argyroderma brevipes.*

Broẁnii: *Lampranthus Brownii.*

Brunntháleri: *Delosperma Brunnthaleri.*

bulbòsum: *Trichodiadema bulbosum.*

calamifórme: *Cylindrophyllum calamiforme.*

calcàreum: *Titanopsis calcarea.*

Cálculus: *Conophytum Calculus.*

cándens: *Drosanthemum candens.*

candidíssimum: *Cheiridopsis candidissima.*

canìnum: *Carruanthus caninus.*

cànum: *Bijlia cana.*

Càroli-Schmídtii: *Cheiridopsis Caroli-Schmidtii.*

cauléscens: *Oscularia caulescens.*

chilénse: *Carpobrotus chilensis.*

chrysoleùcum: *Monilaria chrysoleuca.*

cigarettíferum: *Cheiridopsis cigarettifera.*

coccíneum: *Lampranthus coccineus.*

compáctum: *Pleiospilos nobilis.*

compréssum: *Erepsia compressa.*

Cómptonii: *Lampranthus Comptonii.*

confùsum: *Cephalophyllum confusum.*

conspícuum: *Lampranthus conspicuus.*

cordifòlium: *Aptenia cordifolia.*

crassifòlium: *Disphyma crassifolium.*

crássum: *Ruschia crassa.*

criniflòrum: *Dorotheanthus bellidiformis.*

cròceum: *Hymenocyclus croceus.*

crystállinum: *Cryophytum crystallinum.*

curviflòrum: *Lampranthus curviflorus.*

cymòsum: *Ruschia cymosa.*

decípiens: *Cephalophyllum decipiens.*

Dekenàhii: see *Pleiospilos Dekenahii.*

deltoìdes: *Oscularia deltoides.*

dénsum: *Trichodiadema densum.*

depréssum: *Glottiphyllum depressum.*

Derenbergiànum: *Ebracteola Derenbergiana.*

díchroum: *Ruschia dichroa.*

digitàtum: *Dactylopsis digitata.*

dolabrifórme: *Rhombophyllum dolabriforme.*

Éberlanzii: *Lithops Eberlanzii.*

echinàtum: *Delosperma echinatum.*

Ecklònis: *Delosperma Ecklonis.*

edéntulum: *Echinus edentulus.*

edùle: *Carpobrotus edule.*

elongàtum: *Conicosia elongata.*

emarginàtum: *Lampranthus emarginatus.*

falcifórme: *Lampranthus falciformis.*

felìnum: *Faucaria felina.*

filamentòsum: *Ruschia filamentosa.*

filicaùle: *Lampranthus filicaulis.*

fílipes: listed name.

físsum: *Argyroderma fissum.*

floribúndum: *Drosanthemum floribundum.*

formosiànum: catalogue name.

Francíscii: *Lithops Franciscii.*

Friѐdrichiæ: *Ophthalmophyllum Friedrichiæ.*

Fúlleri: see *Lithops Fulleri.*

geminàtum: *Echinus geminatus.*

gibbòsum: *Gibbæum gibbosum*; see also Ruschia.

gigantèum aùreum: listed name.

glaucéscens: *Carpobrotus glaucescens.*

glaucoìdes: *Lampranthus glaucoides.*

glaùcum: *Lampranthus glaucus.*

glomeràtum: *Lampranthus glomeratus.*

grácile: *Erepsia gracilis.*

granulàtum: *Hereroa granulata.*

granulicaùle: *Psilocaulon granulicaule.*

Haàgei: *Faucaria Haagei.*

hamàtum: *Ruschia hamata.*

Hawórthii: *Erepsia Haworthii.*

Hèathii: *Gibbæum Heathii.*

hesperánthum: *Hereroa hesperantha.*

heteropétalum: *Erepsia heteropetala.*

hexamèrum: *Ruschia hexamera.*

híspidum: *Drosanthemum hispidum.*

Hùgo-Schléchteri: *Titanopsis Hugo-Schlechteri.*

inclaùdens: *Erepsia inclaudens.*

inspérsum: *Cheiridopsis inspersa.*

intónsum: *Trichodiadema intonsum.*

Johánnis-Wínkleri: *Conophytum Johannis-Winkleri.*

karasmontànum: *Lithops karasmontana.*

karroòicum: *Ruschia karooica.*

Klinghardtiànum: *Delosperma Klinghardtianum.*

lácerum: *Semmanthe lacera.*

læ̀ve: *Hymenocyclus Thunbergii.*

lanceolàtum: *Cryophytum Aitonis.*

lapidifórme: *Didymaotus lapidiformis.*

làtum: *Glottiphyllum latum.*

Lèhmannii: *Corpuscularia Lehmannii.*

Lericheànum: *Lithops Lericheana.*

Lésliei: *Lithops Lesliei.*

lineàre: *Dorotheanthus gramineus.*

linguifórme: *Glottiphyllum linguiforme.*

linguìnum: catalogue name.

longispínulum: *Sphalmanthus longispinulus.*

lóngum: *Glottiphyllum longum.*

lùcidum: *Glottiphyllum latum* var. *cultratum.*

Luederítzii: *Drosanthemum Luederitzii.*

lupìnum: *Faucaria lupina.*

lutèolum: *Hymenocyclus luteolus.*

macradènium: *Rhinephyllum macradenium.*

magnipunctàtum: *Pleiospilos magnipunctatus.*

Márgaretiæ: *Lapidaria Margaretiæ.*

Márlothii: *Odontophorus Marlothii;* see also *Cheiridopsis Marlothii.*

marmoràtum: *Lithops marmorata.*

Maximílianii: *Echinus Maximilianii.*

máximum: *Astridia maxima.*

microspérmum: *Dinteranthus microspermus.*

minutiflòrum: *Conophytum minutiflorum.*

minùtum: *Conophylum minutum.*

mirábile: *Trichodiadema mirabile.*

mitràtum: *Mitrophyllum mitratum.*

monilifórme: *Monilaria moniliformis.*

móntis-móltkei: *Ebracteola montis-moltkei.*

múlticeps: *Bergeranthus multiceps.*

multiflòrum: *Ruschia multiflora.*

multiradiàtum: *Lampranthus multiradiatus.*

muricàtum: *Oscularia deltoides* var. *muricata.*

murìnum: *Stomatium murinum.*

musculìnum: *Chasmatophyllum musculinum.*

mustellìnum: *Stomatium mustellinum.*

mutábile: *Erepsia mutabilis.*

nànum: *Oophytum nanum.*

Neìlii: listed name, possibly *Glottiphyllum Neilii.*

Névillei: *Conophytum Nevillei.*

nóbile: *Pleiospilos nobilis.*

nodiflòrum: *Cryophytum nodiflorum.*

obcordéllum: *Conophytum obcordellum.*

octophýllum: *Argyroderma octophyllum.*

odoràtum: *Conophytum odoratum.*

optàtum: *Pleiospilos optatus.*

ópticum: *Lithops optica.*

ovalínguis: listed name.

paardebergénse. Branches decumbent or ascending to 8 in.: lvs. compressed laterally, 1 in. long and ¼ in. wide: fls. rose, 1 in. across, in dense cymes.

pachyphýllum. Branches crowded, densely 4–6-lvd.: lvs. usually erect, pairs unequal, to 2 in. long and 1 in. thick, margins slightly cartilaginous: fls. solitary, rose-purple, to 1¾ in. across.

pachypòdium: *Gibbæum pachypodium.*

papaveránthum: listed name.

parvifòlium: *Drosanthemum parvifolium.*

Pátersoniæ: *Delosperma Patersoniæ.*

pervíride: *Gibbæum perviride.*

píctum: *Conophytum pictum.*

pilósulum: *Gibbæum pilosulum.*

piscodòrum: *Ruschia piscodora.*

Pòle-Évansii: *Dinteranthus Pole-Evansii.*

pomeridiànum: *Carpanthea pomeridiana.*

prodúctum: *Lampranthus productus.*

propínquum: *Ruschia propinqua.*

pseudotruncatéllum: *Lithops pseudotruncatella.*

pubéscens: *Gibbæum pubescens.*

pugionifórme: *Conicosia pugioniformis.*

purpuráscens: *Cheiridopsis purpurascens.*

purpùreo-cròceum: *Hymenocyclus purpureo-croceus.*

Púrpusii: *Conophytum Purpusii.*

pustulàtum: *Glottiphyllum longum.*

Pútterillii. Shrubby, with ascending or decumbent branches to 9 in. long: lvs. ascending, 3-angled, to ½ in. long and ⅛ in. wide and thick, punctate: fls. solitary, rose-purple, ½ in. across.

Puttkammeriànum: *Hereroa Puttkammeriana.*

pygmæum: *Ruschia pygmæa.*

pyropæum: *Dorotheanthus gramineus.*

rèpens: probably *Lampranthus reptans.*

réptans: *Lampranthus reptans.*

retrovérsum: *Diplosoma retroversum.*

rhèolens: *Dracophilus rheolens.*

rhomboídeum: *Rhombophyllum rhomboideum.*

rhopalophýllum: *Fenestraria rhopalophylla.*

rígidum: *Ruschia rigida.*

Roòdiæ: *Pleiospilos prismaticus.*

ròseum: *Lampranthus roseus.*

rosulàtum: *Aistocaulon rosulatum.*

rubrolineàtum: *Nananthus rubrolineatus.*

rubropurpùreum: listed name.

Ruschiòrum: *Lithops Ruschiorum.*

scapígerum: *Bergeranthus scapiger.*

Schíckii. Said to be a hybrid between *Delosperma echinatum* and *Glottiphyllum linguiforme.*

Schoenlandiànum: *Drosanthemum Schoenlandianum.*

Schwántesii: *Titanopsis Schwantesii.*

serrulàtum: *Ruschia serrulata.*

setulíferum: *Trichodiadema setuliferum.*

Símpsonii: *Juttadinteria Simpsonii.*

símulans: *Pleiospilos simulans.*

Sladeniànum: *Prenia Sladeniana.*

sólidum: *Ruschia solida.*

speciòsum: *Drosanthemum speciosum.*

spectábile: *Lampranthus spectabilis.*

spinòsum: *Eberlanzia spinosa.*

spléndens: *Aridaria splendens.*

spongiòsum: *Cephalophyllum spongiosum.*

Stánleyi. To 4 in., shrubby: lvs. keeled, ½ in. long and ⅛ in. wide and thick, glaucous: fls. solitary, fragrant, yellow, 1 in. across.

Steingròeveri: *Ruschia Steingroeveri.*

stellàris: listed name.

stellàtum: *Trichodiadema stellatum.*

stellígerum: *Trichodiadema stelligerum.*

stènum: *Lampranthus stenus.*

suavèolens: *Stomatium suaveolens.*

subcompréssum: *Drosanthemum subcompressum.*

supérbum: listed name.

tenuifòlium: *Lampranthus tenuifolius.*

testàceum: *Delosperma testaceum.*

testiculàre: *Argyroderma testiculare.*

Thúnbergii: *Hymenocyclus Thunbergii.*

tigrìnum: *Faucaria tigrina.*

tortuòsum: *Sceletium tortuosum.*

trícolor: *Dorotheanthus gramineus.*

tricolòrum: *Cephalophyllum tricolorum.*

trigònum: probably *Cerochlamys trigona.*

truncatéllum: *Conophytum truncatellum.*

tuberculàtum: *Cheiridopsis tuberculata.*

tuberculòsum: *Faucaria tuberculosa.*

tumídulum: *Ruschia tumidula.*

turbinifórme: *Lithops turbiniformis.*

uncinàtum: *Ruschia uncinata.*

uncinéllum: *Ruschia uncinella.*

vaginàtum: *Ruschia vaginata.*

velùtinum: *Gibbæum velutinum.*

verruculàtum. Per. to 1 ft. or more, branches twisted or crooked: lvs. fascicled, cylindric, mealy, to 1½ in. long: fls. yellow, the petals scarcely longer than calyx.

vespertìnum: *Bergeranthus vespertinus.*

violàceum: *Lampranthus emarginatus.*

vittàtum: *Nananthus vittatus.*

vulpìnum: a form of *Carruanthus caninus.*

Wátermeyeri: *Lampranthus Watermeyeri.*

Wéttsteinii: *Conophytum Wettsteinii.*

Zèyheri: *Lampranthus Zeyheri.*

MÉSPILUS. *Rosaceæ.* One deciduous small tree from Eu. and Asia Minor, grown for the edible fr. **M. germánica** (*Pyrus germanica*). MEDLAR. To 20 ft., sometimes thorny: lvs. oblong, to 5 in. long, finely toothed: flx. white, to 2 in. across, solitary on shoots of the season: fr. an apple-shaped open-topped pome 1–2 in. across, eaten out of hand when fully ripe or bletted, or made into preserves.—It is hardy N. Propagated by seeds which are slow in germinating and by grafting or budding on seedling stock or on the pear, quince or hawthorn.

MESQUITE: *Prosopis glandulosa.*

METROSIDÈROS. *Myrtaceæ.* Odd trees or shrubs native in New Zeal., Australia and Pacific Isls., having mostly opposite simple lvs., showy white or red fls. in cymes or racemes, the stamens long-exserted, and fr. a leathery caps.; planted for ornament in warm regions, as in Calif. Propagated by cuttings. Sometimes listed as "Iron-tree." The following are from New Zeal. except *M. tremuloides.*

citrìna: *Callistemon lanceolatus.*

Colensòi. Climbing shrub: lvs. to ¾ in. long, ovate or ovate-lanceolate, densely pubescent when young: fls. pink or whitish, in cymes to 1½ in. long.

diffùsa. Climbing shrub: lvs. to 1½ in. long, oblong or ovate, leathery: fls. crimson, in terminal branched cymes.

floribúnda: *Callistemon lanceolatus.*

flórida. Climbing shrub: lvs. to 3 in. long, elliptic-oblong, leathery: fls. orange-red, in terminal cymes. Var. **auràta** has yellow or yellowish-orange fls.

lùcida. Tree to 60 ft.: lvs. to 3 in. long, lanceolate, leathery: fls. bright red, in short terminal cymes.

Párkinsonii. Shrub with prostrate branches or tree to 30 ft.: lvs. to 3 in. long, ovate-lanceolate, leathery: fls. red, in dense cymes usually on old wood.

perforàta: *M. scandens.*

robústa. RATA. Tree to 100 ft.: lvs. to 1½ in. long, ovate-oblong or elliptic-lanceolate, leathery: fls. dark red, in dense terminal cymes.—Commonly starts as an epiphyte.

scándens (*M. perforata*). Climbing shrub: lvs. to ½ in. long, ovate to orbicular, leathery and shining: fls. white, in terminal leafy panicles.

semperflòrens: *Callistemon lanceolatus.*

tomentòsa. Tree to 70 ft.: lvs. to 4 in. long, lanceolate to oblong, leathery, usually white-tomentose beneath: fls. dark red, in dense terminal cymes.

tremuloìdes. Small tree: lvs. to 2 in. long, narrow-lanceolate, leathery, shining above: fls. bright red. Hawaii.

villòsa. Tree to 60 ft.: lvs. to 2 in. long, ovate or oblong, very leathery, white-tomentose beneath: fls. scarlet, in small terminal cymes.

MÈUM. *Umbelliferæ.* Per. tufted aromatic herb to 2 ft. high, native in the mts. of Eu. and planted for ornament. **M. athamánticum.** Lvs. mostly basal, pinnately divided into fine segms.: fls. white to pink, in compound terminal umbels: fr. ribbed.—Propagated by seeds and division.

MEYEROPHỲTUM. *Aizoaceæ.* One succulent shrub of S. Afr. **M. Meỳeri** (*Mitrophyllum Meyeri*). To 2 in., the branches short, thickly covered with sheaths of dead lvs., the internodes very short: lvs. united into a heart-shaped body ¼ in. long, ⅕ in. wide and ⅙ in. thick: fls. red.

MICHAÙXIA. *Campanulaceæ.* Several species of bien. or per. herbs of S. W. Asia, one sometimes planted in the border: lvs. toothed or lobed: fls. white or pink, 8–10-parted and not bell-shaped: caps. opening laterally. Propagated by seeds.

campanuloìdes. Erect, 5–8 ft.: lvs. lanceolate, irregularly toothed, bristly-hairy: fls. white tinged purple, to 2 in. long, drooping, the segms. becoming reflexed.—Blooms second or third year from seed.

MICHÈLIA. *Magnoliaceæ.* Trees and shrubs of Asia resembling Magnolia but with axillary fls. and with a long gynophore or stipe to the ovary; planted in S. U. S. Propagated by seeds and cuttings of ripe wood under glass.

Champàca. Tall evergreen tree: lvs. lanceolate-ovate, to 10 in. long: fls. yellow or orange, very fragrant, to 2½ in. across. Himalayas.

compréssa (*Magnolia compressa*). Evergreen tree to 40 ft.: lvs. oblong, to 4 in. long: fls. yellow, fragrant, 1 in. across. Japan.

fuscàta (*Magnolia fuscata*). Banana-Shrub. Evergreen shrub to 15 ft., the branchlets brown-tomentose: lvs. elliptic to oblong, to 3 in. long: fls. brownish-yellow edged with red, with banana fragrance, to 1½ in. across. China.

MICÒNIA. *Melastomaceæ.* Shrubs and trees of trop. Amer. grown in greenhouses for the large attractive lvs., having rather small white, rose, purple or yellow fls., and berry-like frs.

Miconias should be grown in fibrous soil, given abundant moisture, and screened from the direct rays of the sun. Propagated by cuttings of firm wood over heat.

magnífica (*Cyanophyllum magnificum*). Lvs. broadly ovate, to 2½ ft. long, wavy-margined, reddish-bronze beneath with white or light green veins. Mex.

MICRAMPELIS: *Echinocystis lobata.*

MICRANTHES: *Saxifraga.*

MICROCÍTRUS. *Rutaceæ.* Four Australian very spiny shrubs or small trees, as now known, introduced into this country as interesting citrus allies and as possible material for hybridization and for stocks. They differ from Citrus in the small fls., stamens not united, few-celled ovary and fr., and in foliage characters. **M. australàsica,** Finger-Lime, probably best known here, grows to 30 or 40 ft.: juvenile lvs. very small; mature lvs. obovate or rhomboidal, to 1½ in. long: fr. elongated, to 4 in. long by 1 in. thick, the juice acid.—Hardier than lemon and lime, and promising for experiment; it has been crossed with *Citrus mitis.*

MICROCỲCAS. *Cycadaceæ.* A single species in W. Cuba, much like Zamia except in scales of staminate cone. **M. calócoma,** Corcho, which is sometimes planted in collections, reaches tree dimensions (to 30 ft.), sometimes with a few short branches: lvs. to 3 ft. long, pubescent; lfts. to about 80 pairs, long-linear and acuminate, margins somewhat revolute, the veins parallel but no midrib: staminate cone very large.

MICROGLÓSSA. *Compositæ.* Shrubs of Asia and Afr., sometimes climbing, with alternate commonly entire lvs. and heads in panicles or corymbs, the ray-fls. white or bluish; pappus of hairs. Grown for ornament.

albéscens (*Aster cabulicus*). To 3 ft.: lvs. lanceolate, to 5 in. long, gray-tomentose beneath: heads ⅓ in. across, borne in corymbs to 6 in. across, ray-fls. lilac, disk yellow. Himalayas, China.

MICROLÈPIA. *Polypodiaceæ.* Trop. and subtrop. ferns similar to Davallia but differing in the character of the indusia. Graceful plants requiring the usual greenhouse treatment. See *Ferns.*

platyphỳlla. Fronds to 4 ft. long, 3-pinnatifid, segms. broad and toothed, glabrous and shining when old, on stipes to 3 ft. long. India to Japan.

MICROMÈRIA. *Labiatæ.* Per. usually trailing herbs with small lvs. and small 2-lipped fls. in axillary whorls or terminal spikes; adapted to the rock-garden. Propagated by seeds, cuttings and division.

Chamissònis (*M. Douglasii*). Yerba Buena. Sts. to 2 ft. long, rooting at tips: lvs. round, to 1 in. long, wavy, pubescent: fls. white, ¼ in. long, usually solitary. B. C. to Calif.

córsica: hort. name for woody or suffrutescent form having ovate lvs. to ⅙ in. long, with acute apex, silvery appressed pubescence beneath and rose-pink fls.—The plant is probably *Satureja corsica.*

croática (*Satureja croatica*). Sts. low and tufted: lvs. ovate or orbicular, pubescent: fls. violet, in 1–3-fld. peduncled clusters. Balkans.

dalmática. Sts. ascending to 1½ ft., branched: lvs. ovate, pubescent: fls. white, in many-fld. peduncled clusters forming long loose racemes. Rocks, S. E. Eu.

Doúglasii: *M. Chamissonis.*

græca. To 1½ ft., much branched: lvs. linear or lanceolate, rough-pubescent: fls. rose, in peduncled 2–10-fld. loose clusters. Medit. region.

Juliàna. To 1 ft., much branched: lvs. linear or lanceolate, pubescent: fls. purplish, in many-fld. nearly sessile clusters. Medit. region.

libanótica. To 10 in., sts. usually erect, simple, slender: lvs. orbicular to ovate, to 4 in. long, sessile, white-woolly: fls. pink, in short cymes. Syria.

Piperélla. To 6 in.: lvs. ovate, glabrous: fls. reddish-purple, in few-fld. clusters. S. Eu.

rupéstris. Sts. prostrate, ascending at tips: lvs. ovate or oblong: fls. white spotted lavender, in many-fld. short-peduncled clusters. S. Eu.

MICROSERIS: *Uropappus linearifolius.*

MICROSPERMIA: *Parodia.*

MICROSTYLIS: *Malaxis.*

MIDRIB: the main rib of a leaf or leaf-like part: a continuation of the petiole or petiolule.

MIGNONETTE: *Reseda.* **-Tree:** *Lawsonia inermis.* **-Vine:** *Boussingaultia baselloides.*

MIKÀNIA. *Compositæ.* American twining herbs or shrubs with opposite lvs. and 4-fld. heads of white or pink disk-fls. borne in panicled cymes; pappus of bristles. Allied to Eupatorium and requiring similar treatment.

scándens. Climbing Hempweed. Twining to 15 ft., glabrous: lvs. ovate or hastate, to 4 in. long, deeply cordate at base, long-acuminate. Me. to Fla. and Tex. and S. Amer. —Adaptable for colonizing in wild places.

MÌLA. *Cactaceæ.* Small cylindrical cacti growing in clumps; ribs low, the closely placed areoles bearing spines: fls. at top of plant, small, yellow.

Kubeàna. To 6 in.; ribs about 11; radial spines 9–12, ½ in. long, white; centrals 4, yellow tipped brown, to ¾ in. long. Peru.

Nealeàna. To 6 in. tall and nearly 2 in. diam.; ribs 11, low and flat; radial spines 11–13, to ⅓ in. long, white; centrals 3–4, to ⅝ in. long, flexible: fls. to 1 in. across. Peru.

MILFOIL: *Achillea Millefolium.* **Water:** *Myriophyllum.*

MILK-BUSH: *Euphorbia Tirucalli.* **African:** *Synadenium Grantii.*

MILK-MAIDS: *Dentaria integrifolia.*

MILKWEED: *Asclepias.*

MILKWORT: *Polygala.*

MÍLLA. *Liliaceæ.* One bulbous herb native in Ariz., New Mex. and Mex. **M. biflòra.** MEXICAN STAR. Lvs. basal and grass-like: fls. fragrant, waxy-white, to 2½ in. across, 1–5 together terminating a scape to 1½ ft. high.—Sometimes erroneously cult. under the name *Bessera elegans.* Several bulbs may be planted in one pot and grown in the greenhouse for late winter and early spring bloom; or the bulbs may be planted out-of-doors and the bulbs lifted and stored over winter. *M. uniflora* is *Brodiæa uniflora.*

MILLET: *Panicum miliaceum, Setaria italica.* **African:** *Eleusine coracana, Pennisetum glaucum.* **Indian:** *Pennisetem glaucum.* **Japanese Barnyard:** *Echinochloa Crus-galli* var. *frumentacea.* **Pearl:** *Pennisetum glaucum.* **Texas:** *Panicum texanum.*

MILLÉTTIA. *Leguminosæ.* Old World trees, shrubs or climbing vines allied to Wisteria and differing in the pod which is rather flat, much thicker and not splitting open readily.

japónica: *Wisteria japonica.*

megaspérma: *Wisteria megasperma.*

reticulàta (*Wisteria reticulata*). Twining woody vine: lvs. persistent, pinnate, lfts. elliptic-lanceolate to lanceolate, to 3 in. long, acute, glabrous, somewhat leathery: fls. pinkish-blue, to ½ in. long, in dense stout racemes to 8 in. long, sometimes compounded into large panicles: pods to 6 in. long. China; planted in the S., and hardy to neighborhood of Philadelphia.

MILTÒNIA. *Orchidaceæ.* American epiphytes allied to Odontoglossum and requiring similar treatment, with 1- or 2-lvd. pseudobulbs having sheathing lvs. at base and fls. solitary or in loose racemes, the sepals and petals nearly equal, the lip expanded and showy. For cult. see *Orchids.*

Bleuàna. Hybrid between *M. vexillaria* and *M. Roezlii.*

Blúntii. Supposed to be a natural hybrid between *M. Clowesii* and *M. spectabilis.*

cándida. Pseudobulbs with 2 lvs. to 1½ ft. long: infl. to 20 in. long, 2–8-fld.; fls. about 3–3½ in. across; sepals and petals chestnut-brown tipped and spotted with yellow; lip white with 2 purple-brown spots at base. July–Oct. Brazil.

Chárlesworthii. Hybrid between *M. Hyeana* and *M. vexillaria.*

Clówesii. Pseudobulbs with 2 lvs. to 1½ ft. long: infl. about twice as long as lvs., loosely 7–10-fld.; fls. 2–3 in. across, chocolate-brown barred with yellow; lip with violet basal half and white anterior half. Aug.–Oct. Brazil.

cuneàta. Pseudobulbs with 2 lvs. to 15 in. long: infl. to about 28 in. high, 5–8-fld.; sepals and petals chestnut-brown with yellow at apex and base; lip white. Jan.–Mar. Brazil.

flavéscens. Pseudobulbs with 2 lvs. to 14 in. long and ⅞ in. broad: infl. loosely 4–16-fld., commonly longer than lvs.; sepals and petals straw-yellow; lip white marked with red-purple. Oct., Nov., May, June. Brazil, Paraguay.

Hyeàna. Hybrid between *M. Bleuana* and *M. vexillaria.*

lævis (*Odontoglossum læve*). Pseudobulbs with 2 lvs. to 12 in. long and about 1½ in. wide: infl. to 3 ft. high, racemose or paniculate, loosely many-fld.; sepals and petals cinnamon-brown barred with yellow or yellow-green; lip violet near base, white above. Mar.–July. Cent. Amer.—This species, together with *M. Reichenheimii,* though lately referred to Miltonia, may be found to belong to Odontoglossum in its broadest sense.

Lyceàna. Hybrid between *M.* Lord Lambourne and *M.* Princess Margaret.

Phalænópsis. Pseudobulbs with 1–2 lvs. to 9 in. long: infl. shorter than lvs., loosely 2–5-fld.; fls. 1½–2½ in. across, white with streaks and blotches of purple on lip. Apr.–Aug. Colombia.

púlchra. Hybrid between *M. Lyceana* and *M.* Wm. Pitt.

Régnellii. Pseudobulbs with 2 lvs. to about 1½ ft. long: infl. to 20 in. long, loosely 3–5-fld.; fls. to 2¾ in. across; sepals and petals white; lip rose veined with rose-purple. Jan.–May, Aug.–Oct. Brazil.

Reìchenheimii (*Odontoglossum Reichenheimii*). Similar to *M. lævis,* but with larger fls. and flatter lip with less distinct claw.

Roézlii. Pseudobulbs with 1 lf. to 1 ft. long: infl. loosely 2–5-fld.; fls. to about 4 in. across, white with purple blotch at base of each petal and yellow at base of lip. Sept.–Oct., Mar.–July. Colombia.

Russelliàna. Pseudobulbs 2-lvd.: lf. to 9 in. long: infl. to 2 ft. long, 5–9-fld.; sepals and petals reddish-brown; lip with basal part lilac and apical third pale yellow or white. Brazil.

spectábilis. Pseudobulbs with 2 lvs. to 6 in. long: fls. solitary, about 4 in. across; sepals and petals white or cream-color; lip rose-purple with darker center and nerves. Feb., Sept. Brazil. Var. **Moreliàna** has larger fls. with plum-purple sepals and petals and violet-rose lip.

vexillària. Pseudobulbs 1–2-lvd., surrounded at base by 6–8 two-ranked lvs.: lf. to about 1 ft. long: infl. to 20 in. long, 4–7-fld.; fls. 2–4 in. across, pale rose or white or rose-carmine; lip rose with yellow and white at base and white on edges. May–July. Colombia.

Warscewíczii (*Oncidium fuscatum*). Pseudobulbs bearing 1 lf. to 9½ in. long: infl. simple or paniculate, many-fld., to 14 in. long; sepals and petals red-brown with yellow or white at tips; lip rose-purple with white margins and brown blotch above middle. Feb., Mar. Colombia, Peru.

MIMÒSA. *Leguminosæ.* Plants of various habit, herbs, shrubs and trees with feathery bipinnate foliage, in some species sensitive, small fls. in heads or spikes, and fr. a flat pod made up of 1-seeded joints; native mostly in trop. Amer. Some of the acacias and other plants are sold under the name Mimosa. A few of the shrub and tree species are planted for ornament in warm countries, and the sensitive-plant in conservatories. Cult. as for *Acacia.*

acanthocárpa: *M. aculeaticarpa.*

aculeaticárpa (*M. acanthocarpa*). Spiny shrub or small tree: fls. white or pink, in heads. Mex.

álbida. Spiny shrub to 10 ft., gray-pubescent: fls. pinkish, in heads. Mex. to Peru.

argéntea. Climbing: lvs. pinkish below and partially silvery-gray. Brazil.

illinoénsis: *Desmanthus illinoensis.*

Nèmu: *Albizzia Julibrissin.*

pùdica. SENSITIVE-PLANT. HUMBLE-PLANT. Spiny per. but cult. as an ann.: lvs. sensitive: fls. lavender, in heads. Brazil; nat. in warm countries, running wild in Gulf states.

sepiària. Shrub or tree-like, with short hooked spines or prickles: lvs. twice compound, the pinnæ 6–8 pairs and 2 in. or less long and with many secondary linear lfts.: fls. white, in peduncled small globular heads: pod about 2 in. long, very narrow. Brazil.—Planted in S. Fla.

Speggazzínii. Spiny shrub: lvs. sensitive: fls. rose-purple, in heads. Argentina. Var. **glaùca,** fls. white.—A good greenhouse species, intro. into Calif.

MIMOSACEÆ: *Leguminosæ.*

MÍMULUS (incl. *Diplacus*). MONKEY-FLOWER. *Scrophulariaceæ.* Ann. and per. herbs or sometimes subshrubs with usually showy tubular 2-lipped fls. often spotted, giving more or less the effect of a face (personate), either solitary and axillary or in terminal racemes: lvs. opposite, entire or toothed; decumbent or erect.

Monkey-flowers are grown in the greenhouse and in the border and some of the large kinds in the general garden in California. In the open, glasshouse kinds of mimulus profit by a shady or semi-shady situation and plenty of water, but some of the semi-shrubby kinds of the Pacific Coast may not require such protection. The greenhouse and florists' kinds are propagated by seed sown from January to April, in a mixture of equal parts of loam, leaf-mold and sand, and kept in a temperature of 60° until germination; cuttings and division are also used. *M. luteus* is the chief source of flower-garden and conservatory kinds, with large often spotted flowers.

alàtus. Per. to 2 ft., stoloniferous: lvs. ovate or ovate-lanceolate, to 6 in. long: fls. blue or violet, 1 in. long. Mass. to S. C. and Tex.—Similar to *M. ringens,* differing in its stalked lvs. and shorter fl. pedicels.

alpìnus: *M. luteus* var.

áridus. Shrub to 10 in., sticky: lvs. oblanceolate to oblong, to 1¾ in. long and ½ in. wide, crowded: fls. pale buff to yellow, to 2 in. long, on stout pedicels to ¼ in. long. S. Calif.

aurantìacus (*M. glutinosus. Diplacus glutinosus*). BUSH M. Shrub to 4 ft.: lvs. oblong, to 2 in. long, densely pubescent beneath: fls. deep yellow, to 1½ in. long, the spreading lobes toothed or notched. Ore., Calif.

Bartoniànus. Hybrid between *M. cardinalis* and *M. Lewisii* with fls. rose-red, throat yellow spotted brownish-red.

brévipes. Ann., sticky-pubescent, to 2 ft.: st.-lvs. lanceolate to linear, to 3 in. long: fls. yellow, bell-shaped, 2-lipped, to 2 in. long. Calif.

Brèweri. Ann. to 6 in., pubescent: lvs. oblong or linear, to ¾ in. long: fls. pink or red, funnel-shaped, ⅛ in. long. B. C. to Ida. and Calif.

cæspitòsus: *M. Tilingii* var.

cardinàlis. Per. with erect or weak sts. to 1 ft., sticky-pubescent: lvs. obovate, to 4½ in. long: fls. scarlet, seldom yellow, to 2 in. long, 2-lipped, stamens exserted. Utah to Ore. and Lower Calif.

cùpreus. CHILEAN M. Ann. to 8 in.: lvs. ovate, to 1¼ in. long, 3–5-nerved from base: fls. yellow becoming brilliant copper-color, to 1½ in. long, lobes spreading. Chile.

Frèmontii. Ann. to 8 in., sticky-pubescent: lvs. oblong, to 1 in. long: fls. crimson, 1 in. long, broadly funnel-shaped. Calif.

glaùca: catalogue name, perhaps for *M. glaucescens.*

glaucéscens. Ann. to 15 in., glabrous and glaucous: lower lvs. rounded-ovate to subcordate, to 4 in. long, coarsely toothed, long-petioled, upper lvs. orbicular and sessile: fls. yellowish, spotted red, to 1½ in. long. Calif.

glutinòsus: *M. aurantiacus.*

guttàtus (*M. Langsdorfii*). Ann. or per. to 1½ ft.: lvs. ovate to oblong-lanceolate, to 6 in. long: fls. yellow, usually with red-spotted throat, to 1½ in. long, 2-lipped, calyx much inflated in fr. Alaska to Mex.

imperiàlis: listed as a low per. with orange fls. spotted red.

impléxus: *M. Tiliginii.*

Lángsdorfii: *M. guttatus.*

leptánthus (*Diplacus leptanthus* and *grandiflorus*). Shrub to 3 ft., pubescent: lvs. oblong, to 2 in. long: fls. yellow, to 2½ in. long, the lobes notched. Calif.

Lèwisii. Per. to 2½ ft., sticky-pubescent: lvs. oblong, to 3 in. long: fls. rose-red or pink, to 2 in. long. B. C. to Calif. and Utah. Var. **álbus,** fls. white.

longiflòrus (*Diplacus longiflorus* and *speciosus. M. glutinosus* var. *brachypus*). Shrub to 3 ft.: lvs. lanceolate, to 3 in. long, pubescent beneath: fls. cream-color to salmon-yellow, to 3 in. long, lobes cut or wavy. S. Calif. Var. **rùtilans** is glandular-pubescent with dark red fls.

lùteus. Per., sts. to 1 ft. long, prostrate: lvs. broad-ovate, 1 in. long, 5–7-nerved from base: fls. yellow spotted with red or purple, to 1½ in. long. Chile. Var. **alpìnus,** to 6 in., erect; **rivulàris,** middle lobes of lower lip with large red spot; **variegàtus,** throat pale yellow, lobes margined with pinkish-purple; **Youngeàna,** each lobe spotted.

moschàtus. MUSK-PLANT. Per. with spreading and creeping stolons to 1 ft. long, sticky-hairy, with a musky odor: lvs. ovate, to 1½ in. long: fls. pale yellow, lightly dotted with brown, to ¾ in. long. Mont. to Calif. Var. **compáctus** is listed as a denser plant.

nànus. Ann. to 6 in., sticky-pubescent: lvs. obovate or oblong, to 1¼ in. long: fls. reddish-purple with yellowish tube, ¾ in. long. W. N. Amer.

nasùtus. Ann. to 2 ft.: lvs. ovate or oblong, to 4 in. long, toothed or lobed: fls. spotted with red-brown, to 1 in. long, 2-lipped. B. C. to N. Mex. and Rocky Mts.

parviflòrus (*Diplacus parviflorus*). Shrub to 2 ft.: lvs. obovate, to 1¾ in. long, pale green below and often shining: fls. brick-red tinged with yellow, to 1¾ in. long. Santa Cruz Isl., Calif.

primuloìdes. Per. to 4 in., stoloniferous: lvs. obovate or oblong, to 1 in. long: fls. yellow often spotted with reddish-brown, to ¾ in. long, funnel-shaped, usually solitary. W. N. Amer.

puníceus (*M. glutinosus* var. *puniceus. Diplacus puniceus*). Shrub to 6 ft., sticky: lvs. linear, to 2½ in. long: fls. red, to 1½ in. long. S. Calif.

quinquevúlnerus: hort. name for *M. luteus.*

ríngens. ALLEGHENY M. Per. to 4 ft., sts. 4-angled: lvs. oblong, to 4 in. long: fls. blue varying to pink or white, to 1½ in. long, 2-lipped, throat very narrow. N. S. to Man., Va., Tex.

speciòsus: *M. longiflorus.*

tigrìnus. Hybrids (or other cultigens) between *M. luteus* and *M. guttatus,* with large fls.

Tìlingii (*M. implexus*). Per., sts. creeping, to 8 in. long: lvs. broad-ovate, 3–5-nerved from base: fls. yellow spotted red, to 1½ in. long, calyx inflated in fr. Mont. to Calif. Var. **cæspitòsus** (*M. cæspitosus*) is a smaller mat-forming plant with sts. stoloniferous, shorter than type: fls. to 1 in. long, terminal and solitary. Wet rocks near the snow-line, Calif.

trícolor. Ann. to 6 in., glandular-pubescent: lvs. oblanceolate or oblong, to 1 in. long: fls. yellow, lobes usually with reddish-purple spot, to 1¾ in. long. Ore., Calif.

variegàtus: *M. luteus* var.

MÍMUSOPS. *Sàpotaceæ.* Large number of milky-juiced thick-lvd. evergreen trees in the tropics of both hemispheres, some planted in warm countries for ornament and interest as well perhaps as for the frs. and for the production of rubber: lvs. simple and entire, mostly glossy, without prominent side nerves: fls. bisexual, white or whitish, not showy, single or clustered in axils, the corolla of 6 or more lobes: fr. an ovoid or globose large-seeded berry. Propagated by seeds; they have been employed as stock for sapodilla.

Balàta. To 100 ft. and more: lvs. oblong-obovate, to 8 in. long: fls. 10 or more, outside corolla-lobes lobed: f- about 1 in. long. Farther W. Indies, Venezuela, Guiana.—A source of balata rubber.

Eléngi. SPANISH-CHERRY. Tree to 30 ft. and more, with spreading top: lvs. elliptic or oval, obtuse or bluntly acute, to 4 in. long: fls. white, about ½ in. across, the parts acute: fr. ovoid, yellow, nearly 1 in. long, edible. E. Indies.

MINA: *Quamoclit lobata.*

MINT: *Mentha.* **Horse-:** *Monarda.* **Lemon-:** *Monarda pectinata.* **Mountain-:** *Pycnanthemum.* **Stone-:** *Cunila origanoides.*

MINUARTIA: *Arenaria octandra.*

MIRÁBILIS. *Nyctaginaceæ.* Per. or ann. herbs with colored tubular calyx resembling a corolla and spreading 5-lobed limb; roots often tuberous; about a dozen species in the warmer parts of Amer., a few grown in flower-gardens.

Mirabilis species are grown as tender annuals from seed sown where plants are to stand; roots may be taken up and stored over winter.

califórnica. To 3 ft., sticky-pubescent: lvs. ovate, to 1½ in. long, somewhat fleshy: fls. rose-purple, ½ in. long. Calif.

dichótoma. Ann. to 30 in.: fls. pink suffused with white, stamens purple. Mex.

divaricàta. Differs from *M. Jalapa* in the longer-stalked lvs. which are not cordate at base, and the tube of the purple or rose fls. being narrower. Madeira Isls.

Froèbelii. Per. with tuberous root, sts. decumbent, to 2 ft. long, much branched, sticky-pubescent: lvs. ovate, to 3 in. long: fls. purplish-red, to nearly 2 in. long, usually 3–10 in involucre. Dry stony regions in Colo., Nev. and S. Calif.

Jalàpa. FOUR-O'CLOCK. MARVEL-OF-PERU. To 3 ft., glabrous or nearly so: fls. in shades of red, yellow and white, often striped and mottled, the tube 1–2 in. long, opening in late afternoon. Trop. Amer.—Known as an ann., but the roots are deep and tuberous, weighing more than 40 lbs. when grown as per. in warmer regions.

longiflòra. To 3 ft., glandular-pubescent: fls. white, rose or violet, the tube 4–6 in. long. Mex.

multiflòra (*Quamoclidion multiflorum*). To 3 ft.: fls. rose or purple, the tube to 2 in. long. Colo. to Tex.

viscòsa. To 3 ft., sticky-pubescent, sts. to 2 in. thick: lvs. ovate, to 4 in. long, fleshy, petiolate, usually cordate at base: fls. purple, red, pink or white, to ¾ in. long or less, usually solitary. Colombia, Ecuador, Mex.

MIRASOLIA: *Tithonia diversifolia.*

MIRLITON: see *Chayote.*

MIRO: *Podocarpus ferruginea.*

MISCÁNTHUS (*Eulalia*). *Gramineæ.* Tall bold broad-lvd. per. grasses with awned spikelets in large terminal silky panicles; native in Old World and one species grown for striking effects. See *Grasses.*

gracíllimus: *M. sinensis* var.

sinénsis (*Eulalia japonica*). EULALIA. Common landscape grasses: to 10 ft., forming leafy clumps: lvs. to 3 ft. long and 1 in. wide, with prominent whitish midrib: panicles to 2 ft. long, branches spreading or drooping, silky. China, Japan; somewhat escaped in N. Amer.; hardy N. Var. **gracillîmus** has channelled lvs. to ¼ in. wide. Var. **variegàtus** has lvs. striped white or yellowish and in var. **zebrìnus,** ZEBRA-GRASS, they are banded. Plants listed as *M. sinensis univittatus, E. gracillima univittata* and *E. japonica foliis-vittatis* belong to *M. sinensis* var. *gracillimus.*

zebrìnus: *M. sinensis* var.

MIST-FLOWER: *Eupatorium cælestinum.*

MISTLETOE: see *Loranthaceæ.*

MITCHÉLLA. *Rubiaceæ.* A single N. American evergreen herb, barely woody, with trailing rooting sts. to 1 ft. long, useful in the rock-garden or as a ground-cover beneath trees. **M. rèpens.** PARTRIDGE-BERRY, TWIN-BERRY. SQUAW-BERRY. Lvs. orbicular-ovate, to ¾ in. long, dark green and shining above and often with white lines: fls. twin, white, ½ in. long, with 4 spreading lobes bearded inside: fr. scarlet, ⅓ in. across, white in var. **leucocárpa.**

MITÉLLA. BISHOPS-CAP. *Saxifragaceæ.* Per. small delicate woods herbs with heart-shaped mostly basal lvs. and small white or greenish fls. in racemes, the petals pinnately cut; native in N. Amer. and E. Asia. Sometimes transferred to the wild-garden.

Brèweri (*Pectiantia Breweri*). Slender scapes to 8 in.: fls. greenish-yellow, usually 4–20 in raceme, on short spreading pedicels. B. C. to Calif. on high mts.

cauléscens (*Mitellastra caulescens*). Scapes to 1 ft., with 1–3 lvs.: fls. yellowish-green, in loose racemes. May–July. B. C. to Mont. and N. Calif.

diphýlla. Scapes to 1½ ft., with one pair of opposite nearly or quite sessile lvs.: fls. white, in racemes to 8 in. long. Apr., May. Que. to N. C. and Mo.

nùda. Scapes to 8 in., usually leafless: fls. yellowish-green, in few-fld. racemes. Apr.–June. N. N. Amer., Asia.

oppositifòlia. St.-lvs. long-petioled: divisions of petals filiform. Cent. N. Y.

pentándra (*Pectiantia pentandra*). Scapes to 1 ft. high, naked: fls. greenish, in loose racemes. June–Aug. Alaska to Calif.

stauropétala (*Ozomelis stauropetala*). To 20 in., glandular-puberulent or hirsute: lvs. reniform-orbicular and 5–9-obtusely lobed, somewhat hirsute on each side: fls. white, in elongate racemes, petals 3-parted to the middle. Mont. to Colo., Wash. and Ore.

MITELLASTRA: *Mitella caulescens.*

MITRÀRIA. *Gesneriaceæ.* A climbing evergreen shrub from Chile, grown under glass or out-of-doors in mild climates and of easy cult. **M. coccínea.** Lvs. opposite, ovate, to 1 in. long, with few coarse teeth: fls. scarlet, to 1½ in. long, tubular, drooping on long stalks; stamens exserted.

MITREWORT, FALSE: *Tiarella.*

MITROPHÝLLUM. *Aizoaceæ.* Small S. African shrubs: first pair of lvs. united only at base, second pair united one-third to entirely into a conical body: fls. solitary and terminal, with numerous linear petals and 5–7 stigmas.

gránde. To 1 ft. when in flower: cones to 4 in. long and 1 in. thick: fls. white, 2 in. across.

Meỳeri: *Meyerophytum Meyeri.*

mitràtum (*Mesembryanthemum mitratum*). To 2 ft.: plant at rest a cone to 2½ in. long and 1 in. thick: fls. pale pink with white base, ¾ in. across.

MITSUMATA: *Edgeworthia papyrifera.*

MOCCASIN-FLOWER: *Cypripedium.*

MOCKERNUT: *Carya tomentosa.*

MOEHRINGIA: *Arenaria muscosa.*

MOHÀVEA. *Scrophulariaceæ.* Ann. herbs of Calif. and Ariz., botanically allied to Antirrhinum: fls. solitary in the axils, forming a leafy spike, cream-color, with very short tube and limb of 2 fan-shaped lips, the upper 2-lobed, lower 3-lobed.

confertiflòra. To 1 ft., sticky-pubescent: lvs. lanceolate, to 2½ in. long, entire: fls. about 1 in. long, with fine dots arranged in lines. Colorado and Mohave deserts.

MOHRODENDRON: *Halesia.*

MOLDAVICA: *Dracocephalum.*

MOLE-PLANT: *Euphorbia Lathyrus.*

MOLÍNIA. *Gramineæ.* Tufted per. grasses with narrow lvs. and spikelets in interrupted panicles; native in Eu. and Asia and one of some ornamental value. See *Grasses.*

cærùlea (*Aira cærulea*). To 5 ft.: lvs. to 1 ft. long and ¼ in. wide, rather stiff: panicles to 1½ ft. long, green or purplish. Eu.; nat. in E. U. S.

MOLOPOSPÉRMUM. *Umbelliferæ.* One per. herb to 5 ft. high, native in mts. of Eu., sometimes planted for ornament. **M. cicutàrium.** Lvs. ternately decompound, the ultimate segms. pinnatifid: fls. yellowish-white, small, in terminal umbels standing above the foliage.—Propagated by division or seed.

MÓLTKIA. *Boraginaceæ.* Per. hairy herbs of S. Eu. and Asia, with alternate simple lvs. and blue or yellow fls. in terminal cymes or racemes; corolla funnel-shaped, the throat naked or hairy; stamens protruding. Allied to Lithospermum. Sometimes cult. in the rock-garden.

graminifòlia: *M. suffruticosa.*

petræ̀a (*Lithospermum petræum*). Hoary somewhat woody per. to 1 ft.: lvs. linear-oblong: fls. deep violet-blue, to ½ in. long. S. E. Eu.

suffruticòsa (*M. graminifolia. Lithospermum graminifolium*). Subshrub to 1½ ft.: lvs. linear, white-tomentose beneath: fls. purple-blue, ½ in. long. Italy.

MOLUCÉLLA. *Labiatæ.* Old-fashioned herbaceous annuals, with toothed or cut lvs. and white or pink-tipped tubular 2-lipped fls. in axillary whorls subtended by spiny subulate bracts, the limb of calyx inflated and surpassing the corolla.

Molucellas are grown from seeds sown early in spring indoors, or *M. lævis* in the open where the season is long.

læ̀vis. SHELL-FLOWER. MOLUCCA-BALM. To 3 ft.: lvs. round, to 1¼ in. long, toothed, long-stalked: fls. fragrant, white, the limb of greatly enlarged calyx with 5 slightly prickly angles. W. Asia.—Grown as a curiosity.

spinòsa. To 8 ft., sometimes bien., sts. brownish-red: lvs. ovate, deeply cut: fls. white, the limb of calyx with 1 long spine above and 7 others below. S. Eu., Syria.

MOMBIN: *Spondias Mombin* and *purpurea.*

MOMÓRDICA. *Cucurbitaceæ.* Two ann. slender herbaceous tendril-bearing vines, out of 35–40 in the genus, are cult. for ornament and screens: monœcious or diœcious: lvs. in ours compound or deeply lobed: fls. yellow or white, rather showy (to 1 in. or more across), solitary in ours and the staminate peduncle bearing a broad bract: fr. nearly spherical to oblong, often splitting at maturity. Native in Old World tropics, one extensively nat. elsewhere. Quickly grown from seeds.

Balsámina. Balsam-Apple. Lvs. thin, 1–4 in. across, with very sharp lobes and teeth, lobed ½ or less of the width; bract of staminate peduncle on its upper part: fr. ovoid or ellipsoid, orange, to 3 in. long, narrowed both ends, with points or nearly smooth, bursting.

Charántia. Balsam-Pear. Lvs. deeply lobed and mostly less pointed: bract at middle of peduncle or lower: fr. oblong or ovoid, orange-yellow, 1–8 in. long, warty, bursting and showing red arils. Nat. Fla. south.—The commoner species.

Elatèrium: *Ecballium Elaterium.*

MONÁNTHES. *Crassulaceæ.* Small herbaceous or subshrubby succulents, mostly per., of the Canary Isls., with very thick mostly alternate lvs. and fls. greenish, purplish, or yellowish, in racemes or cymes.

atlántica: *Sedum atlanticum.*

brachycaùlon (*Sempervivum Lowei*). Minute per. with a much thickened bulb-like or cylindrical rootstock and usually a single rosette: lvs. loosely rosulate, oblong-spathulate, papillose, green mottled with purple, to ¾ in. long: fls. in a raceme with the calyx glandular-hairy and the petals greenish-purple. Canary Isls.

laxiflòra. Per. with fibrous roots and fat egg-shaped lvs. to ⅝ in. long: flowering shoots to 3 in. high, terminating in a slightly hairy raceme; fls. purplish or yellowish, with the calyx glabrous or slightly hairy. Canary Isls.

MONÁRDA. Horse-Mint. *Labiatæ.* Ann. and per. aromatic N. American herbs, with opposite toothed lvs. and rather large strongly 2-lipped fls. in dense terminal and axillary bracted showy clusters.

Horse-mints are rather coarse plants but striking in masses in the wild-garden. Of easy cultivation. Propagated by division of plants in the spring.

Bradburiàna. Per. to 2 ft.: lvs. ovate or ovate-lanceolate, to 3½ in. long, sessile: fls. pink to white spotted with purple, 1 in. long, in terminal clusters, the bracts green or purplish. Ind. to Ala. and Ark.

citriodòra: *M. pectinata.*

coccínea: *M. didyma.*

dídyma (*M. coccinea. M. Kalmiana*). Oswego-Tea. Bee- or Fragrant-Balm. Per. to 3 ft.: lvs. ovate or ovate-lanceolate, to 6 in. long, petioled: fls. scarlet, to 2 in. long, in terminal clusters, bracts tinged red. Que. to Ga. and Tenn.—Listed hort. names include **álba, coccínea, magnífica, purpùrea, ròsea, rùbra, salmònea, spléndens, supérba, violàcea.**

fistulòsa. Wild Bergamot. Per. to 3 ft.: lvs. lanceolate to ovate, to 4 in. long, petioled: fls. lilac to purple, 1½ in. long, in terminal clusters, the bracts whitish or purplish. Me. to Fla. and La. Var. **álba** has white fls. Var. **móllis** (*M. mollis*) differs from the typical form only in its much shorter pubescence.

florariénsis: hort. name.

hýbrida: hort. name of no botanical standing.

Kalmiàna: *M. didyma.*

lasiodónta. Per. to 1½ ft.: lvs. linear-lanceolate, to 2 in. long: fls. yellowish, ½ in. long, in axillary and terminal clusters, the bracts white. Okla. to Ariz.

mèdia (*M. fistulosa* var. *media*). Per. to 3½ ft.: lvs. ovate or ovate-lanceolate, to 5 in. long, petioled: fls. purple or purple-red, 1½ in. long, in terminal clusters, the bracts purple. Me. to Va.

menthæfòlia. Similar to *M. fistulosa* var. *mollis* from which it differs chiefly in its almost sessile or short-petioled lvs. Sask. to Alta., south to Ill. and Tex.

móllis: *M. fistulosa* var.

pectinàta (*M. citriodora*). Lemon-Mint. Ann. or short-lived per. to 15 in.: lvs. lanceolate to oblanceolate, to 1¾ in. long, distantly serrulate, punctate: fls. yellowish-white, in axillary and terminal clusters, slightly longer than the purplish-green lanceolate bracts, calyx-lobes awl-shaped. Neb. to Utah south to Tex. and Ariz.

punctàta. Per. to 3 ft.: lvs. lanceolate, to 3 in. long, petioled: fls. yellowish spotted with purple, 1 in. long, in axillary and terminal clusters, the bracts white or purplish, calyx-lobes lanceolate. S. N. Y. to Fla. and Tex.

Ramàleyi. Per. to 2 ft., sts. white-pubescent above: lvs. lanceolate or ovate-lanceolate, short-petioled: fls. lilac, 1 in. long, in terminal clusters, the bracts tinged purple. Colo.

Russelliàna. Per. to 2 ft.: lvs. lanceolate to ovate-lanceolate, nearly sessile: fls. lilac veined with purple, 1 in. long, in terminal clusters, the bracts purplish. Ark.

salmònea: *M. didyma* var.

strícta. To 2 ft., minutely pubescent: lvs. ovate to broadly lanceolate, to 2½ in. long, acuminate, sharply toothed, base rounded or truncate: fls. bright purple. Wyo. to Ariz. and New Mex.

violàcea: *M. didyma* var.

MONARDÉLLA. *Labiatæ.* W. American fragrant herbs with purple, rose or white 2-lipped fls. in terminal heads subtended by an involucre. Sometimes grown in the rock-garden. Propagated by division in spring.

lanceolàta. Ann. to 2½ ft., somewhat pubescent: lvs. oblong-lanceolate to lanceolate, to 2 in. long, entire: fls. rose-purple. Calif.

macrántha. Tufted per. to 1 ft., pubescent: lvs. ovate, to 1 in. long, mostly with entire revolute margins: fls. orange-red, 1½ in. long. Calif.

odoratíssima (*Madronella odoratissima*). Per. to 10 in., sts. decumbent at base, grayish-hairy: lvs. oblong, about ½ in. long, obtuse, sessile or nearly so, somewhat hairy beneath: fls. rose-pink to white, in compact terminal heads to ⅝ in. across. Ore., Wash. and Ida.

parvifòlia (*Madronella parvifolia*). Per. to 1 ft., woody at base and sts. decumbent: lvs. ovate- or oblong- lanceolate, ½ in. long, entire: fls. lilac-purple, ⅓ in. long. Colo.

purpùrea: a form of *M. odoratissima* occurring in N. W. U. S., having the leafy bracts subtending the head puberulent and not pubescent.

villòsa. Per. to 1½ ft., pubescent: lvs. ovate, to 1 in. long, slightly toothed: fls. purple, pink or white, about ½ in. long. Calif.

MONDIA: *Chlorocodon.*

MONDO: *Ophiopogon.*

MONÈSES. *Pyrolaceæ.* One evergreen per. herb to 6 in. high, native in woods of N. N. Amer., Eu. and Asia and sometimes planted in the wild-garden. **M. uniflòra** (*Pyrola uniflora*). One-flowered Shinleaf. Lvs. near base of st., orbicular or ovate, to 1 in. long, wavy-toothed: fls. white or pink, fragrant, to ¾ in. across, solitary and nodding: caps. ¼ in. across.

MONEYWORT: *Lysimachia Nummularia.*

MONILÀRIA. *Aizoaceæ.* Dwarf succulents of S. Afr.: first pair of lvs. a globular body pushed apart by second pair of cylindrical lvs.: fls. solitary, terminal, long-stalked; petals numerous, linear; stigmas 5–7.

chrysoleùca (*Mesembryanthemum* and *Conophyllum chrysoleucum*). To 4 in.: second lvs. to 3 in. long and 1/12 in. thick, papillose: fls. white with yellow stamens, 1½ in. across, on pedicels to 3 in. long.

monilifórmis (*Mesembryanthemum moniliforme*). To 4 in., branched: second lvs. to 3 in. long and ⅕ in. thick, papillose: fls. white with yellow center, 2 in. across, on pedicels 2 in. long.

MONIMIÀCEÆ. Monimia Family. About 30 genera in the tropics, trees and shrubs with opposite simple lvs., mostly bisexual polypetalous fls. having inconspicuous perianth, numerous stamens, many 1-celled carpels, and fr. an achene or drupe borne on the receptacle. Hedycarya, Laurelia and Peumus may be cult. in warm climates.

MONIMIA FAMILY: *Monimiaceæ.*

MONKEY-BREAD TREE: *Adansonia digitata.* **-Flower:** *Mimulus.* **-Pod:** *Samanea Saman.* **-Pot:** see *Lecythidaceæ.* **-Puzzle:** *Araucaria araucana.*

MONKSHOOD: *Aconitum.*

MONOCOTYLEDON: a plant bearing only one cotyledon or seed-leaf, in distinction from those that have two (dicotyledon) or more seed-leaves in the embryo; the cotyledons become apparent in germination. **Monocotyledonous:** adjective, pertaining to monocotyledons. The monocotyledons (in speech sometimes shortened to "monocots") are those of endogenous internal structure, lacking true separable bark or cortex; they were formerly known as endogens. Mostly these plants have parallel-veined leaves and floral parts in threes or multiples of three. Few of them are tall trees, many of the palms being exceptions. Monocotyledonous plants comprise all the grasses, cereal grains, sedges, banana, lilies, aroids, bromeliads, irids, cannas, orchids, palms.

MONŒCIOUS: staminate and pistillate flowers on the same plant.

MONOLÒPIA. *Compositæ.* California white-woolly annuals with alternate sessile lvs. and large solitary heads of golden-yellow ray- and disk-fls.; pappus none; somewhat allied to Baeria.

màjor. To 1½ ft.: lvs. oblong-lanceolate, to 4 in. long, entire or slightly toothed: heads 1–2 in. across.

MONÓPSIS. *Lobeliaceæ.* Small genus of ann. herbs native in S. Afr., allied to Lobelia and differing in the 5-lobed rotate corolla: fr. a caps.

campanulàta (*Lobelia campanulata*). To 1 ft., much branched, glabrous, sts. very slender: lower lvs. ovate-lanceolate, to ¾ in. long and ¼ in. wide, entire or few-toothed: fls. deep blue with yellow anthers, to nearly ¾ in. long: caps. about ¼ in. long, base rounded.

MONOTÁGMA. *Marantaceæ.* Per. herbs from S. Amer., with creeping rootstocks, long-petioled basal lvs. and fls. borne in bracted spikes; sometimes grown for the ornamental foliage. Cult. as for *Calathea.*

smarágdinum (*Calathea* and *Maranta smaragdina*). To 1½ ft.: lvs. lanceolate or oblong-lanceolate, emerald-green above with dark green central stripe, pale green beneath. Ecuador.

MONÓTROPA. *Monotropaceæ* (see *Pyrolaceæ*). White saprophytic herbs with leafless bracted scapes bearing a solitary nodding fl. with 2–4 deciduous sepals and 5–6 petals; 2 species in N. and S. Amer. and Asia, one of them sometimes transferred for curiosity under proper woods conditions.

Bríttonii. Per. 4–15 in. high: lvs. ovate to oblanceolate: fls. ochroleucous or salmon-colored, petals densely ciliate and hairy within. N. C. to Fla.

uniflòra. Indian Pipe. To 10 in., the scapes white-bracted and lacking chlorophyll: fls. white, to 1 in. long: caps. erect, ½ in. long. N. Amer., Mex., Japan, Himalayas.

MONSTÈRA. *Araceæ.* Trop. American woody-stemmed large strong climbers with large thick lvs. which are entire, pinnately cut and sometimes perforated, long sheathing petioles, and bisexual fls. on densely-fld. spadices surrounded by boat-shaped spathes; grown under glass as a curiosity.

Monsteras are not particular as to soil and thrive in pots, tubs and beds in the greenhouse or in the open far South. Propagated by cuttings of the growing stems placed in pots and kept in a humid hot atmosphere.

acuminàta. Lvs. ovate-cordate, to 14 in. long, entire: spathe to 3 in. long, spadix to 2 in. long and 1¼ in. diam. Cent. Amer.

deliciòsa (*Philodendron pertusum*). Ceriman. Straggling climber, having long hanging cord-like aerial roots: lvs. to 3 ft. long and wide, pinnately cut and perforated with large holes: spathes white, about 1 ft. long; spadix to 10 in. long, becoming a solid cone-like edible fr. Mex., Cent. Amer.

dùbia (*Marcgravia paradoxa*). Lf.-blade oblong, to 2½ ft. long, pinnatisect, segms. linear, to 1½ in. wide, acute: spadix to 1 ft. long and 2 in. thick. Mex., Cent. Amer.

MONTANÒA. *Compositæ.* Large shrubs or small trees native Mex. to N. S. Amer., with opposite lvs. and white or rose heads of ray- and disk-fls. borne in panicled cymes; pappus none.

Propagated by seeds under glass and by cuttings; grown under glass and out-of-doors in warm climates for the large leaves and bold habit as well as for the showy heads.

bipinnatífida (*Polymnia grandis*). To 8 ft., shrubby: lvs. pinnately cut, hairy: heads to 3 in. across, with white rays. Mex.

hibiscifòlia. Shrub to 20 ft.: lvs. palmately lobed to about middle, pubescent beneath, to 1 ft. across: heads to 1½ in. across, with white rays and yellow disk. Guatemala to Costa Rica.

MONTBRETIA: *Tritonia.*

MONTEZÙMA (*Maga*). *Malvaceæ.* Two heavily foliaged trees, one Puerto Rican and one Cuban, distinguished from Thespesia by the large calyx breaking apart (circumscissile) and deciduous, with very large showy fls.: fr. an indehiscent leathery or fleshy pod.

speciosíssima (*Thespesia grandiflora*). Tree to 40 or 50 ft.: lvs. thick, broadly cordate-ovate, acuminate, entire, 5–8 in. long: fls. long-peduncled, 5–6 in. across, glossy red and very veiny. Puerto Rico, once thought to be Mexican. —Planted in S. Fla.

MÓNTIA. *Portulacaceæ.* Small soft herbs with rather fleshy lvs., small white or pinkish fls., and capsular frs.; one sometimes grown as a salad and pot-herb and others for interest in moist places. Seed may be sown where plants are to stand, any time in spring or summer.

Chamissòi (*Crunocallis Chamissonis*). Aquatic-floating or creeping per., rooting at nodes: st.-lvs. of several opposite pairs, spatulate to oblanceolate, to nearly 2 in. long: fls. pale rose, to ⅓ in. long, 1–9 in raceme. Alaska to Calif. and New Mex.—Occurs in wet places and springs, adapted to bog garden or shallow pools and ponds.

depréssa (*Limnia depressa*). Ann. to 4 in.: lvs. broadly ovate to orbicular, to ⅝ in. across, connate, usually only a single pair: fls. pink, in short racemes. S. D. to B. C., south to Ariz. and Calif.

parviflòra (*Claytonia* and *Limnia parviflora*). Ann. to 8 in.: lvs. spatulate to filiform, to 6 in. long: fls. pink or white, in racemes subtended by involucral lvs. united into a disk. B. C. to Utah.

perfoliàta (*Claytonia* and *Limnia perfoliata*). Winter Purslane. Ann. 4–12 in. or more: lvs. basal, rhombic-ovate and long-stalked: fls. white, in racemes subtended by 2 lvs. which are united into a round disk, on scapes to 1 ft. high. B. C. to Mex.

Sweètseri. Procumbent, sts. to 4 in. long: basal lvs. ovate, 1½ in. long: fls. pink, petals ½ in. long. Ore.

MONVÍLLEA. *Cactaceæ.* S. American night-blooming cacti with half-erect long slender sts.: fls. toward top of st., naked outside, the perianth persisting even after withering and in that respect differing from Cereus as well as in the absence of columnar sts. or trunks. See *Cacti.*

Cávendishii (*Cereus Cavendishii. C. splendens*). To 10 ft., more or less branched at base, sts. to 1 in. or somewhat more diam.; ribs 9 or 10 and low; spines needle-like and 8–12: fls. white, pinkish outside, to nearly 5 in. long. Brazil, Paraguay, Argentina.

Damaziòi: *Arthrocereus microsphæricus.*

marmoràta: probably not distinct from *M. Spegazzinii.*

phæacántha: *Cephalocereus phæacanthus.*

phatnospérma (*Cereus phatnospermus*). Sts. decumbent, to 6 ft. long and 1 in. diam.; ribs 4–5; radial spines 5–6 and brown; centrals to 1 in. long: fls. white, 5 in. long. Paraguay.

Spegazzínii (*Cereus Spegazzinii*). Sts. erect, 3-angled, spotted white; spines 3–6 and small: fls. white, purplish outside, 5 in. long. Paraguay, Argentina.

MOONFLOWER: *Calonyction.*

MOONSEED: *Menispermum.* **Carolina:** *Cocculus carolinus.*

MOONWORT: *Botrychium, Lunaria.*

MOOSEWOOD: *Acer pensylvanicum.*

MORÀCEÆ. Mulberry Family. Trees, shrubs or herbs of wide distribution, some of them climbing, often having milky juice and mostly alternate simple lvs.: fls. small, unisexual, in spikes or heads, or in Ficus on the inside of a hollow receptacle and constituting a fig; perianth usually of 4 parts and stamens 4; ovary superior, 1-celled: fr. an achene or drupe. The family furnishes many economic products, as edible frs., hemp, rubber, dyes, medicines, and food for silkworms. Genera known to hort. are Antiaris, Artocarpus, Brosimum, Broussonetia, Cannabis, Castilla, Cecropia, Chlorophora, Cudrania, Dorstenia, Ficus, Humulus, Maclura, Morus.

The plants are of diverse utility. Fig, mulberries and breadfruit are known for the edible fruit, hemp (Cannabis) for its fiber, Castilla and some species of Ficus for rubber, Dorstenia for its curious open receptacle and sometimes grown under glass for botanical demonstration, hop (Humulus) for its cones used in brewing and grown also for ornament, osage-orange (Maclura) for hedges, and others in general planting for ornament and interest.

MORÆA (*Morea*). *Iridaceæ.* Herbs, mostly African, having corms or short rootstocks, narrow basal lvs. and iris-like fls. in clusters, the perianth without tube. Tender in the N.; otherwise cult. as for *Iris* which these plants much resemble. They thrive in Fla. and Calif. The spelling Moræa is now conserved.

bícolor. To 2 ft.: fls. lemon-yellow spotted with brown at base, 2 in. across. S. Afr.

Cársonii. To 1½ ft.: lf. 1, narrowly linear, to 1 ft. long, stiffly erect, strongly ribbed: fls. purple, less than 1 in. long, in clusters of 3–4: caps. to ¼ in. long. E. trop. Afr.

catenulàta (*Dietes catenulata*). To 15 in.: lvs. glaucous: fls. white tinged with blue, outer segms. with large yellow spot and 2 rows of small yellow warts, stigmas blue. Described from a cult. plant from Mauritius.

edùlis. To 18 in., sts. slender, terete: lf. solitary, 8–15 in. long, wiry: fls. lilac with yellow basal patches, usually 2–4, about 2 in. across, remaining open for four to six hours only, fragrant, Aug. S. Afr.—Pure yellow and white-fld. forms are known.

flagelloìdes: listed name of unknown botanical standing.

glaucópis. To 2 ft.: fls. white with blue-black circular spot at base of outer segms., to 1¼ in. long. S. Afr.

iridioìdes (*Dietes iridioides*). To 2 ft.: fls. white with yellow bands, 1½ in. long, the crests of the style marked with blue. S. Afr. Var. **Jóhnsonii** has longer lvs. and larger fls. Var. **Macleài** (*M. Macleai*) is an improved hort. form.

isopétala: listed name of form said to be similar to *M. polystachya* but with lilac fls.

Macleài: *M. iridioides* var.

papilionàcea. To 6 in.: lvs. to 6 in. long, hairy: fls. lilac to red with yellow on claws. S. Afr.

pavònia (*Iris pavonia*). To 1 or 2 ft.: lvs. pilose: fls. about 1 in. long, bright red with blue-black or green-black spot at base, or in var. **lùtea** glabrous lvs. and unspotted yellow fls.; var. **villòsa** bright purple with blue-black; another kind is white with blue spots. S. Afr.

polystàchya. To 3 ft.: fls. lilac with large yellow spot at base of outer segms., to 1½ in. long. S. Afr.

ramòsa. To 3 ft.: lvs. linear, to 1½ ft. long: fls. bright yellow, to 1¼ in. long, infl. a corymb of 20–30 clusters. S. Afr.

ramosíssima. To 30 in.: lvs. basal, linear, about 6, to 18 in. long, canaliculate, ribbed: fls. bright yellow, in corymbs, blossoming over several weeks, sts. branched with axillary bulbels. S. Afr.—Corms of this species are sometimes labelled *M. ramosa.*

Robinsoniàna. To 8 ft.: fls. white spotted near base with red and yellow. Lord Howe Isls., Australia.

Sisyrínchium: *Iris Sisyrinchium.*

spathàcea. To 4 ft.: fls. bright yellow, to 2 in. long. S. Afr.

tricúspis (*Iris tricuspis*). To 1 or 2 ft.: fls. whitish or lilac, to 1 in. long. S. Afr. Var. **lùtea** is listed.

tripétala. To 2 ft.: fls. lilac, rarely blue or reddish, to 1¼ in. long. S. Afr.

trístis. To 1½ ft.: lvs. 2–3, linear, mostly basal, grass-like, to 2 ft. long: fl.-st. unbranched; fls. lilac or pink, short-lived, in lax corymbs. S. Afr.

undulàta. Lf. solitary, basal, linear, margin somewhat wavy: fls. lilac, in few erect cymes on short peduncles. S. Afr.

villòsa: *M. pavonia* var.

MORAWETZIA: *Oreocereus Doelzianus.*

MORICÁNDA. *Cruciferæ.* Erect herbs or small shrubs from Medit. region, having glaucous and usually entire lvs., large rose-violet to purple fls., and a linear silique with a short beak on straight, erect pedicels. Propagated by seed.

arvénsis. Ann. or bien. to 1½ ft.: lvs. entire, basal ones cordate and sessile, lower st.-lvs. spatulate and briefly petioled: fls. violet with darker veins, to 1½ in. across or more: pod much compressed, to 2 in. long and 1/12 in. wide, beak about ⅙ in. long.

hesperidiflòra: *Diplotaxis acris.*

sonchifòlia. Ann. or bien. to 2 ft., branched, glabrous: basal lvs. lyrate, segms. ovate, st.-lvs. obovate-oblong, to 4 in. long, acute, serrate, sessile, acutely auricled at base: fls. pale violet-blue, to 1¼ in. across, in lax terminal racemes, anthers yellow: pod to 4 in. long, nearly straight. Siberia.

MORÌNA. *Dipsaceæ.* Thistle-like per. Asian herbs with opposite or whorled spiny-toothed lvs. and 5-lobed fls. in interrupted spikes, the whorls subtended by leaf-like spiny-toothed bracts; sometimes planted for ornament. Propagated by division.

longifòlia. Whorl-Flower. To 4 ft.: lvs. oblong to linear, to 6 in. long: fls. white changing to crimson, 1½ in. long, tubular and conspicuously protruding. Himalayas.

MORÍNDA. *Rubiaceæ.* Trees and shrubs in warm and trop. regions of both hemispheres, sometimes climbing, with opposite lvs. or sometimes in 3's, and small white or crimson fls. often in close clusters: fr. a glomerate head of berry-like carpels.

citrifòlia. Indian-Mulberry. Small glabrous tree: lvs. narrow-oblong to broad-oval, entire, to 10 in. long, with prominent curving side veins, the stipules large and soon falling: fls. white, ½ in. or more long: fr. an aggregate yellowish fleshy head to 2 in. long. S. E. Asia, Australia.—Yields red and yellow dye in fls. and roots.

Roỳoc. Royoc. Vine-like shrub or sometimes erect to 4 ft.: lvs. narrow-oblong, acute, to 3 in. or more: fls. mostly white, in a head which becomes a yellow fr. to ¾ in. and more across. Fla., W. Indies, and seen about cult. grounds.

MORÍNGA (*Hyperanthera*). *Moringaceæ.* Deciduous trees with alternate pinnate lvs. and white or red fls. in axillary panicles; one grown for ornament in the tropics, also for the edible root and the seeds from which ben oil is extracted. Propagated by seeds or cuttings.

oleífera (*M. pterygosperma*). Horse-Radish-Tree. To 30 ft.: lfts. small, less than 1 in. long: fls. white, 1 in. across, fragrant: fr. linear, 3-angled, to 1½ ft. long. E. Indies; nat. in trop. Amer.

pterygospérma: *M. oleifera.*

MORINGÀCEÆ. Moringa Family. Only one genus, Moringa, characterized by bisexual irregular fls. having 5 sepals and petals, 5 fertile and 5 sterile stamens, superior 1-celled ovary, and fr. an elongated caps.

MORÍSIA. *Cruciferæ.* One very small per. herb native in Corsica and Sardinia, adapted to the alpine-garden. **M. monántha** (*M. hypogæa*). Sts. none or very short: lvs. linear, pinnately cut, to 3 in. long: fls. golden-yellow, ¾ in. across, solitary, spring and early summer.

MORMÒDES. *Orchidaceæ.* American epiphytic orchids with more or less elongate several-lvd. pseudobulbs, plicate lvs. and lateral loosely-fld. racemes; allied to Catasetum from which it differs in its perfect fls. and twisted column.

bàdium. Pseudobulbs to 8 in. tall: lvs. linear-oblong, to 15 in. long: scapes many-fld., arching; fls. deep purplish-crimson. Dec.–Jan. Peru. Var. **lùteum** has bright yellow fls.

Lawrenceànum. Pseudobulbs oblong-conic: lvs. to 16 in. long: fls. to about 3 in. across, abundant on long scapes; sepals and petals pale greenish-yellow with 5 brown-purple lines; lip yellow spotted with purplish-brown. Colombia.

MORNING-GLORY: *Ipomœa,* also *Argyreia, Convolvulus.*

MORONGIA: *Schrankia.*

MORPHIXIA: *Ixia paniculata.*

MORRÈNIA. *Asclepiadaceæ.* Twining more or less woody vines from Brazil and Argentina bearing grayish foliage and small not conspicuous fls. in lf. axils; follicles smooth, thick and leathery. One species is planted in Fla. and S. Calif., **M. odoràta,** prized for its fragrant greenish white-centered fls. which are about ⅝ in. long, solitary or few together in axils on slender pedicels nearly or quite the length of the corolla: lvs. opposite, halberd-shaped, with 2 spreading blunt lobes at base and a long central lobe or part acute at apex, closely pubescent underneath: corolla-lobes pointed.

MÒRUS. Mulberry. *Moraceæ.* Deciduous trees of the northern hemisphere with alternate lvs., unisexual fls. in drooping catkins, and fr. a juicy syncarp resembling a blackberry in appearance; grown for the edible frs. and the foliage which is used to feed silkworms. For cult. see *Mulberry.*

acidòsa: *M. australis.*

álba. White M. To 80 ft.: lvs. ovate, to 4 in. and more long, coarsely toothed or often lobed, shining above: fr. white, pinkish or purple-black, to 2 in. long, sweet. China; nat. in Eu. and N. Amer. Var. **globòsa,** said to be of more compact habit. Var. **macrophýlla** (*M. Morettiana*) has undivided lvs. to 9 in. long and red fr. Var. **péndula,** branches drooping. Var. **pyramidàlis,** of narrow pyramidal habit. Var. **skeletoniàna** (var. *laciniata*), lvs. with deep narrow lobes. Var. **tatárica** (*M. tatarica*), Russian M., is a small very hardy form.—Other names referred here are *M. cedrona, M. hispanica* and *M. Tokwa.*

austràlis (*M. acidosa. M. japonica*). To 25 ft., usually shrubby: lvs. ovate, to 6 in. long, toothed, often deeply lobed: fr. dark red, ½ in. long, sweet. China, Korea, Japan.

cedròna: *M. alba.*

hispánica: *M. alba.*

japónica: *M. australis.*

Morettiàna: *M. alba* var. *macrophylla.*

multicaùlis (*M. alba* var. *multicaulis*). Resembling *M. alba* and sometimes considered a var., but with much larger coarsely toothed lvs. which are dull green and rough above, and sweet black fr. China.—Famous for its part in the historic attempts at silk-raising in N. Amer.

nìgra. Black M. To 30 ft.: lvs. broad-ovate, to 8 in. long, coarsely toothed, usually not lobed, heart-shaped at base, dull green and rough above, pubescent beneath: fr. purple to black, to 1 in. long. W. Asia.

pérsica: listed name of unknown botanical standing.

rùbra. Red or American M. To 60 ft.: lvs. ovate, to 5 in. or more long, sharply toothed, sometimes lobed, soft-pubescent beneath: fr. dark purple, about 1 in. long. Mass. to Fla. and Tex.

tatárica: *M. alba* var.

Tókwa: *M. alba.*

MOSCHÀRIA. *Compositæ.* One musky-scented ann. herb from Chile, sometimes planted for ornament. **M. pinnatífida.** To 2 ft., diffuse: lvs. clasping, pinnate or pinnatifid, the upper ones lobed only at base: heads of white or light rose ray- and disk-fls., borne in terminal panicles; pappus of scales.

MOSCHATEL FAMILY: *Adoxaceæ.*

MOSCHOSMA: *Iboza riparia.*

MOSQUITO-TRAP: *Cynanchum acuminatifolium.*

MOSS, CLUB-: *Lycopodium.* **Ditch-:** *Anacharis canadensis.* **Flowering-:** *Pyxidanthera barbulata.* **-Pink:** *Phlox subulata.* **Rose-:** *Portulaca grandiflora.* **Spanish-:** *Tillandsia usneoides.*

MOTHER-OF-THYME: *Thymus Serpyllum.*

MOTHERWORT: *Leonurus.*

MOUNTAIN FLEECE: *Polygonum amplexicaule.* **Fringe:** *Adlumia fungosa.*

MOURNING BRIDE: *Scabiosa.*

MUCRONATE: tipped with a short sharp point or mucro.

MUCÙNA. *Leguminosæ.* Woody per. vines with lvs. of 3 lfts., papilionaceous fls. in axillary clusters, and thick leathery pods; distinguished from Stizolobium chiefly by characters of seed.

Deeringiàna: *Stizolobium Deeringianum.*

ùrens. Climbing to 30 ft.: lfts. to 7 in. long: fls. purple with yellowish keel: pods to 8 in. long, covered with stinging hairs. Trop. Amer.

MUEHLENBÉCKIA (*Calacinum*). Wire-Plants. *Polygonaceæ.* Prostrate, viny or climbing more or less polygonum-like woody plants with wire-like sts. and alternate lvs., small unisexual fls. in axillary clusters or short spikes or racemes, and berry-like frs.; grown in greenhouses and hanging-baskets and out-of-doors in warm climates. Propagated by cuttings, when seeds are not available. Calacinum is an older name than Muehlenbeckia but the latter has been officially conserved.

axillàris. Much branched prostrate or sprawling small bush forming matted clumps 1 ft. or less through or at other times straggling: lvs. ⅓ in. or less long, oblong to nearly orbicular, rounded at base: fls. solitary or in 2's. New Zeal.—Cult. as *M. nana.*

chilénsis. Twining: lvs. ovate to oblong, triangular at base, about ½ in. long: fls. in axillary and terminal racemes. Chile, Peru.

compléxa. Wire-Vine. Maidenhair-Vine. Twining, covering bushes, rocks and chimneys with interlaced sts.: lvs. orbicular or fiddle-shaped, ½–¾ in. across: fls. in axillary or terminal spikes. New Zeal.—Much grown in Calif.

nàna: see *M. axillaris.*

platyclàdos: *Homalocladium platycladum.*

rivulàris: see *Polygonum rivulare.*

MUGWORT: *Artemisia.*

MUÍLLA. *Liliaceæ.* Small group of California cormous plants with very narrow lvs. and small greenish-white fls. in umbels, allied to the alliums.

marítima (*Allium maritimum*). To 1 ft.: lvs. nearly cylindrical: fls. on long pedicels in loose umbels, anthers purple.

MULBERRY. Trees from many regions in the northern hemisphere, being species of Morus (which see). Both for fruit and ornament the mulberry is planted. The tree is naturally open-centered and round-headed, and is an interesting subject; some of the varieties have finely cut leaves. The fruits are in great demand by the birds.

In orchard plantations mulberries may be placed 25–30 feet apart. About the borders of a place they may go closer. The Russian varieties are often planted for windbreaks, for they are very hardy and thrive under the greatest neglect; and for this purpose they may be planted 8–20 feet apart; they make excellent screens and stand clipping well. New American, Trowbridge and Thorburn are leading kinds of fruit-bearing mulberries for the North. The true Downing is not hardy in the northern states; but New American has been sold under this name. Pomological mulberries for planting in the North are forms of *Morus alba.* The more tender *M. nigra,* black mulberry, is grown in the Middle South and beyond. Certain named fruit varieties of the native *M. rubra* are also known. In silk-producing countries mulberries are grown as forage for silkworms. Mulberries thrive in any good soil, and need no special treatment. A weeping mulberry is frequent as an ornamental oddity, being grafted 4 or 5 feet high on a straight tree form; it is *Morus alba.*

Mulberries grow readily from seeds. Named kinds may be cion-budded on seedlings or on stocks grown from ripe hardwood cuttings.

MULBERRY, FRENCH-: *Callicarpa americana.* **Indian-:** *Morinda citrifolia.* **Paper-:** *Broussonetia.*

MULGA: *Acacia aneura.*

MULGEDIUM: *Lactuca.*

MULLEIN: *Verbascum.* **Cretan:** *Celsia cretica.*

MULTIFID: cut or cleft into many narrow lobes or parts.

MUNDI-ROOT: *Chlorocodon Whiteii.*

MUNTÍNGIA. *Elæocarpaceæ.* One species, a tree to 30 ft., native in W. Indies, Mex. to N. S. Amer. and somewhat naturalized in the eastern tropics. **M. Calabùra.** Lvs. alternate, oblong-lanceolate, to 5 in. long, toothed, tomentose beneath: fls. white, 1 in. across, solitary or clustered in the axils: fr. a globose berry about ½ in. across.

MURRÆA (*Murraya. Chalcas*). *Rutaceæ.* A few Indo-Malayan spineless small trees or shrubs, one of which, **M. exótica,** the ORANGE-JESSAMINE, is a handsome evergreen grown for ornament in S. Fla. and S. Calif. and the tropics; the plant known as *M. paniculata* is probably a form of it. The orange-jessamine makes a tree-like specimen 10–12 ft. high with glossy foliage and white very fragrant fls. succeeded by clusters of red ovoid frs. ½ in. or less in diam.: lvs. pinnate, of 7–9 ovate or rhomboidal lfts. and marginless petioles; blooms several times a year.

MÙSA. BANANA. *Musaceæ.* Tree-like but hardly woody plants, the large spirally arranged lvs. (which become frayed by the wind) forming a trunk by their sheathing bases, the irregular fls. borne in clusters under colored bracts on long drooping or erect spikes, each st. or trunk blooming only once, and fr. long and fleshy; grown for the edible frs. and a few for fiber and ornament. See *Banana.*

Bananas are suited only to warm climates, although they often withstand a few degrees of frost. For ornament they are grown in mild climates and are often planted out for subtropical effects. The plant is renewed by the suckers that spring up at the base, as the top dies after fruiting or becomes weak and unsightly. Propagation is also effected by root-cuttings planted in warm beds and transplanted as soon as one or two leaves have matured. The ornamental kinds often produce seeds and these should be sown in beds with bottom heat. Bananas may be grown for decoration in greenhouses with a night temperature of about 65°.

Arnoldiàna. To 15 ft.: lvs. to 7 ft. long: spikes short and drooping: fr. to 4 in. long, with seeds ½ in. long. Trop. Afr.

Cávendishii: *M. nana.*

chinénsis: *M. nana.*

Ensète. ABYSSINIAN B. To 40 ft., the trunk swollen at base: lvs. to 20 ft. long and 3 ft. wide: spike erect, the reddish-brown bracts to 1 ft. long: fr. to 3 in. long, having large black seeds, inedible. Abyssinia.

Mártinii. To 30 ft.: lvs. to 8 ft. long, oblong, long-petioled, green above, red-veined beneath: fls. rose-red, followed by small yellow fr. Intro. from Canary Isls.—Plant similar in habit to *M. paradisiaca.*

nàna (*M. Cavendishii. M. chinensis*). DWARF B. To 6 ft., stoloniferous: lvs. to 4 ft. long and 2 ft. wide: spike short and drooping, the reddish-brown bracts to 6 in. long: fr. yellow, to 5 in. long, seedless. S. China.

oranocénsis: probably a hort. form of banana.

paradisìaca. PLANTAIN. To 30 ft., stoloniferous; lvs. to 9 ft. long and 2 ft. wide: spike drooping, to 5 ft. long, the red or violet bracts to 1 ft. long: fr. greenish-yellow, to 14 in. long, seedless, edible when cooked. Probably India. Var. **sapiéntum,** COMMON B., has yellow fr. which is edible without cooking. Races are **rùbra** with red frs. and **Chámpa** with thin-skinned "lady-finger" frs.

religiòsa. To 8 ft.: lvs. to 5 ft. long, somewhat elliptical, mucronate tipped and thick: fr. filled with seeds to ⅓ in. diam., not edible. French Congo.

rosàcea. To 6 ft., stoloniferous: lvs. to 3 ft. long and 1 ft. wide, purplish beneath: spike drooping, to 1 ft. long, the pale blue bracts to 8 in. long: fr. yellowish-green, to 3 in. long, inedible. India.

sapiéntum: *M. paradisiaca* var.

sumatràna. To 8 ft., usually stoloniferous: lvs. to 6 ft. long and 1½ ft. wide, glaucous beneath: spikes drooping: fr. to 3 in. long, inedible. Sumatra.

supérba. To 12 ft., st. short: lvs. oblong, to 10 ft. long, sessile, base narrow: fls. dull red, many in drooping spike: fr. to 3 in. long. Tropics of Old World.

téxtilis. ABACÁ. MANILA HEMP. To 20 ft., stoloniferous: lvs. oblong with petiole 1 ft. or more long: spike drooping and short: fr. to 3 in. long, with numerous black seeds, inedible. Philippines.—Grown for the fiber in the lf.-bases.

zebrìna: botanical identity uncertain: lvs. striped with brown.

MUSÀCEÆ. BANANA FAMILY. Trop. per. monocotyledonous herbs of about 6 genera, often of very large size and becoming woody and somewhat tree-like. The family is characterized by the bisexual or monœcious fls. borne in the axils of large bracts in a spicate or paniculate infl. which is subtended by spathes, with 3 sepals and 3 petals, 6 stamens, 5 of which are fertile, inferior 3-celled ovary, and fr. a berry or caps. Several genera are cult. for ornament and other kinds for fiber and the edible fr., as Heliconia, Musa, Ravenala, and Strelitzia.

MUSCADINIA: *Vitis rotundifolia, V. Munsoniana* and *V. Popenoei.*

MUSCÀRI. GRAPE-HYACINTH. *Liliaceæ.* Spring-blooming bulbous herbs native in Medit. region, having a few narrow basal lvs. and small blue or white urn-shaped nodding fls. in racemes or spikes at top of scape, the perianth-segms. united and having 6 small recurved teeth. Of easy cult., as for hyacinths, and useful for colonizing. Propagated by offsets or seeds.

álbum: plants under this name may be forms of *M. botryoides* or *M. conicum.*

amethýstinum: an unidentified trade name.

amphíbilis: listed name for a form with light blue fls.

Argæi: hort. name of uncertain standing.

armenìacum. Lvs. to 1 ft. long and ¼ in. across: fls. deep violet, the teeth white, scape to 6 in. high. Armenia.

azùreum: *Hyacinthus ciliatus.*

botryoìdes. To 1 ft.: lvs. ⅓ in. across: fls. blue, about ⅛ in. long. S. Eu. Var. **álbum** has white fls., **cárneum** flesh-colored, and **cærùleum** bright blue.

cærùleum: *M. botyroides* var.

cilìàtum: *Hyacinthus ciliatus.*

commutàtum. To 10 in.: lvs. ⅙ in. across: fls. dark blue. Sicily.

comòsum. To 1 ft.: lvs. to 1 in. across: upper fls. sterile, blue or violet, lower fertile fls. olive. S. Eu., Asia. Var. **monstròsum** (*M. plumosum* and *tenuifolium*) has all the fls. sterile and cut into fine shreds.

cónicum. To 6 in.: lvs. ¼ in. across: fls. violet-blue. S. Eu.

élegans: listed name, fls. bright blue bordered with white.

Heldreìchii. To 8 in.: lvs. 1/12 in. wide: fls. amethyst-blue, the teeth white. Greece.

latifòlium. To 1 ft.: lvs. solitary, to 1 in. across: fls. blue, the sterile fls. paler. Phrygia.

Masseyànum: listed name; plant with rose-colored fls.

micránthum. Scape to 5 in.: lvs. longer, to ⅙ in. across: fls. bright violet, sterile ones pale blue, fragrant. Habitat unknown.

monstròsum: *M. comosum* var.

moschàtum. To 10 in. or less: lvs. to ¾ in. across: fls. musk-scented, purplish becoming yellowish or brownish. Asia Minor. Var. **flàvum,** fls. yellowish. Vars. **màjus** and **minus** are hort. forms.

negléctum. To 9 in.: lvs. ⅙ in. wide: fls. dark blue, fragrant. Medit. region.

paradóxum. To 9 in.: lvs. few, to ¾ in. broad: fls. blue-black, in dense racemes. Caucasus.

plumòsum: *M. comosum* var. *monstrosum.*

polyánthum. To 1 ft.: lvs. ¼ in. across: fls. deep blue. Asia Minor. Var. **álbum** is listed.

racemòsum. To 8 in.: lvs. 1/12 in. wide: fls. dark blue, fragrant. Eu., Asia. Var. **cárneum** is in the trade.

Szovitsiànum. To 7 in.: lvs. linear, to 9 in. long, canaliculate, light green: fls. bright to purplish-blue, on short curved pedicels, nodding in dense conical racemes. Caucasus and S. Russia.

tenuifòlium: *M. comosum* var. *monstrosum.*

MUSCARIA: *Saxifraga.*

MUSHROOMS are higher fungi, of which *Agaricus campestris*, the common mushroom, is the only species usually cultivated in the United States. The life cycle of mushrooms begins with the germination of a spore, which in the cultivated mushroom gives rise to a thread-like growth called mycelium. The mycelium develops an extensive underground system by which it concentrates food in a central point. Here the threads enlarge, eventually forming a group of buttons or small mushrooms.

Mushrooms are produced from an especially prepared material, called spawn, filled with living mushroom mycelium with which the prepared beds are inoculated. The spawn originally had a manure base, but since 1930 there has been a gradual change to a base of whole kernels of wheat or rye. This new type is economical to produce and will inoculate approximately three times as much bed area as an equal volume of the manure spawn.

Mushrooms are grown where the temperature can be kept between 45 and 65° F., providing the relative humidity is high and the ventilation controlled. Sunlight is not harmful to mushrooms, but they are usually grown in the dark because it is easier and cheaper to control the temperature and humidity in structures without windows. Cellars, caves, old barns, and specially constructed mushroom houses are employed.

Horse manure with straw bedding has been used almost exclusively in the past as the raw material for mushroom compost. However, experiments in Pennsylvania have shown that a compost of wheat straw, urea and wheat produced nearly as many mushrooms to a ton as did horse manure. Manure from grain-fed horses bedded with wheat straw seems to be best. It is usually composted as soon as a pile is assembled sufficient to fill the mushroom house or a definite unit of bed space; less than 1 ton of manure is difficult to compost. Aeration, moisture, and temperature are the most important factors affecting the composting process. These are largely dependent on the size, shape and compactness of the pile, the quantity of water added and the number of days between turnings. Manure containing a moderate amount of straw is usually piled 4 to 6 feet high when first assembled. The piles are allowed to stand undisturbed for ten days before the first turning. Repeated turnings are made at intervals of about a week. Usually three or four turnings are sufficient. The compost should be kept moist at all times, neither wet nor dry. The practical test is to squeeze a ball of it tightly in the hand. If the hand is not moistened, the compost is too dry; if water oozes out freely between the fingers, it is too wet.

Manure should be placed in the beds at about the rate of 1 bushel to 2 square feet of bed space. As soon as the beds are filled, the house, or that section of the structure containing the beds, is sealed tightly for a few days to allow the manure to go through a final period of fermentation. High temperatures are generated in the beds and in the air surrounding them. The manure in the beds should reach a temperature of 130–145° and the surrounding air temperature should reach 120–130°. This eradicates most of the harmful insects and fungi and seems to bring about a condition which later encourages a healthier and more rapid run of spawn. A still more complete control of the insects and diseases may be obtained by burning flowers of sulfur, 2 pounds to 1,000 cubic feet of air space, at the time the house reaches its peak heat. All cracks and openings should be tightly sealed for twenty-four hours.

After heating, the temperature is gradually lowered to 75° for spawning. Mycelium develops most rapidly from the spawn inoculations if this temperature is maintained for a week or ten days after spawning. The beds are then allowed to cool slowly until a cropping temperature of 45–65° is reached. Spawn pieces about one-half as large as hen's eggs should be spaced 8 inches to 1 foot apart in the bed and about 1–1½ inches deep. An imperial quart bottle of manure spawn will inoculate 30 to 40 square feet of bed area. The new type grain spawn will inoculate about twice this area.

Casing is the term applied to spreading soil about an inch thick over the entire bed. This is performed two to four weeks after spawning. Silt loams to light clay loams, containing a fair amount of organic matter and with a reaction approximately neutral, are best. Acid soils should be avoided or limed.

Watering the beds usually begins as soon as they have been cased. Light waterings may be necessary before this if the compost becomes too dry. Care should be taken to avoid excess watering.

After casing, mushrooms should appear in six or seven weeks, and the crop should continue, under proper conditions, for two or three months.

MUSÌNEON. *Umbelliferæ.* W. American caulescent or cespitose perennials with pinnate to tripinnate lvs., cream-colored to yellow fls. in dense bractless umbels, and ovate to oblong fr. flattened laterally.

tenuifòlium (*Daucophyllum tenuifolium*). Plant cespitose, to 10 in. high: lvs. 2–3-pinnate, segms. filiform: fr. cream-white. Neb. to S. D. and Wyo.

MUSKMELON: see *Melon.*

MUSK-PLANT: *Mimulus moschatus.* **-Root:** *Adoxa Moschatellina.*

MUSQUASH-ROOT: *Cicuta maculata.*

MUSTARD. Several species of Brassica (Sinapis), mostly annuals, grown for the cluster of basal leaves used as greens, and also for the seeds employed in the manufacture of table mustard and in other countries for oil (colza). They are half-hardy, coming quickly from seeds. For greens the plants are usually in rows far enough apart to admit of tool-tillage; in the row they may stand 5 or 6 inches apart and be thinned as used. They may be sown at intervals, in early spring for early summer use up to August or even later for autumn use; in warm countries they are sown in autumn for early spring crop. They are usually little attacked by fungi. If allowed to seed, they may become weedy.

The commonest vegetable-garden species is *Bràssica juncea*, particularly var. *crispifolia* in the kinds known as Ostrich Plume and Southern Curled. Another race is represented by *B. chinensis*, *B. parachinensis* and *B. pekinensis*, the latter discussed under the entry *Pe-Tsai*. Probably all these mustards are east-Asian in nativity.

MUTÍSIA. *Compositæ.* Herbs and shrubs of S. Amer., with alternate lvs. and solitary terminal heads of disk-fls. and a few purple, rose or yellow ray-fls.; pappus plumose. One species grown out-of-doors in Calif. or in a cool greenhouse. Propagated by cuttings.

Clématis. Pubescent climbing herb: lvs. pinnate, with 4–5 pairs of oblong-lanceolate entire lfts., the midrib extended into a tendril: heads 2 in. across, with 9–10 bright red recurved rays. Trop. Andes.

MYALL, WEEPING: *Acacia pendula.*

MYCONÉLLA. *Compositæ.* A small Cent. and S. European genus, probably of a single species, differing from Chrysanthemum in the marginal achenes sterile, flattened and those of the disk with a stiff pappus. **M. Mycònis** (*Chrysanthemum* and *Myconia Myconis*). Ann. or per. to 2½ ft., sts. glandular-hairy to glabrescent: lvs. obovate to spatulate, sharply serrulate, obtuse: heads yellow, to 1½ in. across, solitary on long narrow-lvd. peduncles; rays oblong, apex usually bidentate.—Plants cult. under this name may be *Chrysanthemum segetum.*

MYCONIA: *Myconella Myconis.*

MYOPORÀCEÆ. MYOPORUM FAMILY. Trees and shrubs of 5 genera native from Australia, E. Asia to Hawaii and W. Indies: lvs. mostly alternate, simple and entire: fls. bisexual, with 5-parted calyx, gamopetalous 5–6-lobed corolla, 4 stamens and 1 staminode, and superior usually 2-celled ovary: fr. a drupe. Bontia and Myoporum are occasionally grown for ornament in warm regions or greenhouses.

MYÓPORUM. *Myoporaceæ.* Shrubs and trees with alternate glandular long and narrow lvs. and usually white bell-shaped fls., regular or essentially so, in axillary clusters among the foliage, and small drupaceous frs.; native from Japan to Australia and grown in the open in warm regions and under glass N. Propagated by cuttings.

acuminàtum. Shrub: lvs. oval-oblong to linear, to 3 in. long: fls. white, ⅓ in. long. Australia.

insulàre. Tall shrub or tree to 30 ft.: lvs. lanceolate to obovate, to 3 in. long, remotely serrate to entire, thick: fls. white with purple spots, to ¼ in. across, usually 2–4 in axils: fr. purplish-blue, globular, to ¼ in. across. Australia.

lætum. Shrub or tree to 15 ft.: lvs. lanceolate, to 4 in. long, shining: fls. white spotted purple, ⅔ in. across: fr. reddish-purple. New Zeal.

sandwicénse. BASTARD SANDALWOOD. NAIO. Tree to 60 ft. with wood odor of sandalwood: lvs. oval-lancéolate, to 6 in. long: fls. white or pink, ⅓ in. across: fr. white. Hawaiian Isls.

MYOSOTÍDIUM. *Boraginaceæ.* A single per. herb native in the Chatham Isls. (New Zeal.), sometimes cult. in mild climates; it has been referred to Cynoglossum. Propagated by seeds. **M. Horténsia** (*M. nobile*). To 3 ft.: basal lvs. ovate, heart-shaped at base, to 1 ft. long, st.-lvs. smaller: fls. dark blue, paler at outside, ½ in. across, in dense cymes to 6 in. across.

MYOSÒTIS. FORGET-ME-NOT. *Boraginaceæ.* Small ann., bien. and per. herbs with alternate entire lvs. and small but abundant blue, rose or white fls. in terminal racemes, largely in Amer. and Eu. in moist or cool places; corolla salverform, throat usually crested; stamens included.

Forget-me-nots are cultivated mostly out-of-doors and thrive in partially shady positions in moist soil. Winter protection is desirable. Propagated by seeds which will give bloom in autumn or the second year; also by division of the clumps.

alpéstris (*M. rupicola*). Similar to *M. sylvatica*, from which it differs in its lower habit, shorter-stalked fls. and larger nutlets. Eu.—Not known to be in cult., the plant grown under this name is a form of *M. sylvatica*, which see for listed vars.

alpìna: *M. sylvatica.*

arvénsis. Ann. or bien. to 1½ ft.: lvs. oblong or oblong-lanceolate, 1 in. long: fls. white or blue, to ⅙ in. across. Eu., Asia, E. N. Amer.

austràlis. Per. to 1½ ft., densely hispid: basal lvs. oblong- to linear-spatulate, obtuse, to 2 in. long, st.-lvs. smaller: fls. yellow or white, to ¼ in. long, many in elongated racemes. New Zeal. Var. **conspícua** has fls. to ½ in. long and may not be cult.

azórica. Per. to 1½ ft.: lvs. broadly oblong-lanceolate, to 4 in. long: fls. blue with whitish center, ¼ in. across. Azores, Canaries, Algeria.

cespitòsa (*M. Rehsteineri*). Similar to *M. laxa* but more pubescent and fls. longer pedicelled. Eu.

decòra. Per., white-hoary, sts. prostrate or decumbent, to 2 in. long: basal lvs. linear-oblong, to 1 in. long, leathery, st.-lvs. to ½ in. long, sessile: fls. white, solitary in lf. axils, to ⅓ in. long, on short stalks, anthers long and conspicuous. New Zeal.

dissitiflòra. Similar to *M. sylvatica*, but differing in lower habit and nutlets stalked, not sessile. Switzerland.—The plant known to hort. under this name is a form of *M. sylvatica.*

explanàta. Per. to 12 in., sts. white-hairy, ascending: basal lvs. linear to spatulate, to 4 in. long, st.-lvs. narrowly oblong-lanceolate: fls. white, to ⅔ in. across, in many-fld. short racemes. New Zeal.

grandiflòra álba: *M. sylvatica* var. *robusta grandiflora.*

láxa. Per. with decumbent sts. to 1½ ft. long: lvs. oblong or spatulate: fls. blue with yellow center, ⅙ in. across. Newf. to Va. and Tenn., Eu.

lithospermifòlia: a form of *M. sylvatica* with numerous large lvs.

oblongàta: *M. sylvatica.*

palústris: *M. scorpioides.*

pyrenàica. Per. to 5 in. tall, sts. ascending: basal lvs. spatulate, long-petioled, st.-lvs. lanceolate: fls. bright blue, to ¼ in. across, in groups of 2–3, stalks shorter than calyx. Corsica to Asia Minor.

Rehsteìneri: *M. cespitosa.*

robústa grandiflòra: a form of *M. sylvatica.*

ròsea: a variant of *M. sylvatica.*

rupícola: *M. alpestris.*

scorpioìdes (*M. palustris*). Sts. decumbent, to 1½ ft. long: lvs. oblong-lanceolate: fls. bright blue with yellow, pink or white center, ¼ in. across. Eu., Asia. Var. **ròsea** is listed as a color form. Var. **semperflòrens** is a dwarf form to 8 in. high which flowers all summer.

sylvática (*M. alpina. M. oblongata*). Ann. or bien. to 2 ft.: lvs. oblong-linear: fls. blue with yellow center, varying to pink or white, to ⅓ in. across, fl.-stalks nearly twice as long as calyx; nutlets sessile. Eu. and Asia.—A variable plant in cult. and hort. variants are often confused and listed under *M. alpestris;* some of these are: **álba,** fls. white; **compácta,** a dense-growing form, lower than type; **Físcheri,** dwarf with fls. bluish-pink; **robústa grandiflòra,** vigorous-growing with large fls.; **ròsea,** fls. rose; **stricta,** branches erect and strict.

Tràversii. Much branched per. to 6 in., white-hairy: lvs. linear-spatulate, to 1½ in. long, leathery, rough: fls. lemon-yellow, ¼ in. long, fragrant, in head-like hairy racemes. New Zeal.

uniflòra. Tufted per. forming clumps 2–6 in. across, covered with appressed white hairs: lvs. linear-lanceolate or oblong, to ¼ in. long: fls. yellowish-white, to ⅜ in. across, solitary, terminal, almost sessile. New Zeal.

Welwítschii. Ann. or bien. to 4 in.: lvs. ovate-lanceolate: fls. bright blue with yellowish-white center. Spain.

MYRCIARIA: *Eugenia.*

MYRÌCA (*Cerothamnus*). *Myricaceæ.* Shrubs or tree-like, with alternate simple lvs., unisexual fls. in catkins, and grayish or purple drupaceous frs.; native in the northern hemisphere. Cult. for ornament or *M. rubra* for the edible frs. Propagated by seeds, layers and suckers.

asplenifòlia: *Comptonia peregrina.*

califórnica. California Bayberry. To 35 ft.: lvs. evergreen, lanceolate, to 4 in. long: fr. purple, to ¼ in. long. Wash. to Calif.; not hardy N.—Will grow on sterile sandy soils.

caroliniénsis: *M. pensylvanica* and *M. cerifera.*

cerífera (*M. caroliniensis*). Wax-Myrtle. To 35 ft.: lvs. evergreen, lanceolate, to 3 in. long, acute: fr. grayish-white. N. J. to Fla. and Tex.; fairly hardy N.—Prefers moist peaty soil.

Gàle. Sweet Gale. To 5 ft.: lvs. deciduous, oblanceolate, to 2½ in. long: fr. inclosed by 2 wing-like bracts, yellowish, in dense catkins ¼ in. or more long. N. Amer., Eu., Asia; hardy N.—Does best on moist peaty soil. Specific name pronounced in two syllables.

pensylvánica (*M. caroliniensis* of cult.). Bayberry. To 9 ft.: lvs. deciduous or sometimes evergreen, obovate, to 4 in. long, acutish or obtuse: fr. grayish-white. N. S. to Fla. and Ala.; hardy N.—Will do well on poor soil. The name *M. caroliniensis* was originally used by Philip Miller for the plant correctly known as *M. cerifera* and is not available for the Bayberry.

pùmila. To 2 ft., spreading by horizontal rootstocks: lvs. obovate to linear-spatulate, often toothed at apex, glandular, hairy beneath, sessile: fr. grayish-white, to ⅙ in. diam. Ga. and Fla.

rùbra. To 15 ft.: lvs. oblong-lanceolate, to 5 in. long: fr. deep red-purple. China, Japan; hardy only in warm regions. —The frs. are edible and also used for making a drink.

MYRICÀCEÆ. Sweet Gale Family. Two genera of small trees or shrubs native in the northern hemisphere, Comptonia and Myrica, with alternate simple or pinnatifid lvs., unisexual fls. without perianth, having 2–16 stamens, 1-celled ovary, and fr. a small drupe or nut.

MYRICÀRIA. False Tamarisk. *Tamaricaceæ.* Deciduous woody plants, Eu. to China, with heath-like or scale-like closely placed alternate lvs., distinguished from Tamarix on technical characters of fls. and seeds: fls. small, in dense racemes, pink or white.

germánica (*Tamarix germanica*). To 6 ft., with many close ascending branches: fls. in terminal bracted racemes to 2 in. long. S. Eu., W. Asia; hardy N.

MYRIOCÉPHALUS. *Compositæ.* Herbs of Australia, usually white-woolly, with alternate entire lvs. and tubular fls. in dense compound heads surrounded by a general involucre, the bracts often with conspicuous appendage; pappus none or of awns or bristles. One species sometimes grown as an everlasting.

Stùartii (*Polycalymma Stuartii*). Ann. to 2 ft.: lvs. linear or lanceolate, to 2 in. long: fls. yellow, the bracts tipped white and resembling rays, in clusters 1 in. or more across.

MYRIOPHÝLLUM. Water-Milfoil. *Haloragidaceæ.* Aquatic herbs, the lvs. often of two kinds, those above the water entire or toothed and the submerged lvs. pinnatifid into hair-like segms., and the fls. in axillary clusters or spikes; grown in aquaria and ponds. Propagated by long cuttings planted in mud. Several species are native in the U. S., and they may occasionally be transferred to aquaria or pools.

proserpinacoìdes. Parrots-Feather. Water-Feather. Rising about 6 in. out of water: lvs. feathery, all of one kind, the herbage in long bright green strands: fls. diœcious. Chile, Uruguay.—Now commonly grown in fountain basins and similar places.

verticillàtum. Lvs. of two kinds; submerged lvs. in whorls of 3 or 4 and very finely divided; floral lvs. pinnatifid. N. N. Amer., Eu., Asia.

MYRISTICA: see *Nutmeg.*

MYRISTICÀCEÆ. Nutmeg Family. Trop. evergreen diœcious trees of 8 genera, having alternate entire lvs., small fls. without corolla, with 2–30 stamens, superior 1-celled ovary, and fleshy fr. containing 1 seed surrounded by an aril. The genus Myristica furnishes the nutmeg and mace of commerce.

MYROBALAN: *Phyllanthus Emblica, Terminalia Catappa*; also *Prunus cerasifera.*

MYROSPÉRMUM. *Leguminosæ.* A single tree to 60 ft., native in S. Amer. and escaped in W. Indies. **M. frutéscens.** Lvs. of 11–17 oblong or oval lfts. to 1 in. long: fls. papilionaceous, white, ½ in. long, in racemes to 4 in. long: pod flat, to 3 in. long, winged.

MYRÓXYLON (*Toluifera*). *Leguminosæ.* Large trees with pinnate lvs., whitish papilionaceous fls. in racemes, and flattened 2-winged pods bearing 1 seed in the end; native of trop. Amer. where they are grown for the balsam which they yield.

Pereìræ. Balsam-of-Peru. To 50 ft.: lfts. 7–11, oblong. Mex. to N. S. Amer.

peruíferum. Peru Balsam-Tree. Large tree: lfts. 9–13, ovate. N. S. Amer.

senticòsum: *Xylosma senticosa.*

toluífera (*T. Balsamum*). Tolu Balsam-Tree. To 100 ft.: lfts. 7–11, oblong. N. S. Amer.

MYRRHÍNIUM. *Myrtaceæ.* Shrubs and trees of S. Amer. with opposite simple lvs. and fls. in corymbs, having 4–8 long-exserted stamens; one species intro. in S. Calif.

salícinum. Medium-sized glabrous tree: lvs. narrow oblong-lanceolate, gradually contracted at base. Uruguay.

MÝRRHIS. Myrrh. *Umbelliferæ.* European per. herb., sometimes grown for the sweet-scented herbage. **M. odoràta.** Sweet Cicely of Eu. To 3 ft.: lvs. 2–3-pinnately compound into lanceolate, toothed or cut segms.: fls. small, whitish, in compound umbels: fr. shining, nearly 1 in. long and strongly ribbed.—Propagated by seeds sown as soon as ripe, or by division.

MYRSINÀCEÆ. Myrsine Family. Trees and shrubs of about 30 genera in the tropics and subtropics on both sides of the world, with alternate simple lvs., regular bisexual or rarely diœcious fls. having 4–5 sepals, 4–5-lobed corolla, 5 stamens, mostly superior 1-celled ovary, and fr. a berry or drupe. Ardisia, Mæsa, Myrsine and Suttonia are grown for ornament.

MÝRSINE. *Myrsinaceæ.* Shrubs and trees in Asia and Afr., having entire or toothed lvs., small fls. with petals united at base or to middle, and fr. a 1-seeded berry; grown out-of-doors in warm climates. Name in three syllables.

africàna. Shrub to 4 ft. or sometimes small tree: lvs. elliptic, variable but usually about ½ in. long, finely toothed beyond middle: fls. 1/24 in. across, in 3–8-fld. clusters. Afr., Arabia to Cent. China.

salícina: *Suttonia salicina.*

semiserràta. Small tree; lvs. lanceolate, to 4 in. long, toothed or nearly entire: fls. white, about 1/12 in. long, in 5–12-fld. clusters. Himalayas to China.

Úrvillei: *Suttonia australis.*

variábilis. Tree to 40 ft.: lvs. obovate-oblong, to 2½ in. and more long, entire or slightly toothed: fls. about 12 in. long. Australia.

MYRSIPHYLLUM: *Asparagus asparagoides.*

MYRTÀCEÆ. Myrtle Family. An important family with aromatic qualities, in the tropics and semi-tropics of both hemispheres, particularly strong in Australia, of about 75 genera, largely evergreen, yielding valuable timber, economic products such as oils, gums, cloves, allspice, and many edible frs., as well as numerous ornamental subjects. Trees and shrubs with simple mostly opposite lvs., regular bisexual polypetalous fls. having usually 4–5 sepals and petals or petals lacking, numerous stamens and inferior 1- to many-celled ovary. Genera known to hort. are: Agonis, Angophora, Astartea, Backhousia, Baeckea, Balaustion, Beaufortia, Britoa, Callistemon, Calothamnus, Calytrix, Chamælaucium, Darwinia, Eremæa, Eucalyptus, Eugenia, Feijoa, Hypocalymma, Kunzea, Leptospermum, Melaleuca, Metrosideros, Myrrhinium, Myrtus, Pimenta, Psidium, Regelia, Rhodomyrtus, Syncarpia, Tristania, Verticordia.

MÝRTILLOCÁCTUS. *Cactaceæ.* Short-trunked tree-like heavy spiny cacti of Mex. and Guatemala, making thick-branched erect tops, with few stout ribs: fls. diurnal, very small, often several at an areole; ovary bearing a few very small scales with wool in the axils. See *Cacti.*

Còchal (*Cereus Cochal*). To 10 ft. with short woody trunk and many branches; ribs 6–8; radial spines 5; centrals ¾ in. long: fls. light green tinged with purple, 1 in. long: fr. red, ½ in. across, edible. Lower Calif.

geométrizans (*Cereus geometrizans*). Top large and much branched, to 15 ft., branches bluish-green and commonly 5- or 6-ribbed and to 4 in. thick; radials mostly 5; central 1 and dagger-shaped: fls. mostly 1 in. or more broad: fr. (garrambulla) size of olive, bluish or purplish, edible. Tablelands, Cent. and S. Mex.

Schénckii. To 4 in. diam., dark green; ribs 7–8, acute, smooth, areoles glabrous; radial spines 5–7, to 1 in. long or less; central 1, to 2 in. long: fls. cream to pale lemon-yellow within, brownish outside, small. Mex.

MYRTLE: *Myrtus.* **Crape-:** *Lagerstrœmia.* **Downy-:** *Rhodomyrtus tomentosa.* **Gum-:** *Angophora.* **Running-:** *Vinca minor.* **Sand-:** *Leiophyllum.* **Wax-:** *Myrica cerifera.*

MÝRTUS. Myrtle. *Myrtaceæ.* Shrubs and trees in both hemispheres, with opposite entire lvs., white or rosy fls. solitary or in cymes, and fr. a berry.

Myrtle is grown out-of-doors in the South, in greenhouses or in pots for lawn specimens in the North. Propagated by cuttings of partially ripened wood under glass; also by seed.

bullàta. To 25 ft.: lvs. broad-ovate, to 2 in. long, leathery, blistered between veins: fls. ½ in. across: fr. dark red, ⅓ in. long. New Zeal.

commùnis. The classic Myrtle. To 10 ft., evergreen, strongly scented: lvs. ovate to lanceolate, to 2 in. long: fls. to ¾ in. across: fr. bluish-black, ½ in. long. Medit. region. Var. **albocárpa,** fr. white. Var. **buxifòlia,** lvs. elliptical. Var. **compácta** is more dwarf and dense. Var. **itálica,** lvs. small, sharp-pointed. Var. **latifòlia,** lvs. very broad. Var. **microphýlla** has small overlapping lvs. Vars. **mínima** and **nàna** are small-lvd. dwarf forms. Var. **romàna,** lvs. broad-ovate. Var. **tarentìna,** lvs. in 4 rows, short. Var. **variegàta,** lvs. variegated.

Lùma: *Eugenia apiculata.*

obcordàta. To 15 ft., much branched: lvs. obcordate, to ½ in. long, leathery: fls. ¼ in. across: fr. dark red or violet, ¼ in. long. New Zeal.

pedunculàta. Similar to *M. obcordata* but differing in the obovate lvs. rounded at the tip and 5- rather than 4-lobed calyx. New Zeal.

Poeppígeri: listed name.

Rálphii. To 15 ft.: lvs. ovate, to 1 in. long: fls. ½ in. or less across: fr. dark red, to ⅓ in. long. New Zeal.

romàna: *M. communis* var.

Úgni (*Eugenia Ugni*). Chilean Guava. Shrub or tree, pubescent when young: lvs. ovate, leathery, shining above, whitish beneath: fls. tinted rose, with 2 persistent basal bracts, calyx-lobes reflexed: fr. purple or reddish, about ½ in. diam. Chile.

MYSTACÍDIUM. *Orchidaceæ.* African epiphytic orchids resembling Angræcum; sepals and petals similar, lip entire or 3-lobed, spurred at base. See *Orchids.*

dístichum (*Angræcum distichum*). Sts. tufted, more or less curved, to about 9 in. long, densely covered with small equitant two-ranked fleshy lvs. about ½ in. long: fls. white, solitary, about ⅛ in. long; spur as long as the furrowed ovary. July–Oct. Trop. Afr.

N

NABALUS: *Prenanthes.*

NÆGELIA: *Smithiantha.*

NAIBEL: *Hesperethusa crenulata.*

NAIL-WORT: *Paronychia.*

NAIO: *Myoporum sandwicense.*

NAMA: *Eriodictyon Parryi.*

NANÁNTHUS. *Aizoaceæ.* Segregates from the old genus Mesembryanthemum: stemless very dwarf per. plants with thick rootstock and warted lvs. in tufts of 3–6 pairs together not separated by internodes: fls. sessile or nearly so; stamens erect and conspicuous, in a cone. S. Afr.

albinòtus: *Rabiea albinota.*

aloìdes (*M. aloides*). Tufted: lvs. 6–8, partially terete, 2 in. long and ⅓ in. broad at base, white-warted: fls. yellow, 1 in. across, the petals in a single series.

Jàmesii (*Aloinopsis Jamesii*). Lvs. 2, recurved, about 1 in. long, the upper ones ovate or orbicular, ½ in. long, brownish-green, punctate: fls. yellow with red lines, in two series.—See also *Rabiea Jamesii.*

Peèrsii: *Cheiridopsis Peersii.*

Pòle-Évansii. Lvs. 6–10, spatulate-lanceolate, 1¼ in. long and ⅓ in. broad, gray-green with pale warts: fls. light yellow with red line down middle of petals, ¾ in. across, the petals in two series.

rosulàtus: *Aistocaulon rosulatum.*

rubrolineàtus (*M. rubrolineatum. Aloinopsis Dyeri*). Lvs. 6–8, oblong-spatulate, to 2 in. long and ⅓ in. broad, covered with whitish warts: fls. yellow with red line down middle of petals, 1¼ in. across, the petals in two series.

vittàtus (*Aloinopsis vittata. M. vittatum*). Closely cespitose: lvs. 6–8, obtusely triangular, to 1 in. long and ⅓ in. broad, with many warts: fls. bright yellow with red line down center of petals, 1 in. across.

NANDÌNA. *Berberidaceæ.* An attractive evergreen shrub native in China and Japan, and grown out-of-doors in S. U. S. **N. doméstica.** To 8 ft.: lvs. 2–3-pinnate, lfts. narrow, to 2 in. long, turning red in fall: fls. white, small, in panicles to 1 ft. long: berries bright red, ¼ in. across. Var. **álba** is listed. The plant offered in the trade as *N. aurea* is probably only a hort. form of *N. domestica.* In China the plant is called "heavenly bamboo."—It thrives in shady or sunny positions but should be well watered; adaptable for full growth to southern parts of the country but root-hardy N. in protected places. Propagated by seeds.

NÁNNORRHOPS. *Palmaceæ.* Three species in N. India and 1 of them also in the Afghanistan region, small cespitose polygamous fan-palms with prostrate branching sts. and infl. among the foliage, unarmed but with serrulate petiole: lvs. rigid, plicate, with short petiole and curved bifid segms.: spadix much branched; stamens about 9 in the staminate fls. and 6 in the hermaphrodite ones: fr. a small globose or oblong 1-seeded drupe.

Ritchieàna (*Chamærops Ritchieana*). Mazari Palm. Lvs. grayish or whitish, commonly tufted from slender underground sts. or rhizomes but sometimes from erect branching st. to 10 or 20 ft. high; segms. 8–15 and a ft. or more long, long-pointed, extending to middle of blade or lower: fr. ¾ in. or less diam., surface somewhat wrinkled. Punjab, Afghanistan, Baluchistan, in arid and cold regions; has been planted in S. Calif. and in Fla., but little known amongst us.

NANNY-BERRY: *Viburnum Lentago.*

NARCÍSSUS. *Amaryllidaceæ.* Spring-flowering bulbous plants with basal lvs. and yellow or white fls. solitary or several at top of scape, the perianth salverform and having a crown or corona which may be long and tubular or short and ring-like.

Narcissi are hardy out-of-doors and also forced in the greenhouse for winter and spring bloom; favorites for colonizing. Bulbs should be planted in September or October in good loamy soil, and they will bloom the following spring if of flowering size. They do better if lifted every few years and separated, the poor bulbs discarded. A few kinds, as *N. Tazetta,* may be grown in the house without soil, merely putting the bulbs in a bowl of water and propping them up with stones. There are many choice variants and hybrids, prized by fanciers. See *Bulbs.*

Àjax: a garden group belonging to *N. Pseudo-Narcissus.*

Bárri: a hort. group intermediate between *N. incomparabilis* and *N. poeticus,* the solitary yellow fls. having a crenulate crown about ⅓ as long as segms. Var. **conspícuus** is said to have a broad short crown edged red.

bícolor: plants so listed may be forms of *N. Pseudo-Narcissus* or *N. Tazetta,* having white segms. and yellow corona.

biflòrus. Primrose Peerless N. Lvs. to 2 ft. long and ½ in. broad: fls. usually 2, white, the tube 1 in. long, the pale yellow wavy-edged crown several times shorter than segms. France to Tyrol.

Broussonètii. To 1 ft.: lvs. linear, as long as scape: fls. white, to 1¾ in. across, crown very low or seemingly absent, segms. oblong-lanceolate, acutish. Morocco.—Perhaps not hardy N.

Bulbocòdium (*N. cantabricus*). Petticoat Daffodil. Lvs. to 15 in. long, very slender, exceeding the fls.: fls. solitary, bright yellow, the crown to 1 in. long and surpassing the very narrow segms. S. France to Morocco. Var. **citrìnus** has lemon-yellow fls. to 2 in. long. Var. **conspícuus** is a large form. Var. **Graéllsii** has whitish or primrose-yellow fls. Var. **monophýllus** (*N. Clusii*) has sessile white fls. and is said to be hardier.

Búrbidgei. Probably hybrid between *N. incomparabilis* and *N. poeticus:* fls. solitary, drooping, white, with very short yellow crown with red rim.

Campernéllii: *N. odorus.*

canaliculàtus: *N. Tazetta.*

cantábricus: *N. Bulbocodium.*

cérnuus: *N. triandrus* var.

Clùsii: *N. Bulbocodium* var. *monophyllus.*

cyclamíneus. Fls. solitary, drooping or inclined, with very short tube and lemon-yellow reflexed segms., the orange-yellow wavy-edged narrow crown as long as segms. Portugal.—Small slender plant.

giganteùs: a large-fld. form of *N. incomparabilis.*

grácilis. To 1 ft.: lvs. grass-like, 1/16 in. wide or less: fls. light lemon-yellow, corona usually deeper colored, segms. oblong acute and imbricated. S. France. Var. **tenùior** is more slender with paler fls.

incomparábilis. Lvs. 1 ft. long and ¼ in. wide: fls. solitary, yellow, with tube ¾ in. long and wavy-edged crown about half as long as segms. Spain to Tyrol. In var. **álbus** the segms. are white. There are double-fld. forms.

Jóhnstonii: *N. Pseudo-Narcissus* var.

Jonquílla. Jonquil. Lvs. to 1½ ft. long, narrow and rush-like: fls. 2–6 together, yellow, fragrant, with tube 1 in. long and wavy-edged crown much less than half as long as segms. S. Eu., Algeria. Var. **símplex** is listed.

juncifòlius. Lvs. to 6 in. long, narrow and rush-like: fls. 1–4 together, bright yellow, with tube ½ in. long and darker yellow wavy-edged crown about half length of segms. S. France, Spain, Portugal. Var. **rupícolus,** pedicels absent or greatly reduced, perianth-tube about ¾ in. long.

Leèdsii: a hort. group intermediate between *N. Pseudo-Narcissus* and *N. poeticus* with solitary whitish fls. having a yellow wavy-edged crown nearly as long as segms.

máximus: garden form of *N. Pseudo-Narcissus* with very large golden-yellow fls.

mínimus: very small garden form of *N. Pseudo-Narcissus,* 3-6 in. high, early.

mìnor: name applied to small forms of many species.

monophýllus: *N. Bulbocodium* var.

monspeliénsis: listed name of plant believed to be dwarf form of *N. Tazetta.*

moschàtus. By some authors considered a variant of *N. Pseudo-Narcissus* but differs in lvs. to 1 ft. long and ½ in. wide: fls. pale yellow becoming white, the segms. lanceolate and somewhat twisted, pedicel shorter and stouter. Mts. of Spain and Portugal.

nànus: hort. name applied to small garden forms of *N. Pseudo-Narcissus.*

Nélsonii. Robust: fls. solitary, white with short tube and lemon-yellow crown more than half as long as segms. Probably hybrid.

odòrus (*N. Campernellii*). Campernelle Jonquil. Lvs. about 1 ft. long and very narrow: fls. 2–4 together, bright yellow, fragrant, with tube ¾ in. long and crenate-lobed crown about half length of segms. France and Spain eastward. Var. **rugulòsus** has shorter imbricated segms.

orientàlis: *N. Tazetta* var.

ornàtus: *N. poeticus* var.

pòetaz. Poetaz N. Hybrid between *N. Tazetta* and *N. poeticus* var. *ornatus*, having 2–6 fls. larger and more pleasantly fragrant than *Tazetta.*

poéticus. Poets N. Lvs. to 1½ ft. long and ¼ in. wide: fls. mostly solitary, white, very fragrant, with tube 1 in. long and shallow crown with wavy red edges much shorter than segms. France to Greece. Var. **ornàtus** is an early-flowering form. Var. **radiiflòrus** has narrower lvs. and segms. and a more erect crown. Var. **recúrvus,** lvs. and segms. recurved.

polyánthos: *N. Tazetta* var.

prínceps: a form of *N. Pseudo-Narcissus* with sulfur-yellow fls. and yellow crown.

Pseùdo-Narcíssus. Daffodil. Trumpet N. Lvs. to 15 in. long and ¾ in. wide: fls. solitary, yellow, with tube ½ in. long and frilled crown about length of segms. or 2 in., sometimes double. Eu.—Here belong the Ajax narcissi. Among the Latin-named forms are: **bícolor,** corona yellow with white imbricated segms.; **Jóhnstonii,** corona pale yellow and truncate segms. reflexed. Portugal.

recúrvus: *N. poeticus* var.

rugulòsus: *N. odorus* var.

scabérulus. To 4 in.: lvs. 2, linear, arching to prostrate, canaliculate: fls. deep orange-yellow, tube narrowly cylindrical, to 1 in. long, segms. obovate, acute, somewhat reflexed. Portugal.—Requires much moisture at blossoming time, but little or none for remainder of season.

serótinus. To 10 in.: lvs. narrowly linear, appearing after flowering: fls. with greenish-white tube to ½ in. long and small white segms. Spain to Palestine.—Perhaps not hardy N.

Tazétta (*N. canaliculatus*). Polyanthus N. Lvs. to 1½ ft. long and ¾ in. wide: fls. usually 4–8 together, white, fragrant, with tube to 1 in. long and light yellow crown much shorter than the obovate segms. Canary Isls. to Japan.—A pure white-fld. kind is the Paper White narcissus, favorite with florists for winter bloom, capable of being brought into flower before Christmas. Var. **orientàlis,** Chinese Sacred-Lily, has sulfur-yellow segms. and dark yellow crown about ⅓ their length; much grown in water as a house plant. Var. **polyánthos** has fls. in umbels of 12–20, segms. ovate, shorter than tube. S. France.

triándrus. Lvs. about 1 ft. long, narrow and rush-like: fls. 1–6 together, pure white, with tube to ¾ in. long and entire cup-like crown half the length of segms. Spain, Portugal. Var. **calathìnus** has pale yellow fls. with crown nearly as long as segms. Var. **álbus,** an old name for *triandrus.* Var. **cérnuus** (*N. cernuus*) has larger fls. with pale yellow segms. and golden-yellow crown. Var. **cóncolor,** pale yellow. Var. **pulchéllus,** yellow with white crown.

viridiflòrus. To 1½ ft.: lvs. slender and cylindrical, to 1 ft. long: fls. green, drooping, to 1 in. long, segms. linear-lanceolate, reflexed, usually 2–4 on slender erect scape. Morocco.

Watièri. To 6 in.: lvs. narrowly linear, obtuse: fls. solitary, segms. pure white or occasionally flushed pink, to 1 in. across, tube to ½ in. long, greenish-white. Mts., Turkey.—Does best in sun in not too dry a soil.

NARTHÈCIUM. Bog-Asphodel. *Liliaceæ.* Rhizomatous herbs with grass-like lvs. and small greenish-yellow fls. in terminal racemes; sometimes transplanted.

americànum (*Abama americana*). To 1½ ft.: lvs. to 8 in. long: fls. ¼ in. long, in dense racemes 2 in. long. Swamps, N. J. and Del.

califórnicum. To 2 ft.: basal lvs. sword-shaped and folded as in iris, narrowly lanceolate, to 10 in. long, st.-lvs. to 4 in. long: fls. yellowish-green, to ⅓ in. long, in loose terminal racemes to 7 in. long, anthers red: caps. salmon-pink. Marshes, Calif. to S. W. Ore.

NASTÚRTIUM. *Cruciferæ.* Name of confused application because of the indefinite and varying practices of early authors. The horticultural plant involved is the water-cress, **N. officinàle** (*N. Nasturtium-aquaticum*). An aquatic or marsh inhabiting bien., sts. much branched, floating or creeping, glabrous: lvs. pinnately divided, of 3–9 segms. with terminal one largest, all ovate to orbicular: fls. white, to ⅙ in. across, in racemes: caps. to 1½ in. long, on pedicels as long. Eu., N. Asia; nat. in temp. or subtrop. regions of New World. See *Cress.* As a vernacular name, Nasturtium is applied to Tropæolum. See also *Armoracia.*

NAVARRETIA: *Gilia.*

NAVELSEED: *Omphalodes.*

NAVELWORT: *Omphalodes, Umbilicus pendulinus.*

NEANTHE BELLA: *Collinia elegans* probably.

NECKLACE-TREE: *Ormosia.*

NECTARINE, smooth-fruited peach, named as a botanical variety (var. *Nectarina*) of *Prunus Persica.* Usually nectarines are of smaller size than peaches and of richer quality, but there are no essential differences. The trees are the same. One may originate from the other, reciprocally, by seed and by bud-variation. Cultural requirements and propagation are the same. Nectarines are infrequently planted in E. U. S., being known mostly as oddities or rarities.

NEGUNDO: *Acer.*

NEÍLLIA. *Rosaceæ.* Simple-leaved deciduous Asian spirea-like shrubs with alternate toothed often lobed lvs. and white or pink fls.in terminal racemes or panicles. Attractive bushes, hardy N. or in the north central states. Propagated by greenwood cuttings under glass and by seeds.

affìnis. To 6 ft.: fls. pink, campanulate, in dense racemes to 3 in. long, calyx pubescent. May–June. China.

longiracemòsa. To 10 ft.: fls. pink, tubular, in dense racemes 3 in. and more long, calyx pubescent. June–July. China.

sinénsis. To 6 ft.: fls. pinkish, tubular, in nodding racemes to 2 in. long, calyx glabrous. May–June. China.

thibética. To 6 ft.: fls. pink, tubular, in dense racemes to 3 in. long, calyx pubescent. China.—Closely allied to *N. longiracemosa* but lvs. and ovary more pubescent.

thyrsiflòra. To 4 ft.: fls. white, campanulate, in panicled racemes, calyx pubescent. Aug.–Sept. Himalayas.

NELÚMBIUM (*Nelumbo*). Lotus. *Nymphæaceæ* (or *Nelumbonaceæ*). Large aquatic plants with shield-like lvs. usually standing above the water, single large fls. mostly overtopping the lvs., and large flat-topped fr.-receptacles containing many carpels, each opening on top by a large hole; suitable for large ponds and for masses, sometimes colonized.

The roots of nelumbiums should not be allowed to freeze. Increased by seed, sown in shallow pans in the garden or if sown in ponds they are rolled in a ball of clay and dropped in the water; the hard seeds of some species germinate better if they are bored or filed. Propagated also by sections of the rhizomes, covered with a foot or two of water, if outdoors; *N. Nelumbo* may be increased by division. The tubers or roots should not be transplanted until good growth has begun.

flavéscens: a hort. form, probably of *N. pentapetalum.*

lùteum: *N. pentapetalum.*

Nelúmbo (*N. speciosum. Nelumbo nucifera* and *indica*). East Indian L. Rootstock with small scale-like lvs., many ft. long, used as food in some countries: lvs. mostly 3–6 ft. above the water, 1–3 ft. across: fls. 4–10 in. across, fragrant, pink or rose. S. Asia to Australia, sometimes nat. Many vars. are in cult. as **álbum grandiflòrum; álbum plènum** (*Shiroman*); Grossherzog Ernst Ludwig (*N. flavescens* × *N. Osiris*), salmon-rose; **kermesìnum,** light rose; Kinshiren, white shaded pink; **Osìris,** deep rose; **púlchrum,** dark rosy-red; **pekinénse rùbrum,** rosy-carmine and **plènum** large and double; **pygmæum,** dwarf; **ròseum,** rosy-pink.—This plant is sometimes called Egyptian lotus, but that name belongs rather with *Nymphæa Lotus.*

pekinénse: hort. form of *N. Nelumbo.*

pentapétalum (*N. luteum*). American L. Water Chinkapin. Lvs. usually 1–2 ft. above the surface in shallow water, cup-shaped, 1–2 ft. across: fls. pale yellow, to 10 in. across. S. Ont. to Fla. and La.

speciòsum: *N. Nelumbo.*

NELUMBO: *Nelumbium.*

NEMÁSTYLIS. *Iridaceæ.* American bulbous herbs with long narrow lvs. and blue or purple fls. lasting only a day; tender in the N.

acùta. To 2 ft., the sts. simple or forked: lvs. to 1 ft. long: fls. to 2 in. across, 2–3 from a spathe. Apr.–June. Tenn. to Tex.

cœléstina: *Salpingostylis cœlestina.*

floridàna. Recently discovered species in the northeastern coastal region of Fla.: 1½–4 ft. and more: lvs. plicate: fls. several, erect, violet, to 2 in. across, opening 4–6 o'clock afternoon in autumn.

purpùrea: *Eustylis purpurea.*

NEMATÁNTHUS. *Gesneriaceæ.* Trop. American shrubs or vines similar to Columnea, differing in its calyx-tube turbinate, corolla-throat swollen the entire length becoming somewhat funnelform, and fr. a caps.

lóngipes (*Columnea splendens*). Shrub to 2 ft. with drooping branches: lvs. oblong to ovate-lanceolate, to 3 in. long, fleshy, ciliate when young: fls. bright red, to 2½ in. long, lobes reflexed, pedicel to 3 in. long, slender and hirsute. Brazil.—Sometimes grown as a house plant; propagated by seeds and cuttings.

NEMÈSIA. *Scrophulariaceæ.* African herbs and subshrubs with attractive tubular fls. in various colors, usually in terminal racemes, the corolla-tube 2-lipped, short, with a sac or spur in front, blooming from June–Sept.: lvs. opposite. Much like short-tubed linarias.

Nemesias are easily grown as annuals; they should stand about 6 inches apart in the garden; seeds are commonly started in the house.

chamædrifòlia. Ann. to 2 ft.: lvs. ovate, to 1½ in. long: fls. pale pink, spurred, solitary in the axils. S. Afr.

compácta: *N. versicolor* var.

floribúnda. Ann. to 15 in.: lvs. ovate or oval, to 1½ in. long: fls. whitish, spurred, in many-fld. racemes to 5 in. long. S. Afr.

fœtens. Per. to 2 ft., somewhat shrubby: lvs. linear, to 1½ in. long: fls. blue, lavender, pink or white with yellow crest, spur and throat, to ⅝ in. long. S. Afr. Var. **latifòlia** has lvs. lanceolate, toothed, and fls. white to pink.

grandiflòra tigrìna: *N. strumosa* var.

hýbrida: hort. name.

lilácina. To 15 in.: lvs. narrow-lanceolate, to 1½ in. long: fls. small, lilac, spurred, in racemes to 1 ft. long. S. Afr.

nàna compácta: *N. strumosa* var.

strumòsa. Ann. to 2 ft.: lvs. lanceolate, to 3 in. long: fls. white or in shades of yellow and purple, often purple marked on the outside, the bearded throat spotted on a yellow ground, with pouch at base, in racemes to 4 in. long. S. Afr. Var. **grandiflòra** is an improved form with larger fls. Var. **nàna compácta** is dwarf. Var. **Súttonii** comprises improved forms in white, yellow, rose-pink, orange, crimson and scarlet.

versícolor. Ann. to 1 ft. or more: lvs. ovate to lanceolate, to 2 in. long: fls. in various colors, the spur nearly straight or incurved, in racemes to 3 in. long. Var. **compácta** (*N. compacta*) is a compact form, very free flowering.

NEMOPÁNTHUS. Mountain-Holly. *Aquifoliaceæ.* Neat deciduous bush distinguished from Ilex by the narrow separate petals and very small not persistent sepals. **N. mucronàta** (*N. canadensis. N. fascicularis*). To 10 ft., glabrous, with purplish young growths, nearly or quite entire elliptic or oblong or somewhat obovate mucronate-tipped lvs. to 1½ in. long: fls. axillary, on slender pedicels: drupe about ¼ in. diam., red. Mostly in bogs and swamps, Newf. to Wis. and Va.—Handsome in fr. and in autumn foliage.

NEMÓPHILA. *Hydrophyllaceæ.* Small soft fragile ann. herbs, mostly Californian, glabrous, pubescent or prickly-hairy, with usually pinnatifid lvs., blue or white solitary peduncled fls. or rarely in racemes, the calyx having 5 spreading or reflexed appendages in each sinus, stamens not exserted; grown in the garden for the continuous spring and summer bloom.

Seeds may be sown where the plants are to grow, in early spring for summer bloom; the flowers are small but usually profuse and bright. Recent studies have modified the conception of the cultivated species.

atomària: *N. Menziesii* var.

aurìta: *Pholistoma auritum.*

crambeoìdes: *N. Menziesii* var.

discoidàlis: *N. Menziesii* var.

insígnis: *N. Menziesii.*

integrifòlia: *N. rotata* var.

liniflòra: *N. Menziesii* var.

maculàta. Five-Spot. Ascending or decumbent: fls. white with deep purple spot at tip of each lobe. Calif. Var. **grandiflòra** has larger fls. and var. **purpùrea** purple fls.

Ménziesii (*N. insignis*). Baby Blue-Eyes. Sts. prostrate or ascending, to 20 in. long: lvs. to 4 in. long, pinnatifid into 5–9 lobed divisions: fls. blue, rotate, to 1½ in. across. Calif. Var. **álba,** fls. white. Var. **atomària** (*N. atomaria*), fls. paler, dotted with purple or black. Var. **crambeoìdes,** fls. light blue veined purple. Var. **discoidàlis,** fls. brownish-purple in center and white on edges. Var. **grandiflòra,** fls. large. Var. **liniflòra** (*N. liniflora*), fls. white or pale blue with black center. Var. **marginàta,** fls. blue margined white.

phacelioìdes. To 2 ft.: lvs. alternate, segms. ciliate, notched at tip: fls. blue with white center, bell-shaped. W. N. Amer.

purpùrea: trade name, possibly for *N. maculata* var.

rotàta. Differs from *N. Menziesii* in lvs. pinnatifid into 3–5 entire divisions and smaller fls. Calif. Var. **integrifòlia** (*N. integrifolia*), fls. pale blue, about ½ in. across.

NEOBENTHÀMIA. *Orchidaceæ.* A single African terrestrial orchid, **N. grácilis.** Tall more or less branching plant to 4 ft. high: lvs. numerous, two-ranked, linear or linear-lanceolate, to 8 in. long: infl. terminal, simple or branched, densely-fld. at the end of a long naked peduncle; fls. white having a lip with yellow middle line bordered on each side by a row of rosy spots. Jan.–Apr., Sept. See *Orchids.*

NEOBÉSSEYA. *Cactaceæ.* Small simple or tufted globose or depressed cacti, on the Great Plains of the U. S. to Mex.: plant-body bearing spiralled or irregular tubercles mostly grooved on the upper side and which are spine-bearing at the apex: fls. near top of plant, relatively large, yellow or pink. See *Cacti.*

asperispìna. Usually solitary, globose, blue-green, to 2½ in. diam.; tubercles conical, to ¾ in. long; spines grayish, radials 9–10, to ½ in. long, stiff, radiating, central usually absent: fls. greenish-yellow, to 1½ in. long. Mex.

missouriénsis (*Cactus, Mammillaria* and *Coryphantha missouriensis. Mammillaria Nuttallii*). St. usually solitary, globose, 1–2 ft. high; tubercles ½ in. or more long; spines 10–20 together: fls. about 1 in. long and broad, yellow or reddish, stamens yellow. N. D. to Tex. and west.

Nòtesteinii. Similar to *N. missouriensis* from which it differs in its pubescent spines, pink stamens, and perianth-segms. with red midrib. Mont.

símilis (*Coryphantha similis*). Growing in clumps to 6 in. high and 1 ft. diam.; tubercles cylindrical and to ¾ in. long; radial spines 12–15, white tipped brown; central 1 or none: fls. light yellow, 2 in. long. E. Tex.

Wíssmannii. Solitary or growing in clumps to 4 in. high and 1 ft. diam., areoles white-woolly; spines 7–14, ½ in. long: fls. deep yellow, 2 in. long. Cent. Tex.

NEOLLÓYDIA. *Cactaceæ.* Small cylindric and densely spiny tubercled cacti of Tex. and Mex., formerly named in Mammillaria and Echinocactus: central spines 1–several and much longer than the numerous radials: fls. large, pink or purple. See *Cacti.*

Beguìnii (*Echinocactus Beguinii*). Cylindric, to 6 in. high; tubercles in geometric figures and covered with spines; radials 20 or more and white: fls. bright pink, to 1½ in. long. Mex. Var. **senìlis** is listed.

ceratìtes (*Mammillaria ceratites*). Ovoid, to 4 in. tall and 2 in. diam., gray-green; tubercles about ⅝ in. across, rhomboid, axils woolly; spines grayish, radials 15, to ⅝ in. long, base bulbous, centrals 5–6, to 1¼ in. long, stout: fls. purple, to 1½ in. long. Mex.

clavàta (*Mammillaria clavata. M. rhapidacantha*). Simple, cylindric, to 6 in. high, bluish-green; tubercles conic and axils woolly when young; radials 6–12; central 1: fls. about ¾ in. long, creamy-white. Mex.

conoídea (*Mammillaria conoidea. Echinocactus conoideus*). Mostly cespitose, parts short-cylindric; tubercles obtuse and axils very woolly; spines very many and covering the plant, the radials white: fls. purple. N. Mex.

grandiflòra (*Mammillaria* and *Coryphantha grandiflora*). Cylindrical, to 4 in. tall and nearly 3 in. diam.; tubercles subrhombic, compact, woolly in groove and axils; radial spines usually 20–25, white with black tip; centrals 1–2, or absent, black, stiff: fls. dark violet-pink, to 2½ in. across or more. Mex.

horrípila (*Mammillaria horripila*). Globular or short-cylindric, 5 in. high; tubercles glaucous; radial spines 8–10 and ½ in. long; central 1: fls. deep purple, 1¼ in. long. Mex.

pilispìna (*Mammillaria pilispina*). Cespitose, 1¼ in. diam., young areoles with long white wool; radial spines 6–7 and white tipped black; central spine 1 or none: fls. purplish, ½ in. long. Mex.

Roseàna: probably *Cochemiea Poselgeri.*

texénsis. Globose or short-oblong, 2 in. long; radial spines 10–15 and white; central spines 1–3, 1 in. long, black. Tex.

NEOMAMMILLARIA: *Mammillaria.*

NEOMÁRICA (*Marica* of hort.). *Iridaceæ.* Trop. per. herbs with short rootstocks, narrow basal lvs. and blue, yellow or white iris-like fls. of brief duration, in clusters near the end of flat, winged, leaf-like scapes. The generic name Marica, long associated with the following plants, is now known to be a synonym of the closely related genus Cipura.

Maricas are hardy in mild regions with winter protection, and thrive in Florida and similar climates. Propagated by division.

cærùlea. To 2½ ft.: lvs. to 3 ft. long and 1½ in. across, ensiform: fls. bright blue or lilac, to 4 in. across, outer segms. with transverse bars of brown, yellow or white. Brazil.

grácilis. Lvs. to 1½ ft. long and 1 in. across: fls. 2 in. across, the outer segms. white with yellow and brown markings, inner segms. small, blue. Mex. to Brazil.

longifòlia. To 2 ft.: lvs. 1 in. across: fls. 2 in. across, yellow barred with brown. Brazil.

magnífica: listed name of unknown botanical standing.

Northiàna. To 3 ft.: lvs. to 2 ft. long and 2 in. across: fls. very fragrant, to 4 in. across, outer segms. white variegated at base, inner segms. violet variegated at base. Brazil.

trístis: listed name.

NEOPIERIS: *Lyonia.*

NEOPORTÈRIA. *Cactaceæ.* Chilean cacti of globose or cylindrical form with usually straight tubercled ribs: fls. from center of plant, pinkish or reddish, short-funnelform.

acutíssima: *Chilenia acutissima.*

chilénsis: *Chilenia chilensis.*

fúsca (*Echinocactus fuscus* and *ebenacanthus*). To 4 in. diam., globular or short-cylindric; ribs 12–13; radial spines 5–7 and brownish; central spines 4 and 1 in. long: fls. yellowish-white, 1 in. long.

napìna. Globose to obconical, to nearly 4 in. tall and 2 in. diam., reddish-gray to brownish-green; ribs 14, spiral, conspicuously tubercled; spines all radial, about 3–9, to ⅛ in. long, dark brown: fls. yellow, to 1½ in. long.

Nìdus (*Echinocactus Nidus* and *senilis. N. senilis*). Solitary, globose to subcylindrical, to nearly 4 in. diam., covered with long recurved spines; ribs 16–18, deeply notched; spines in two series, the outer 20–24 slender, white and about ¾ in. long, the inner 6–8 stouter, tortuous and to 1¼ in. long: fls. reddish, to 1½ in. long.

nígricans (*Echinocactus nigricans*). Short-cylindric; ribs 15, strongly tubercled; radial spines 8–9, black; central spines 1–2, ½ in. long: fls. white or yellowish-green, 2 in. long.

occúlta (*Echinocactus occultus*). To 3 in. high, globular or short-cylindric; ribs about 14, strongly tubercled; spines 1–10 or wanting, blackish, to 1½ in. long: fls. reddish outside, 2 in. across.

Reìchii (*Notocactus Reichii*). Cespitose and free-sprouting, globose, to 3 in. diam., gray-green; ribs 30–40, low, tubercled; spines 7–9, to ⅛ in. long, white, curved: fls. yellow, style red.

senìlis: *N. Nidus.*

Stumeriàna: listed name, perhaps *Parodia Stuemeri.*

subgibbòsa: *Chilenia subgibbosa.*

NEORAIMÓNDIA. *Cactaceæ.* Stout columnar cactus branching near base, native in W. Peru. **N. macrostìbas.** To 12 ft., areoles very large and sometimes elongated to 4 in.; ribs few; spines 12 or more, very unequal, the central often to 10 in. long: fls. to 1½ in. long, funnelform. Var. **roseiflòra,** fls. rose-pink. Var. **gigantèa,** a large form to 20 ft., much branched from about 1½ ft. above ground, with spines to 6 in. long.

NEOWASHINGTONIA: *Washingtonia.*

NEOWERDERMÁNNIA. *Cactaceæ.* One species native in the high mts. of S. Amer. **N. Vorwérkii.** Plant of 16 spirally arranged protuberant 3-angled ribs, areoles in depressions and white-woolly when young; spines 10, bent, ½ in. long, and one to 1½ in. long and black.

NEPENTHÀCEÆ. NEPENTHES FAMILY. One genus of semi-woody more or less climbing insectivorous plants native from E. Indies to Madagascar, sometimes grown under glass as curiosities and once assembled as much-prized fanciers' plants in many forms and hybrids. The family is characterized by alternate lvs. with midrib prolonged into tendril bearing at end a hollow pitcher with thickened rim and large or small lid, small diœcious fls. in racemes, having 3–4 sepals, no petals, 4–24 united stamens, superior 4-celled ovary, and fr. a caps. The family appears in the sequence associated with Sarraceniaceæ, Droseraceæ, Resedaceæ.

NEPÉNTHES. PITCHER-PLANT. *Nepenthaceæ.* Characters as for the family (above); many of the named kinds are artificial hybrids.

Pitcher-plants are suitable for pots or baskets suspended from roof of greenhouse, with temperature of not less than 65°. The best potting material is fibrous peat, moss and sand. They should be shaded from bright sunshine. Propagated by cuttings of ripened shoots and by seeds in a close propagating frame.

atrosanguínea. Hybrid probably of *N. distillatoria* and *N. Sedenii:* pitchers reddish-purple mottled with pale green, wings fringed.

Chélsonii. Hybrid between *N. Hookeriana* and *N. Dominii:* pitchers yellowish-green spotted with purple, wings fringed.

Còurtii. Hybrid, with *N. Dominii* as one of the parents: pitchers green mottled with purple, wings fringed.

Dickinsoniàna. Hybrid between *N. Rafflesiana* and *N. Veitchii:* pitchers green marked with purple, wings fringed.

distillatòria. Pitchers pale green to dull red, to 5 in. long and 1½ in. across, wings fringed. Ceylon.

Dóminii. Hybrid with *N. Rafflesiana* as one of parents: pitchers mottled green and purple, wings fringed.

edinénsis. Hybrid between *N. Rafflesiana* and *N. Chelsonii:* pitchers yellow-green spotted with dark purple, wings fringed.

Henryàna. Hybrid with *N. Hookeriana* and *N. Sedenii:* pitchers red or greenish-red and mottled, wings fringed.

Hookeriàna. Pitchers pale green marked with purple, to 6 in. long and 3 in. across, the wings broad and doubly fringed or unfringed on upper pitchers. Borneo.

intermèdia. Hybrid with *N. Rafflesiana* as one parent: pitchers green spotted with purple, the wings fringed.

khasiàna. Pitchers green or reddish-green, to 7 in. long and 1½ in. across, wings narrow and fringed. India.

Lawrenciàna. Hybrid between *N. polymorpha* and *N. Hookeriana:* pitchers pale green with dark purple markings, wings fringed, expanded: lvs. lanceolate, margins usually dentate-ciliate.

Mastersiàna. Hybrid between *N. sanguinea* and *N. khasiana:* pitchers deep crimson or crimson-green with purple spots, the wings fringed or small.

máxima. Pitchers pale green, heavily blotched with purple, lower ones with wings expanded and fringed, middle narrow-cylindric and unfringed, upper ones funnel-shaped; peristome expanded and wavy, greenish to dark purple within. Celebes, Borneo, New Guinea.—Highly colored, free-flowering; parent of many hybrids.

Mórganiæ: probably not distinguishable from *N. Lawrenciana*, both of which are reputed to have same parentage.

paradìsæ. Hybrid with *N. Phyllamphora* as one parent: pitchers purple-red below, yellow-spotted above.

Pátersonii. Hybrid of uncertain parentage: pitchers yellowish-green mottled with red, the wings narrow and fringed.

Phyllámphora. Pitchers pale to reddish-green or red, to 6 in. long and 1½ in. across, the wings narrow and cord-like. S. China, E. Indies.

Rafflesiàna. Pitchers pale green spotted with purple, to 7 in. long and 4 in. across, the lower urn-shaped and upper funnelform. Malacca to Borneo and Sumatra.

sanguínea. Pitchers red or reddish-green, to 10 in. long and 3 in. across, wings fringed or plain. Malaya.

Sèdenii. Hybrid of uncertain parentage: pitchers slightly contracted in middle, the wings fringed.

spléndida. Hybrid between *N. Hookeriana* and *N. Phyllamphora.*

Veìtchii. Pitchers yellowish-green to reddish, hairy, to 8 in. long and 3 in. across, wings fringed, with wide rim. Borneo.

Wílliamsii. Hybrid between *N. Sedenii* and *N. Hookeriana:* pitchers yellow-red with many bright red blotches and spots: lvs. petiolate.

NÉPETA. *Labiatæ.* Mostly aromatic herbs, ann. and per., with toothed or cut lvs., blue or white fls. in whorls in clusters or spikes; grown for medicinal purposes and the creeping kinds for ground-cover in shady places. Catnip is one of the sweet herbs. Propagated by seeds and by division; easily grown.

amethýstina. Per. to 2 ft., soft-tomentose: lvs. cordate-lanceolate, to 1½ in. long: fls. blue, ½ in. long, in clusters forming a long raceme. Spain.

barbàta. To 1½ ft.: lvs. ovate, to 1½ in. long and ½ in. wide, rounded or hastate at base: fls. in few-fld. loose racemes, the spreading lower lip barbed. Turkestan.

Catària. Catnip or Catnep. Catmint. Per. to 3 ft., pubescent and pale: lvs. ovate, to 2½ in. long: fls. whitish or pale purple, ¼ in. long, in dense spikes to 5 in. long. Eu., Asia; widely nat. in N. Amer.—An old sweet herb.

cyànea. To 6 in., sts. ascending, soft-tomentose: lvs. ovate or oblong, small, wrinkled: fls. pale purple, small, in numerous racemes 1 in. long. Caucasus.

dístans. Per. to 1½ ft., soft-tomentose: lvs. ovate-cordate, to 2 in. long: fls. rose, in spikes to 8 in. long. Himalayas.

Glechòma: *N. hederacea.*

grandiflòra. Per. to 2 ft.: lvs. ovate-cordate, to 2½ in. long: fls. blue, ¾ in. long, in clusters forming loose racemes. Caucasus.

hederàcea (*N. Glechoma. Glecoma hederacea*). Ground Ivy. Gill-over-the-Ground. Field-Balm. Creeping per. forming a mat, useful as ground-cover in both exposed and shady places: lvs. round or kidney-shaped, deeply cordate, to 1½ in. across: fls. light blue, to 1 in. long, in few-fld. clusters. Eu., Asia; widely nat. in N Amer. Var. **variegàta** has variegated lvs.

itálica. Per. to 3½ ft.: lvs. ovate, to ¾ in. long, obtuse, cordate, petiolate, glabrous above and shortly villous-pubescent beneath, margins crenate: fls. purple to white, in condensed verticillate cymes subtended by narrowly lanceolate bracts. N. W. Medit. region.

lanceolàta: *N. Nepetella.*

macrántha. Per. to 3 ft.: lvs. ovate-lanceolate, to 4 in. long: fls. blue, to 1½ in. long, in few-fld. clusters. Siberia.

Mussínii. Per. to 2 ft., much branched, white-pubescent: lvs. oblong-ovate, to ¾ in. long: fls. blue with dark spots, to ½ in. long, in clusters forming long racemes. Caucasus, Persia. Vars. **grándis** and **supérba** are listed.

Nepetélla (*N. lanceolata*). Per. to 4 ft.: lvs. lanceolate, 1 in. long, gray-pubescent: fls. white or pink spotted with purple, ½ in. long, in spikes. S. Eu.

nervòsa. Per. to 2 ft.: lvs. linear-lanceolate, to 4 in. long, toothed: fls. pale blue, in spikes to 3 in. long. Himalayas.

nùda (*N. pannonica*). Per. to 4 ft.: lvs. oblong, to 2 in. long, nearly glabrous: fls. violet to white spotted with purple, ½ in. long, in many-fld. racemes. S. Eu.

pannónica: *N. nuda.*

ucránica. Per. to 2 ft., pubescent or nearly glabrous: lvs. oblong-ovate to oblong: fls. blue, small, in loose bracted cymes. E. Eu., W. Asia.—Not showy; the material planted under this name is usually *N. grandiflora.*

Wìlsonii: *Dracocephalum Wilsonii.*

NEPHELIUM: *Litchi* and *Euphoria.*

NEPHRODIUM: *Dryopteris.*

NEPHRÓLEPIS. Sword-Fern. *Polypodiaceæ.* Trop. and subtrop. ferns of both hemispheres, some of them favorite house and conservatory plants: fronds usually long and narrow, pinnately compound or divided; sori on upper forks of veins.

The sword-ferns are greenhouse or porch subjects, sometimes grown in vases and baskets; they are commonly propagated by rooting runners, as good spores may not be produced by the horticultural varieties. The plants thrive under common or even untoward conditions and produce dense crowns of long often drooping fronds. See *Ferns.*

acuminàta (*M. davallioides*). Fronds drooping, to 3 ft. long and 1 ft. wide, pinnæ linear-lanceolate, coarsely toothed, the fertile ones much contracted. Malaya.

acùta: *N. biserrata.*

biserràta (*N. acuta*). Fronds drooping or arching, to 4½ ft. long and 1 ft. wide, pinnæ distant, to 6 in. long, toothed. Tropics. Var. **fúrcans** has forked segms.

bostoniénsis: *N. exaltata* var.

bulbífera: perhaps a form of *Polystichum aculeatum.*

cordàta: *N. cordifolia.*

cordifòlia (*N. cordata. N. tuberosa*). Rhizome bearing tubers: fronds to 2 ft. long and 2½ in. wide, erect or nearly so, bright green, pinnæ close together, to 1¼ in. long, sharp-toothed. Tropics and subtropics. Hort. vars. are **compácta, gigantèa, plumòsa, tessellàta, variegàta.**

davallioìdes: *N. acuminata.*

Dúffii (*N. cordifolia* var. *Duffii*). Tufted, graceful: fronds to 2 ft. long and ½ in. wide, usually forked or crested at tips, pinnæ nearly orbicular, ¼ in. across, wavy-toothed. New Zeal. or S. Sea Isls.—Probably a mutant of *N. cordifolia.*

exaltàta. Stiff, erect: fronds to 5 ft. long and 6 in. wide, pinnæ close together, to 3 in. long, entire or slightly toothed. Fla. to Brazil and in Afr. and E. Asia.—This species has given rise to numerous sports or mutants with much divided and even crested fronds and that have received Latinized names, some of which are entered here. Var. **bostoniénsis,** Boston-Fern, is more graceful and drooping, a famous window-garden and table fern. From it or its derivatives have arisen many forms as: *Amersohlii, Childsii, Dreyeri, edmontoniensis, elegantissima* and its vars. *compacta* and *compacta cristata, Elmsfordii, falcata, Forsteriana, Galvestonii, Giatrasii, Goodii, Gretnai, Harrisii, Hillsii, lycopodioides, Macawii, magnifica, Milleri, Millsii, muscosa, Norwoodii, philippinensis, Piersonii, Randolphii, robusta, Rooseveltii, Scholzelii, Schubertii, Scottii, Smithii, splendida, superba, superbissima, tripartita, todeoides, viridissima, Wanamakeri, Whitmanii, Wicheri, Wilsonii, Wittboldii, Wredei.*

pectinàta (*N. cordifolia* var. *pectinata*). Basket-Fern. Small, compact, grayish-green: fronds to 1½ ft. long and 1 in. wide, pinnæ close together, ½ in. long, toothed. Trop. Amer.

tuberòsa: *N. cordifolia.*

NEPHROPHYLLÍDIUM. *Gentianaceæ.* A monotypic genus occurring in arctic and sub-arctic regions from N. Wash. to Alaska and Japan: allied to Menyanthes, differing in having simple lvs. and entire corolla-lobes. **N. Crísta-gálli.** Per. with creeping rootstocks: basal lvs. kidney-shaped, to 5 in. wide, coarsely crenate, long-petioled: fls. white, shortly funnelform and 5-lobed, in cymes on scapes to 2 ft. high. In bogs and marshes.—Adaptable to the bog garden or in moist mucky soil along pools or ponds.

NEPHTHÝTIS. *Araceæ*. Herbs with thick rhizomes, in W. Afr., long-petioled arrow-shaped lvs., and fls. borne on a stalked cylindrical spadix, the spathe decurrent on peduncle; no close relatives in general cult.

Afzèlii (*N. liberica*). Rhizome horizontal and creeping: lvs. to 1 ft. long, on petioles to 1½ ft. or more long: spathes green, to 3 in. long. Var. **variegàta** is listed as a variegated foliage form.

libérica: *N. Afzelii.*

picturàta: *Rhektophyllum mirabile.*

triphýlla: hort. name unidentifiable botanically, probably not a Nephthytis.

NEPTÙNIA. *Leguminosæ*. Per. herbs or shrubs of warm parts of the western hemisphere: sts. spineless, diffusely branched or prostrate: lvs. bipinnate, lfts. small: fls. regular, in globose or cylindrical spikes on solitary axillary peduncles: pods ⅓–½ as broad as long, flattened. Grown for ornament in the border; propagated by seeds.

lùtea. Low per., branched at base, pubescent: lfts. 18–34, oblong, ⅛ in. long or less, ciliate, apiculate: fls. yellow, in dense heads to ¾ in. long. Okla., Tex.

NERÌNE. *Amaryllidaceæ*. Bulbous herbs from S. Afr. with strap-shaped basal lvs. not appearing with the bloom, and funnelform fls. in shades of red to white borne in umbels at top of solid scape, the perianth-tube very short, blooming in autumn (Mar. to May in S. Afr.)

Nerines are tender and grown mostly in pots in the greenhouse, and out-of-doors in mild climates. They should be given plenty of water until after flowering, and from May to August the bulbs should be rested. Propagated by offsets.

Bòwdenii. To 15 in.: lvs. strap-shaped, obtuse: fls. bright rose-pink, in umbels of 8–12, segms. to 3 in. long, spreading, margin wavy and crisp, reflexed at tip, stamens and style longer than segms.

corúscans: hort. name, perhaps for *N. sarniensis* var. *corusca.*

curvifòlia. To 1½ ft.: lvs. 1 ft. long, curved, glaucous, after fls.: fls. scarlet, stamens not exserted. Var. **Fóthergillii** (*N. Fothergillii*) is stronger with numerous fls.

filifòlia. Suberect grass-like lvs. to 8 in. long: fls. bright red, to 1 in. long, segms. narrow, oblanceolate; infl. a centripetal umbel.

flexuòsa. To 3 ft.: lvs. linear-lorate, to ¾ in. wide: fls. pale pink, to 1½ in. long, in umbels of 10–20, segms. with crisped margins, stamens and style shorter than segms. A var. **álba** with white fls. is advertised.

Fóthergillii: *N. curvifolia* var.

Mánsellii. Said to hybrid between *N. flexuosa* and *N. curvifolia* var. *Fothergillii.*

ròsea: *N. sarniensis* var.

sarniénsis (*Amaryllis sarniensis*). Guernsey-Lily. To 1½ ft.: lvs. to 1 ft. long and ¾ in. wide, after fls.: fls. crimson, 1½ in. long, the segms. slightly crisped and the bright red stamens exserted. Var. **corúsca,** lvs. broader with cross-bars between veins, fls. bright scarlet, large; its form **màjor** has crimson-red fls. Var. **ròsea** (*N. rosea*) has darker lvs. and rose-pink fls.

NÈRIUM. *Apocynaceæ*. Stout evergreen shrubs with lvs. opposite or in 3's or 4's, showy funnelform fls. in terminal cymes, and fr. of 2 long follicles; native from Medit. region to Japan.

Oleanders are grown out-of-doors in the South and as pot- or tub-plants North. They require little attention in the South; in the North plants should be cut back and rested after flowering, then potted in loam and rotted manure. Propagated easily by cuttings of mature firm wood, sometimes in water.

índicum (*N. odorum*). Sweet-scented Oleander. To 8 ft.: lvs. linear-lanceolate, to 10 in. long: fls. rosy-pink to white, often double, fragrant, 2 in. across. Persia to Japan.

odòrum: *N. indicum.*

Oleánder. Oleander. To 20 ft.: lvs. oblong-lanceolate, to 8 in. long: fls. to 3 in. across, white, yellowish to red and purple, as indicated by the trade names **álbum, atropùreum, cardinàlis, cárneum, lutéscens, ròseum, spléndens.** Var. **variegàtum,** lvs. variegated with white or yellow. Medit. region. — Popular as a tub-plant; slips are sometimes rooted in bottles of water.

NERTÈRA. *Rubiaceæ*. Creeping per. herbs with small opposite lvs., solitary tubular 4–5-lobed fls., and fr. a fleshy drupe; native in the southern hemisphere.

One species is cultivated as a ground-cover in California and under glass in the North. It should be grown in a shady place in sandy or light soil. Propagated by seeds and division.

depréssa. Bead-Plant. Sts. to 10 in. long, matted: lvs. broad-ovate, ⅙ in. long: fls. greenish, minute and inconspicuous: fr. orange, about ¼ in. across. S. Amer., New Zeal., Tasmania.

NESÆA: *Decodon.*

NETTLE: *Urtica.* **Dead:** *Lamium.*

NEVIÙSIA. *Rosaceæ*. One deciduous shrub native in Ala., grown out-of-doors for ornament and sometimes forced under glass. **N. alabaménsis.** Snow-Wreath. To 6 ft.: lvs. alternate, ovate, to 3 in. long, toothed: fls. white, without petals, 1 in. across, in clusters, of feathery appearance due to the many stamens.—Propagated by seeds and cuttings of young wood in the greenhouse. It is hardy to New England and Cent. N. Y. in somewhat protected places.

NEYRAÙDIA. *Gramineæ*. One large leafy per. grass native in trop. Asia, trop. Afr. and Madagascar, planted somewhat for ornament in S. Fla. and S. Calif. **N. madagascariénsis.** To 8 ft. or more: lvs. to 2 ft. long and 1 in. wide: spikelets awned, in compound nodding plume-like panicles to 3 ft. long. See *Grasses.*

NICÁNDRA (*Physalodes*). *Solanaceæ*. Stout ann. herbs from Peru differing from Physalis in the 3–5-celled ovary and dry rather than fleshy fr.: fls. larger and more showy. Sometimes grown from seed sown in the open in the S., under glass in the N., as an ornamental subject; escaped as a weed in some places.

Physalòdes. Apple-of-Peru. Shoo-Fly Plant. Strong spreading old-fashioned garden plant, to 4 ft.: lvs. oval, sinuate-toothed: fls. blue, 1 in. or more across, wheel-shaped, solitary: berry inclosed in an enlarged strongly 5-winged calyx. Escaped in U. S. and tropics.

violàcea. Sts. dark violet: lvs. to 10 in. long, with colored hairs on upper surface: fls. solitary, bell-shaped, violet-blue on upper half and white on lower.

NICKER-NUT: *Cæsalpinia Bonduc.*

NICOTIÀNA. *Solanaceæ*. Large herbaceous annuals and perennials, rarely shrubby or tree-like, usually sticky-hairy, with long tubular strongly fragrant fls., white, greenish, yellow or purple, mostly opening at night, in terminal panicles or racemes: lvs. alternate and simple, possessing narcotic-poisonous properties; grown for ornament and *N. Tabacum* yielding tobacco.

Nicotianas are easily grown but are sensitive to frost. Some of them make good pot-plants and border subjects. Propagated by seed, the ornamental forms also by cuttings; *N. alata* var. *grandiflora* by root-cuttings.

acuminàta. Per. but grown as ann.: lvs. ovate-lanceolate, long-acuminate, short-petioled, undulate: fls. white, 3 in. long, salverform, the tube 5 times as long as calyx, lobes obtuse. Chile.

affìnis: *N. alata* var. *grandiflora.*

alàta. Tender per. to 5 ft.: lvs. lanceolate or oblong, to 4 in. long, acute or obtuse, the petiole with narrow wings, undulate: fls. fragrant at night, closing in cloudy weather, salverform, corolla-limb white within, pale violet beneath, 2 in. across, lobes acute or notched, tube 4–5 times longer than calyx. Brazil, Uruguay, Paraguay. Var. **grandiflòra** (*N. affinis*), Jasmine Tobacco, has very large fls. with much dilated tube.

angustifòlia: *N. Tabacum* var.

arbòrea: *N. glauca.*

attenuàta. Ann. to 4 ft.: lvs. broad-ovate to lanceolate, to 4 in. long, petioled: fls. white or greenish, salverform, to 1 in. long, opening at night. B. C. to Mont. and Mex.

auriculàta. Ann.: lvs. oblong-lanceolate, acuminate, clasping and ear-shaped at base: fls. funnel-shaped, red, lobes acuminate. Sardinia.

Bígelovii. Indian Tobacco. Ann. to 2 ft.: lvs. oblong-ovate to lanceolate, to 7 in. long, acute, short-petioled or sessile: fls. white, salverform, 2 in. long, limb 1 in. across. Calif. to Nev. and Ariz.

cerinthoìdes: a listed name of uncertain botanical application.

chinénsis: *N. Tabacum* var. *angustifolia.*

colossèa: *N. tomentosa.*

Forgetiàna. Ann. to 3 ft.: lvs. papery, oblong-lanceolate, about 1 ft. long, obtuse, with short winged petiole: fls. rose, funnelform, to 1¼ in. long and 1 in. across, the lobes obtuse. Brazil.

fràgrans: *N. suaveolens* var. *macrantha.*

fruticòsa: a listed name of uncertain botanical application.

gigantèa: *N. Tabacum.*

glaùca (*N. arborea*). Tree Tobacco. Tree-like, to 20 ft., glaucous-blue and glabrous: lvs. ovate, acute, long-petioled: fls. yellow, salverform, 1½ in. long, lobes acute. S. Amer.; nat. in Tex., Calif. and elsewhere.

glutinòsa. Ann.: lvs. cordate-ovate, abruptly acuminate, petioled: fls. reddish-yellow, drooping, salverform, twice as long as calyx, lobes acute. Peru, Bolivia.

grandiflòra purpùrea: a form of *N. Tabacum* var. *macrophylla;* see also *N. alata* var.

lancifòlia: an unidentified name in lists; perhaps a form of *N. Tabacum.*

Lángsdorffi. Ann. to 3 ft.: lvs. ovate to lanceolate, obtuse, short-petioled or sessile: fls. greenish-yellow, drooping, salverform, 3 times longer than calyx, lobes obtuse. Brazil, Chile.

longiflòra. Ann. or per. to 3 ft.: lvs. ovate-lanceolate, to 9 in. long, obtuse or acute, sessile or short-petioled: fls. salverform, fragrant, night-opening, yellowish-violet without, white within, to 6 in. long, 6–7 times longer than calyx, the lobes obtuse or notched. Tex. to Chile and Argentina.

macrophýlla: *N. Tabacum* var.

noctiflòra. Per. to 3 ft.: lvs. oblong to linear-lanceolate, obtuse or acute, short-petioled or sessile: fls. salverform, opening at night, fragrant, white within, purplish without, 3 times as long as calyx, lobes notched. Argentina, Chile.

paniculàta. Ann. to 3 ft.: lvs. ovate, acute or obtuse, petioled: fls. yellowish-green, salverform, 6 times longer than calyx, lobes acute. Peru.

petiolàris. Ann.: lvs. cordate-ovate, to 1 ft. long, acuminate, with short reddish petioles: fls. red, funnelform, the lobes acuminate or acute. Habitat unknown.

plumbaginifòlia. Lvs. oblong, sessile or clasping, undulate: fls. salverform, greenish-white, to 2 in. long, opening in evening. Mex., W. Indies.

quadriválvis. Ann. to 2 ft.: lvs. ovate-lanceolate or oblong, petioled, upper sessile: fls. funnelform, white inside, purplish outside, to 1 in. long. Wash., Ore., Mont.

rústica. Ann., bien. or trien. to 3 ft.: lvs. ovate or oblong, to 1 ft. long, obtuse, petioled, thick: fls. day-opening, yellowish or greenish, 1 in. long, salverform, 2–3 times longer than calyx, lobes obtuse. Mex., Tex. Var. **hùmilis** is listed.

Sánderæ. Hybrid between *N. alata* and *N. Forgetiana:* ann. to 3 ft.: lvs. spatulate, to 1 ft. long, acuminate, petioled, undulate: fls. salverform, tube greenish-yellow tinted with rose, to 3 in. long, the limb carmine-rose, 3 times longer than calyx, lobes acute, obtuse or notched.

sanguínea: listed name of uncertain botanical standing.

suavèolens. Ann. or bien. to 2 ft.: lvs. spatulate to ovate-lanceolate, obtuse or acute, short-petioled: fls. nodding, greenish-purple, night-opening, fragrant, to 2 in. long and 1 in. wide, the limb somewhat 2-lipped, lobes obtuse. Australia. Var. **macrántha** (*N. fragrans*) has white fls.

sylvéstris. Per. to 5 ft. or more: lvs. wrinkled, oblong, obtuse, sessile or clasping: fls. drooping, not closing in the morning when cloudy, white, fragrant, salverform, 3½ in. long, 7 times longer than calyx, lobes acute. Argentina.

Tabácum (*N. gigantea*). Tobacco. Ann. to 6 ft.: lvs. oblong or oblong-lanceolate, 1 ft. or more long, acuminate, sessile: fls. diurnal, to 2 in. long, woolly, funnelform, rose-colored or red, lobes acute. Probably trop. Amer. Var. **angustifòlia** (*N. chinensis*) has narrow lvs. Var. **macrophýlla** (*N. macrophylla*) has larger lvs. and fls.

texàna: listed name without botanical standing.

tomentòsa (*N. colossea*). Giant N. Per., often woody, to 20 ft.: lvs. obovate-oblong, to 1½ ft. long, acuminate, with winged petiole: fls. 1½ in. long, salverform, pale green without, yellowish tinged with red within, lobes obtuse. Brazil. Var. **variegàta** has mottled and margined foliage.

trigonophýlla. Ann. to 3 ft.: lvs. obovate-oblong, to 6 in. long, sessile, lower with winged petioles: fls. salverform, creamy-white, to 1 in. long. Colo. to Calif. and Mex.

virgínica: a name of uncertain application.

viscòsa. Ann.: lvs. oblong, to 3 in. long, obtuse, sessile or clasping: fls. funnelform, twice as long as calyx, lobes obtuse. Argentina.

wigandioìdes. Per. to 9 ft.: lvs. ovate, undulate, petioled: fls. salverform, yellowish-white, drooping. Colombia.

NIDULÀRIUM. *Bromeliaceæ.* Epiphytic Brazilian herbs with prickly-margined lvs. in dense basal rosettes and red, purplish or white fls. sessile among the lvs. and subtended by modified or bract-lvs.; grown as a glasshouse subject. Cult. as for *Bromeliaceæ.*

amazónicum: *Canistrum amazonicum.*

fúlgens (*N. pictum*). Lvs. to 1 ft. long and 2 in. broad, spotted with dark green: fls. white with violet limb, in dense clusters, the bract-lvs. bright scarlet.

Ínnocentii. Lvs. to 1 ft. long, strap-shaped, tinted with brown or red: fls. white, in dense heads, the bract-lvs. bright red.

Líndenii: *Canistrum Lindenii.*

píctum: *N. fulgens.*

striàtum. To 1 ft.: lvs. lorate, serrulate, deep green, longitudinally striped with narrow white bands which become cream-colored as they approach the margin: fls. white. Brazil.

NIEREMBÉRGIA. Cup-Flower. *Solanaceæ.* Herbaceous annuals, perennials and subshrubs grown in the open border, rock-garden or as pot-plants for the showy pale violet or white tubular fls. which often have a purple center, and are borne singly at or near the tip of the branches: lvs. small, alternate, simple and entire.

The perennial species described (except *N. Veitchii*) are hardy as far north as New York. Propagated by seeds or in the fall from cuttings of firm shoots; *N. rivularis* most easily by division of the creeping stems where they have rooted.

atroviolàcea: color form of *N. frutescens.*

cærùlea. Per. to 1 ft.: lvs. linear, to ¾ in. long: fls. pale lavender-blue with bright yellow eye, to 1¼ in. across. Argentina.—Best treated as an annual propagated by seeds, or desirable color forms may be maintained by cuttings. This plant is often erroneously listed in the trade as *N. hippomanica.*

calýcina. Per., sts. decumbent, much branched: lvs. broadly obovate, to ¾ in. long, glandular-pubescent: fls. white, yellowish at base, to 3 in. long; corolla-tube very slender, 4–6 times as long as lobes; calyx large, lobes triangular. N. Argentina.—This plant may not be in general cult., and much of the material so listed is *N. gracilis.*

filicàulis: *N. gracilis.*

frutéscens (*N. fruticosa*). Tall C. To 3 ft., shrubby, much branched: lvs. linear, to 1 in. or more long: fls. 1 in. across, the saucer-shaped limb white tinted with lilac or blue, the throat yellow. Chile. Var. **albiflòra** has white fls., **atroviolàcea** dark violet with bright yellow throat, and **grandiflòra** larger fls.—This is the prevailing species in cult.

fruticòsa: *N. frutescens.*

grácilis (*N. filicaulis*). Prostrate or creeping, sts. ascending to 8 in.: lvs. linear, to ½ in. long: fls. with convex limb, white tinged and veined with purple toward the center, throat yellow, to 1¾ in. long; calyx-lobes linear. Argentina. Var. **Crozyàna** has more abundant violet-tinted fls.—*N. frutescens* is likely to be cult. under this name, and plants listed as *N. calycina* usually belong here.

hippománica. Per. to 6 in. or less, pubescent: lvs. linear, to ½ in. long: fls. white tinged rose, to ¾ in. across or less. Argentina.—Not known to be in cult., the plants so listed are probably *N. cærulea.*

rivulàris. White-Cup. Sts. creeping and rooting, matted, to 6 in. high: lvs. oblong or oblong-spatulate, to 1 in. long, long-petioled: fls. 2 in. across, creamy-white sometimes tinged rose or blue, limb broadly bell-shaped, throat golden. Argentina.

Veìtchii. Tender per. to 1 ft., sts. prostrate, glabrous or nearly so: lvs. spatulate to linear, to 1 in. long: fls. pale lilac with white tube to ¾ in. long; calyx-lobes linear and recurved. Trop. Amer.

NIGÉLLA. Fennel-Flower. *Ranunculaceæ.* Ann. ornamental herbs with lvs. pinnately cut into linear or thread-like segms., often showy white, blue or yellow fls., and fr. a caps.; native in Medit. region and W. Asia.

Nigellas are planted in the flower-garden and of easy culture. Propagated by seeds, that may be sown directly where the plants are to stand; open sunny situation.

aristàta: *N. arvensis.*

arvénsis (*N. aristata*). To 1½ ft.: lfts. filiform: fls. bluish-white, 1 in. or more across, solitary, without involucre: fr. of 3–5 strongly ribbed carpels joined about ⅔ their length, with long beak-like styles. N. Afr., Eu., Asia.

damascèna. Love-in-a-Mist. To 1½ ft. or more, much branched: lfts. filiform: fls. white or light blue, to 1½ in. across, solitary and surrounded by a large finely divided attractive involucre: fr. globular, inflated, carpels united to top, with long erect styles. S. Eu.

diversifòlia. Lower lvs. oblong-linear, entire, st.-lvs. sessile, palmately parted into linear lfts.: fls. pale bluish, in cymes: fr. of 3 carpels united about to middle, shortly beaked. Turkestan.

hispánica. To 1½ ft., branching: lfts. linear but not filiform: fls. blue with red stamens, to 2½ in. across, solitary or in 2's, without involucre: fr. ribbed, the carpels united nearly to top, the styles spreading. Spain, N. Afr. Var. **álba** has white fls. and **atropurpùrea** purple.

satìva. To 1 ft. or more, branching: lfts. linear but not filiform: fls. blue, to 1½ in. across, solitary, without involucre: fr. of 3–7 carpels united to top, inflated, styles spreading. Medit. region.—Seeds are used for seasoning.

NIGHTSHADE: *Solanum.* **Enchanters-:** *Circæa lutetiana.* **Malabar-:** *Basella.*

NINEBARK: *Physocarpus.*

NINTOOA: a section of the genus *Lonicera.*

NIOBE: *Hosta.*

NÌPA. *Palmaceæ.* One gregarious monœcious unarmed feather-palm with branched rootstocks and no upstanding trunk: spadices erect from the rootstock; staminate fls. in catkin-like short lateral branches among the many bracts; stamens 3; pistillate fls. in dense terminal heads: fr. a large globose aggregation of obovoid fibrous carpels. A plant of estuaries and brackish swamps, India, Malaya, Philippines, Australia; stands in S. Fla. in suitable locations; a handsome plant when properly placed. The herbage is employed in domestic manufacture.

frùticans. Lvs. from crowns of rootstocks, 10–30 ft. long, gracefully arching; pinnæ very many, well separated, rigid, long-acuminate, 2–3 ft. long, ridged, glaucous underneath: head of fr. 10–12 in. diam., the angular hard carpels 4–5 in. long.

NIPHOBOLUS: *Cyclophorus Lingua.*

NIPPON-BELLS: *Shortia uniflora.*

NODE: a joint where a leaf is borne or may be borne; also incorrectly the space between two joints, which is properly an internode.

NOLÀNA. *Nolanaceæ.* Reclining and prostrate herbaceous per. but grown as ann., with showy tubular blue fls., and entire usually fleshy lvs.; native in Chile and Peru.

Nolanas are grown as basket-plants and also useful in the border or on rocky hillsides. They require the usual treatment for annuals, with a sunny exposure.

atriplicifòlia (*N. grandiflora. N. paradoxa*). Sts. spotted and streaked with purple above, to 1 ft. or more long, usually erect: lvs. spatulate, basal with petioles 3 in. long: fls. blue with white throat, yellow inside, to 2 in. across. Var. **álba**, fls. white. Var. **violàcea**, fls. violet.

grandiflòra: *N. atriplicifolia.*

lanceolàta. Whole plant hoary-pubescent: lvs. lanceolate, to 6 in. long: fls. deep blue with yellowish-white spotted throat, to 2 in. across.—Stock grown under this name is likely to be *N. atriplicifolia.*

paradóxa: *N. atriplicifolia.*

prostràta. Sts. reclining, to 10 in. long: lvs. spatulate, to 3 in. long: fls. blue with white throat, latter with purple-violet veins, to ¾ in. across.

NOLANÀCEÆ. Nolana Family. Three genera of herbs or subshrubs native in Chile, Peru and Bolivia, with lvs. alternate or paired, bisexual solitary fls. having 5-parted calyx, gamopetalous 5-lobed corolla, 5 stamens, superior ovary and fr. of 5–30 nutlets or follicles. Only the genus Nolana is known to hort. The family is sometimes included in Convolvulaceæ and in Solanaceæ.

NOLÌNA. *Liliaceæ.* Sometimes producing tree-like trunks or often without apparent sts., having linear stiff lvs. and very small whitish fls. in panicles; occasionally planted in warm climates; rigid dry-country and desert plants. For cult. see *Yucca.*

Béldingii. To 25 ft., branched near top: lvs. to ¾ in. broad and 3 ft. long, glaucescent: panicle compound, primary divisions about 1½ ft. long: fr. emarginate. Lower Calif.

longifòlia (*Dasylirion longifolium*). To 10 ft., swollen at base and with few branches toward top: lvs. 3 ft. or more long and 1¼ in. wide, rough on edge. Mex.

microcárpa. Stemless per. with coarse linear lvs. to ½ in. wide, scabrous on margins: fls. pale yellow to whitish, in erect racemes. S. W. New Mex. to Ariz. and south.—Lvs. may be used in basketry and cordage.

Pálmeri. Stemless: lvs. about ½ in. wide, rough on edge. Lower Calif.—Roots said to be used as a substitute for soap.

Párryi. To 6 ft., unbranched: lvs. in dense crown, to 3 ft. long and ¾ in. broad: flowering stalk to 2 ft. long, branches stout. S. Calif.

tuberculàta: *Beaucarnea recurvata.*

NÓLTEA. *Rhamnaceæ.* One S. African evergreen shrub, sometimes grown in Calif. **N. africàna** (*Willemetia africana*). To 12 ft.: lvs. alternate, oblong-lanceloate, to 2½ in. long, toothed, pale beneath: fls. white, small, in panicles about 1 in. long: caps. ⅓ in. across. Var. **aùrea** is listed.—Propagated by seeds and cuttings of green or mature wood.

NOMÓCHARIS. *Liliaceæ.* Bulbous herbs with scattered or whorled lanceolate lvs. and showy somewhat drooping fls. 1–4 in the axils, perianth-segms. spreading and deciduous; allied to Fritillaria.

Màirei. To 2 ft.: distinguished from *N. pardanthina* by the subverticillate and broader lvs. and the perianth-segms. abruptly acuminate, anthers purple, basifixed. Yunnan. —Forms with satin-white and unspotted fls. also occur.

nàna (*Fritillaria Stracheyi*). To 16 in.: st.-lvs. linear, acute, the upper one exceeding the fl.: fls. purple to pale lilac, about 1 in. long, solitary, nodding, segms. ovate-lanceolate, acute, anthers purple and versatile. Himalayas.

pardanthìna. To 1 ft.: fls. to 3 in. across; sepals pale rose, oval, entire; petals reddish spotted with violet, oval, cut-toothed on edge, anthers yellow. Yunnan.

NOPÀLEA. *Cactaceæ.* Cacti of Mex. and Guatemala, differing from Opuntia in erect petals and elongated filaments and style: much branched plants with cylindrical trunks and flattened often narrow branches, producing small nearly terete lvs. which are soon deciduous; spines present in most of the species: fr. a juicy red edible berry. Cult. as for Opuntia. See *Cacti.*

Aùberi (*Opuntia Auberi*). To 30 ft., with jointed trunk not very spiny; joints narrow to 1 ft. long, bluish or glaucous, areoles bearing wool and glochids and spines 1 or 2 or wanting: fls. rose-pink, about 3½ in. long. Cent. and S. Mex.

Bríttonii. Differs from *N. cochenillifera* in the sprawling habit, flattened trunk, joints 2–3 ft. long, areoles much further apart, and longer ovary. Mex. Var. **variegàta** is listed.

cochenillífera (*Opuntia cochenillifera*). Cochineal Plant. To 16 ft., trunk sometimes 8 in. diam.; joints oblong and often 20 in. long and mostly spineless, the many glochids caducous: fls. on tops of joints, upwards of 2 in. long, pink or rose. Long cult. but original habitat unknown. —The cochineal of commerce is the insect that feeds on the plant, collected in bulk, once extensively used as a dye. This is one of the cacti on which the insect subsists.

dejécta (*Opuntia dejecta*). To 6 ft. with definite trunk, very spiny; joints narrow and 4–6 in. long: fls. 2 in. long, dark red. Probably Panama; cult. in trop. Amer. Var. **variegàta** is listed.

ináptera. To 20 ft. with very spiny trunk and many branches; joints to 7 in. long and strongly tubercled; spines 4–12 and to ¾ in. long and yellowish: fls. pink, 1½ in. long. Mex.

NOPALXÒCHIA. *Cactaceæ.* Two Mexican cacti with irregularly branching habit, fls. funnelform with tube shorter than limb, segms. or sepals and petals many, outer segms. acute or acuminate. See *Cacti.*

Áckermannii (*Epiphyllum* and *Zygocactus Ackermannii*). Sts. several, to 3 ft., flat, thin and crenate: fls. very large, to 8 in. long, scarlet outside and carmine within. Believed to be of hybrid origin.

phyllanthoìdes (*Epiphyllum phyllanthoides*). Somewhat woody, branches at length hanging and thin and flattened above and often 2 in. broad: fls. diurnal, rose or red, tube about 1 in. long.

NORMÁNBYA. *Palmaceæ.* Trop. Australian palm that has been planted in Fla.: monœcious, unarmed, feather-lvd.: the genus is particularly distinguished from Drymophlœus and Ptychosperma by the non-sulcate seed, and the peculiarly arranged pinnæ which are in groups resulting apparently from the splitting of one pinna or lft. into several that remain united at their bases, and each pinna narrow with no marginal nerves and truncate irregular apex.

Mérrillii: *Adonidia Merrillii.*

Mùelleri: *N. Normanbyi.*

Normánbyi (*N. Muelleri. Areca, Cocos, Drymophlœus* and *Ptychosperma Normanbyi*). Black Palm. Stout tree to 60 ft., outer wood hard and black: lvs. 6–8 ft. long, the petiole short or none; pinnæ, or groups of about 9 narrow lobes, 1½ ft. long and 1 in. broad, whitish underneath: fls. spiral, the pistillate on lower part of branches: fr. about 1½ in. long, more or less pear-shaped.

NOTAPHŒBE: *Persea Borbonia.*

NOTHOCALAIS: *Agoseris cuspidata.*

NOTHOFÀGUS. *Fagaceæ.* Beech-like trees or shrubs but with small alternate lvs., unisexual fls. solitary or in 3's, and usually 3 3-angled nuts in a 2–4-lobed scaly involucre; native in S. S. Amer., Australia and New Zeal., the southern hemisphere representative of Fagus. Hardy only in warm regions, as Calif. Propagated by seeds and layers.

antárctica. To 100 ft.: lvs. deciduous, to 1 in. long, toothed or slightly lobed, glabrous except on midrib. Chile.

cliffortioìdes. To 40 ft.: lvs. persistent, to ⅔ in. long, acute, entire, grayish-pubescent beneath. New Zeal.

Cúnninghamii. To 200 ft.: lvs. persistent, to ½ in. long, glabrous. Australia.

fúsca. To 100 ft.: lvs. persistent, to 1½ in. long, coarsely toothed, glabrous except on margin. New Zeal.

Ménziesii. To 80 or 100 ft.: lvs. persistent, ovate-rhomboid, to ½ in. long, doubly toothed, glabrous except petiole. New Zeal.

oblìqua. To 100 ft.: lvs. deciduous, to 3 in. long, toothed. Chile.

procèra. Tree: lvs. deciduous, to 4 in. long, finely toothed, pubescent beneath. Chile.

Solándri. To 80 ft.: lvs. persistent, to ¾ in. long, obtuse, entire, grayish-pubescent beneath. New Zeal.

NOTHOLÆ̀NA. *Polypodiaceæ.* Small rock-loving ferns with farinose densely chaffy or hairy fronds, 1–4-pinnate: sori usually submarginal, borne at or near the tips of the unmodified veins: margins of segms. unmodified, flattish or revolute and partially covering the sporangia. About 60 species in S. E. U. S. and trop. Amer., also 1 in Eu.

Féndleri. Fronds to 9 in. long, broadly deltoid-ovate, 4–5-pinnate, whitish-farinose below, with rachises and their branches flexuous and zigzag. Colo. to Ariz. and Tex.

NOTHOLCUS: *Holcus.*

NOTHOLÍRION. *Liliaceæ.* Four Asiatic species now considered distinct from Lilium, differing in the bulb being tunicated (not composed of scales), in the production of small bulbils at the base of the bulb, long basal lvs., stigma deeply 3-cleft (not merely 3-lobed) and seeds much smaller and wingless.

macrophýllum (*Lilium macrophyllum*). To 1 ft., with flexuose sts.: fls. rose, 1½ in. long, funnel-shape, usually in clusters of 4–6. Himalayas.

Thomsoniànum (*Lilium Thomsonianum*). To 3 ft., with long racemes and lvs. scattered: fls. pink, fragrant, spreading, broad-funnelform, the narrow segms. to about 2 in. long. Afghanistan to N. W. Himalayas.

NOTHÓPANAX. *Araliaceæ.* Evergreen trees and shrubs from Malaya to New Zeal. with simple or compound lvs., small fls. in umbels, and drupaceous frs.; a few species are grown in Calif. for ornament.

anómalum (*Panax anomalum*). Shrub to 12 ft., much branched: lvs. orbicular, to ⅔ in. long, in young plants of 3 lfts.: fls. minute, in simple umbels: fr. mottled. New Zeal.

arbòreum. Tree to 25 ft., much branched: lvs. digitately 5–7-parted into oblong toothed lfts. to 7 in. long: fls. ¼ in. across, in compound umbels: fr. purplish-black. New Zeal.

Colensòi. Shrub or tree to 15 ft.: lvs. of 3–5 obovate toothed lfts. to 6 in. long: fls. in compound umbels. New Zeal.

símplex. Tree to 25 ft.: lvs. lanceolate, to 5 in. long, in young plants lobed or pinnately parted: fls. small, in compound umbels. New Zeal.

NOTHOSCÓRDUM. False Garlic. *Liliaceæ.* Bulbous allium-like herbs with linear basal lvs. and small yellow or white fls. in umbels, the perianth-segms. distinct; rarely cult., the following species tender N.

biválve (*Allium striatum*). Lvs. to 16 in. long and ⅙ in. wide: fls. yellowish, ½ in. long, on scapes to 16 in. high. Va. to Fla. and Mex.

fràgrans. Lvs. to 1 ft. long and ¾ in. wide: fls. white lined with pinkish, fragrant, to ½ in. long, on scapes to 2 ft. high. Habitat doubtful; nat. in Bermuda and S. U. S.

NOTOBASIS: *Cirsium syriacum.*

NOTOCÁCTUS. *Cactaceæ.* A S. American genus of cacti combined by some authors with Malacocarpus from which it differs in its bristly, scaly and hairy perianth-tube and fr., the latter being dry and dehiscing at maturity; further distinguished by highly colored bristle-like spines and larger fls. Treatment as for Echinocactus. See *Cacti.*

ápricus (*Echinocactus apricus*). Cespitose, globose, to 2 in. diam.; ribs 15–20, low, somewhat tubercled; spines reddish-yellow, radials 18–20, to ⅝ in. long, bristly, centrals 4, to 1¼ in. long: fls. yellow, to 1¼ in. long, inner segms. dentate, stigma 13-lobed. Uruguay.

concínnus (*Echinocactus* and *Malacocarpus concinnus*). Usually solitary, depressed-globose, to 2½ in. tall and 4 in. diam.; ribs about 18, low, tubercled along upper third; radials 10–12, to ¼ in. long, yellow; centrals 4, to ⅝ in. long, yellow to reddish-brown: fls. pale yellow within, red outside, to 3 in. long, stigma red, 10-lobed. Uruguay, S. Brazil.

florícomus (*Echinocactus* and *Malacocarpus floricomus*). Solitary, depressed-globose to subcylindrical, to 7 in. tall and 5 in. diam.; ribs 20, tubercled; spines white to gray with red base, radials 15–20, radiating, centrals 4–5, to 1 in. long, erect: fls. yellow, to 2½ in. long, inner segms. dentate, stigma dark red, 8-lobed. Uruguay, Argentina. Var. **flavispìnus** is said to have bright yellow spines.

Gràessneri (*Echinocactus* and *Malacocarpus Graessneri*). To 2 in. high and 4 in. across; ribs more than 60 and usually in spirals; spines numerous, ¾ in. long, bright yellow: fls. small. Brazil.

Gróssei (*Echinocactus* and *Malacocarpus Grossei*). Globose or depressed, to 4 ft.; ribs usually 16; spines 3–7, white, to 1½ in. long: fls. citron-yellow, 1½ in. long. Paraguay.

Háselbergii (*Echinocactus* and *Malacocarpus Haselbergii*). Globose or slightly depressed, to 3 in. across; ribs 30 or more; radial spines about 20 and white; central spines 3–5, pale yellow: fls. red outside, variegated inside, 1 in. across. Brazil.

Léninghausii (*Echinocactus* and *Malacocarpus Leninghausii*). St. slender and cylindric, to 3 ft. long and 4 in. diam.; ribs about 30 and obtuse; radials about 15; centrals 3 or 4 and longer: fls. 2 in. across, yellow. S. Brazil.

mammulòsus (*Echinocactus* and *Malacocarpus mammulosus*). Plant simple and nearly globose, to 3 in. high, shining green; ribs 18–25; radials 20–30; centrals 2–4, to ⅝ in. long: fls. about 1½ in. long, yellow. Brazil to Argentina. Var. **rùber** is listed.

Mueller-Mélchersii. A little-known species; st. depressed-globose, areoles usually with 1 erect spine to ⅕ in. long. Uruguay.

muricàtus (*Echinocactus muricatus*). Globose to subglobose, to 6 in. tall and 4 in. diam.; ribs usually 16–20, low, rounded, light green, notched; spines brown, radials usually 12–15, to ¼ in. long, somewhat curved, centrals 3–4, to ⅜ in. long, darker: fls. pale yellow, to 1½ in. long, stigma 9–11-lobed. Uruguay, S. Brazil.

nigrispìnus: listed name.

Ottònis (*Echinocactus* and *Malacocarpus Ottonis*). Simple or cespitose, globular or perhaps depressed, 2 in. or so diam.; ribs 10 and broad; spines needle-like and short: fls. 2 in. or so long, yellow. S. Brazil to Argentina. Var. **uruguayénsis** has 11 ribs with areoles more distant.

pampeànus (*Malacocarpus* and *Echinocactus pampeanus*). Globose to subcylindrical, to 4 in. tall and 2½ in. diam.; ribs 21, straight; radials 7–10, to ½ in. long, sharp, spreading; centrals 1–2, stout: fls. yellow, inner segms. dentate. Uruguay, Argentina.

Reìchii: *Neoporteria Reichii.*

Schumanniànus (*Echinocactus* and *Malacocarpus Schumannianus*). To 1 ft. long and across; ribs about 30 and low; spines 4–7, brownish or yellow: fls. citron-yellow, 1 in. long. Paraguay, Argentina.

Scòpa (*Echinocactus Scopa* and var. *Malacocarpus Scopa*). Globular or cylindrical, to 1½ ft. high; ribs 30–40 and nearly hidden by spines; radial spines 40 and white; central spines 4, brown or purple: fls. lemon-yellow, 2½ in. across. Brazil, Paraguay. Var. **rubérrimus** has crimson-red central spines.

submammulòsus (*Echinocactus* and *Malacocarpus submammulosus*). Differs from *N. mammulosus* in having only 6 radial spines and a single central, the latter to ¾ in. long. Uruguay and Argentina.

tabulàris (*Echinocactus* and *Malacocarpus tabularis*). Simple and globose or short-columnar; ribs 16–18 and glaucous; radials 16–18; central spines 4: fls. 2 in. or more long, yellow. Brazil or Uruguay.

Velenóvskii. Similar to *N. floricomus*, to 4 in. thick and as high; ribs 18–20, to ½ in. wide, acute; radial spines about 25, to ½ in. long, radiating, bristly; centrals 7. Uruguay.

NOTÒNIA. *Compositæ.* Fleshy herbs or subshrubs with rudimentary or succulent lvs., allied to Senecio but with heads of disk-fls. only: heads red or yellow, solitary or in cymes: native trop. Afr. and Asia.

Grántii. To 8 in., root tuberous: radical lvs. elliptic, sessile, to ¾ in. long: heads orange-scarlet, ¾ in. long, on scape-like sts. bearing a few scale-like lvs. Trop. Afr.

péndula (*Kleinia pendula*). Sts. prostrate and rooting, to 1 ft. long and ¾ in. thick, covered with remains of dried lvs.: lvs. nearly cylindrical, ¾ in. long: fls. orange- or blood-red. Arabia.

NOTOSPÁRTIUM. Pink or Southern Broom. *Leguminosæ.* Leafless shrubs, endemic to New Zeal., having flattened pendulous branchlets, small papilionaceous fls. in lateral racemes, and legume linear, straight or curved, compressed, 3–10-jointed and indehiscent. **N. Carmichaèliæ.** To 12 ft., sts. slender, much branched, greenish: lvs. present only on young plants, obcordate or orbicular, small: fls. magenta-pink, to ⅓ in. long, 8–20 crowded into simple racemes to 2 in. long crowded on the branchlets for a considerable distance: pods to 1 in. long, 1 seed in each joint.—Does best on sandy loam in sunny locations. Propagated by seeds and cuttings. Not hardy N.

NOTOTHLÁSPI. *Cruciferæ.* A small genus of fleshy alpine herbs from New Zeal., having spatulate lvs., large white fls. in terminal racemes or corymbs, and rather large much compressed and winged pods containing numerous kidney-shaped seeds attached by long radicle.

rosulàtum. Per. to 9 in., sts. unbranched and very short or wanting: lvs. fleshy, spatulate, densely crowded and imbricated in rosette, becoming glabrous with age: fls. fragrant, in dense conical racemes: pods to 1 in. long, obovate, stigma very short.

NOTOTRÍCHIUM. *Amaranthaceæ.* Shrubs or trees, one sometimes planted in Calif.: lvs. opposite: fls. small, pubescent, in spikes: fr. a utricle.

sandwicénse. Kului. To 20 ft. or often a shrub: lvs. ovate, to 3 in. long, silvery-tomentose beneath: fls. crowded in 3–5 spikes to 1 in. long at ends of branches. Hawaiian Isls.

NÙPHAR (*Nymphozanthus*). Cow-Lily. Spatterdock. Yellow Pond-Lily. *Nymphæaceæ.* Aquatic plants with stout rootstocks creeping in the mud: lvs. large, some submerged, others floating or standing erect above the water: fls. not very attractive, yellow or purplish, usually standing above the water, the 5 or more sepals the showy part of the fl.

The spatterdocks grow on the margins of slow-running mud-bottom streams or lakes or in stagnant pools. Their cultivation and propagation is the same as for the hardy nympheas and nelumbos.

ádvenum (*Nymphæa advena*). Common S. Lvs. 1 ft. long, thick: fls. 2–3 in. across, more or less globular, not wide open, yellow tinged green or brown, sepals 6. N. Amer.

lùteum (*Nymphæa lutea*). European Yellow P. Lvs. rising a little above the water or floating: fls. smaller than those of *N. advenum*, yellow, somewhat fragrant, sepals 5. Eu.

polysépalum (*Nymphæa polysepala*). Lvs. to 1 ft. long and 14 in. wide: fls. 3–5 in. across, yellow, sepals 9–12. Calif. to Ore.

NURSERY, in horticulture, is a place or establishment in which plants are propagated and then grown until such time as they are placed in permanent quarters or sold to the customer. It is naturally concerned mostly with perennial plants.

The nursery establishment may be wholly or partly under glass, or wholly in the open. It may be devoted to the rearing of orchids, begonias, roses, dahlias, lilies, lilacs, hedge plants, forest trees, fruit-trees, or any other class of vegetation. Nursery-growing practically constitutes a business or enterprise quite by itself, requiring special equipment, experience and market, and it has its own literature and traditions.

NUT: an indehiscent 1-celled and 1-seeded hard and bony fruit, even if resulting from a compound ovary. In horticulture an edible hardshelled fruit that can be kept in a dry state; see *Filbert, Hickory-Nut, Pecan, Walnut.*

NUTLET: a small or diminutive nut; nucule.

NUTMEG. One member, *Myristica fragrans*, of a large genus, is widely known for the seed which furnishes the nutmeg of commerce and the aril surrounding the seed which is commercial mace. Attractive tree to 70 feet: leaves alternate, oblong-lanceolate, to 5 inches long, brownish: flowers diœcious, without corolla: fruit reddish or yellowish, to 2 inches long, splitting into 2 valves, the scarlet mace forming a network around the brown seed or nutmeg. Molucca, but somewhat grown in parts of the American tropics.

The nutmeg thrives in a hot moist climate in well-drained rich soil. The plants are diœcious and one male is sufficient for ten to twelve females, although it is impossible to determine the sex before flowering. For this reason grafting is the best method of propagation although seeds are commonly employed. Seeds may be sown in bamboo pots and transplanted when seedlings are 8–10 inches high. A tree should come into bearing at seven to eight years of age and will remain productive for many years.

NUTMEG, CALIFORNIA-: *Torreya californica.*

NUTTALLIA: *Osmaronia, Mentzelia.*

NYCTAGINÀCEÆ. Four-o'Clock Family. About 25 genera distributed widely about the world in warm and trop. countries; known to hort. chiefly in Bougainvillea, a genus of woody plants, Pisonia, and the herbaceous genera Abronia, Allionia, Boerhaavia and Mirabilis, grown for ornament. The family is characterized by its fls. subtended by an involucre which is sometimes petal-like and showy (as in Bougainvillea), petals lacking but calyx often or usually corolla-like (as in the four-o'clock), 1-celled 1-seeded ovary, the fr. an achene on which the calyx is persistent. The family is allied to Amaranthaceæ.

NYCTÁNTHES. *Oleaceæ.* Shrub or tree to 30 ft., native of India and sometimes grown under glass or in the open in warm countries, for its small night-blooming fls. Propagated by cuttings over heat. **N. Arbor-trístis.** Night-Jasmine. Tree-of-Sadness. Lvs. opposite, ovate-cordate, to 4½ in. long: fls. salverform, white with orange tube, fragrant, in few-fld. heads subtended by involucre-like bracts: fr. an orbicular caps. ¾ in. long.

NYCTERINIA: *Zaluzianskya.*

NYCTOCÈREUS. *Cactaceæ.* Slender erect or clambering somewhat branched cereus-like cacti, sts. and branches cylindric and many-ribbed, spiny: fls. nocturnal, large and white, funnelform: species 5, in Mex. and Cent. Amer. See *Cacti.*

guatemalénsis (*Cereus guatemalensis*). Usually erect, to 2½ in. diam.; ribs 8–12, obtuse, low; spines about 10, to 1½ in. long, yellowish, not stiff: fls. yellow- to carmine-red outside, white within, to 8 in. long. Guatemala.

Hirschtiànus (*Cereus Hirschtianus*). Sts. to 1 in. diam., prostrate; ribs about 10, acute, low; spines pale yellow, to ⅝ in. long: fls. pale rose to white, the segms. very narrow. Nicaragua.

serpentìnus (*Cereus serpentinus*). Clustered, at first erect and then clambering or hanging, to 10 ft. long and 2 in. thick; spines about 12: fls. 6–7½ in. long. Mex.—Widely cult.

NYMPHÆA (*Castalia*). Nymphea. Water-Lily. *Nymphæaceæ.* Showy aquatic herbs with horizontal or erect rootstocks, sometimes tuberous, the lvs. usually floating and often colored on the under surface: fls. mostly showy, floating or standing near the surface, in white, yellow, pink, red or blue, some blooming by day and some by night: fr. under water, a single compound body of many divisions with a depressed saucer-like center; about 40 species and numerous hort. hybrids distributed widely in temp. and trop. regions.

Nympheas are propagated by seed which are rolled up in a ball of clay and dropped into a pond, or sown in pots which are then submerged in shallow water, indoors or out. The more usual method is to use parts of rootstocks which are sunk in the pond and held by stones, or in the case of the tender species they are placed in pans of water indoors; the species that produce tubers on the rootstocks may be increased by this means.

ádvena: *Nuphar advenum.*

álba (*N. venusta*). European White W. Robust: lvs. roundish, to 1 ft. across, red when young, crowded on the rhizome: fls. white, 4–5 in. across, open nearly all day. Eu., N. Afr. In var. **candidíssima** the lvs. are yellowish when young, first to bloom in spring till frost. Var. **rùbra,** rosy-red. Sweden.

amábilis: hort. form with silver-pink fls. of spreading petals.

ámpla. Tender: lvs. narrowly peltate, to 14 in. diam., margins toothed or nearly entire, green above and red-purple beneath: fls. white, to 5 in. across. Tex. to Brazil.

Andreàna. Hybrid between *N. alba* var. *rubra* and *N. mexicana.*

Arethùsa. Hybrid between *N. alba* var. *rubra* and *N. mexicana:* fls. crimson-pink.

Arnoldiàna. Hybrid between *N. rubra* and *N. Lotus:* fls. rosy-carmine.

atropurpùrea: form of *N. rubra.*

auròra. Hybrid between *N. alba* var. *rubra* and *N. mexicana.*

Bíssetii. Hybrid between *N. rubra* and *N. Lotus:* fls. magenta.

cærùlea. Blue Lotus of Egypt. Tender, free-blooming but not showy: lvs. 12–16 in. across, green with purple blotches beneath: fls. 3–6 in. across, light blue with white center, opening 3 days in forenoon. N. and Cent. Afr.

candidíssima: *N. alba* var.

capénsis. Cape Blue W. Tender: lvs. to 16 in. across: fls. 6–8 in. across, sky-blue, whitish at bottom, opening 4 days in forenoon to late afternoon. S. Afr. Var. **zanzibariénsis** (*N. zanzibariensis*). Lvs. often smaller; fls. larger, to 12 in., deep blue, opening and closing 3–5 days somewhat later, sepals purple-blue within and on margins. Zanzibar. Forms of this are **azùrea** and **ròsea.**

Carishbroòkii: hort. hybrid of undetermined parentage.

caroliniàna (*N. odorata* var. *superba*). Hybrid between *N. odorata* var. *rosea* and *N. tuberosa:* fls. rosy-pink.

castaliflòra: a hort. form with mottled lvs. and pink fragrant fls. to 10 in. across, day-blooming.

chromatélla: *N. Marliacea* var.

chrysántha. Hybrid between *N. alba* var. *rubra* and *N. mexicana.*

colossèa. Hybrid between *N. alba* and *N. odorata* var. *rosea:* fls. light pink.

columbiàna. Hybrid between *N. rubra* and *N. Lotus:* fls. carmine.

Daubeniàna. Possibly a hybrid of *N. micrantha* and *N. cærulea:* tender: fls. pale blue.

Deaniàna. Hybrid between *N. rubra* and *N. Lotus:* fls. pink.

dentàta: *N. Lotus* var.

devoniénsis. Hybrid between *N. rubra* and *N. Lotus:* fls. rosy-carmine.

élegans. Lvs. 7 in. across, under surface dark purple: fls. pale violet, 3–6 in. across, open 3 days in the forenoon. Mex., Tex.

Ellisiàna: hort. hybrid, of which one parent is probably *N. alba* var. *rosea.*

flàva: *N. mexicana.*

flavóvirens (*N. gracilis*). Tender: lvs. 15–17 in. across, green underneath: fls. 6–8 in. across, white, day-blooming. Mex.

formòsa. Hybrid between *N. alba* var. *rubra* and *N. mexicana.*

Froèbelii: a form probably of *N. alba* var. *rubra.*

fúlva. Hybrid between *N. alba* var. *rubra* and *N. mexicana.*

gigantèa. Australian W. Lvs. 18 in. across, under surface brownish-pink to purple: fls. light blue, petals tipped dark blue, open 7 days 9 a.m. to 6 p.m., 6–12 in. across. Australia. Var. **Hudsoniàna** does not differ.

Gladstoniàna. Hybrid between *N. alba* and *N. odorata* var. *rosea:* fls. white.

gloriòsa: a form of *N. alba* var. *rubra.*

grácilis: *N. flavovirens.*

grácilis ròsea and **rùbra** represent a pink-fld. hybrid between *N. flavovirens* and *N. capensis* var. *zanzibariensis.*

hélvola: *N. tetragona* var.

índica. Hybrid between *N. rubra* and *N. Lotus:* fls. of different colors, of many named forms.

kewénsis. Hybrid between *N. rubra* and *N. Lotus:* fls. rosy-pink.

láctea: garden form of *N. odorata.*

Laydékeri. Hybrid between *N. alba* var. *rubra* and *N. tetragona* or *N. mexicana:* there are many named forms in different colors.

Lòtus. White Lotus of Egypt. Tender: lvs. 12–20 in. across, dark green on top, brownish beneath: fls. 5–10 in. across, white with outer petals pinkish, opening evening till nearly next noon. Egypt. Var. **dentàta.** Fls. white, 8–10 in. across, open till past noon. Cent. Afr. Large-fld. forms of this are **grandiflòra, magnífica** and **supérba.**

Luciàna: improved form of the hybrid between *N. odorata* var. *rosea* and *N. tuberosa.*

lùcida: form of the hybrid *N. Laydekeri* with red-crimson fls.

lùtea: *Nuphar luteum.*

Marliàcea. A series of hybrids of different parentage raised by M. Latour-Marliac of France. Vars. **álbida, cárnea** and **ròsea** are hybrids of *N. alba* and *N. odorata* var. *rosea.* Var. **chromatélla** (*N. chromatella*). Hardy: floating lvs. much blotched with brown, 3–8 in. across, when crowded rise above water: fls. bright yellow, 3–6 in. across. Probably a hybrid between *N. mexicana* and *N. alba* or *N. tuberosa.* Hybrids between *N. alba* var. *rubra* and *N. tetragona* are vars. **flámmea, ígnea,** and **rùbra punctàta.**

marmoràta: hort. name for a tender form said to have lavender-blue fls. and lvs. green, mottled and streaked with chestnut-brown.

mexicàna (*N. flava*). Yellow W. Rootstock erect and tuber-like, spreading by runners: floating lvs. 4–8 in. across, blotched brown above, crimson-brown with blackish dots beneath: fls. 4 in. across, standing 4–5 in. above the water, bright yellow, open before midday and early afternoon. Fla., Mex., but hardy N. protected under cult.

Moòrei. Hybrid between *N. alba* and *N. mexicana.*

odoràta. Fragrant W. Hardy: lvs. 3–10 in. across, rather thick, dull green above, usually purplish beneath: fls. white, fragrant, 3–5 in. across, opening 3 days in forenoon. Common in E. U. S. In the wild at Cape Cod is a pink-fld. var. **ròsea,** in the S. and American tropics is a larger white-fld. var. **gigantèa.** Var. **máxima** is *N. tuberosa* var. Var. **mìnor,** lvs. deep red beneath, sepals purple. Var. **sulphùrea** (*N. sulphurea*). Lvs. all floating, 4–6 in. across, like those of *N. odorata* but blotched with brown: fls. light yellow, 4–5 in. across, 2–4 in. above the water, open in morning. Probably *N. mexicana* × *N. odorata.*

Omaràna. Hybrid between *N. rubra* and *N. Lotus:* fls. magenta.

Ortgiesiàna rùbra. Hybrid between *N. rubra* and *N. Lotus:* fls. magenta.

ovalifòlia. Tender: lvs. narrowly elliptic, 10 in. long and 6 in. wide, large brown blotches above, under surface plain green: fls. deep blue, closed in dull weather. Trop. Afr.

pennsylvània. Hybrid between *N. cærulea* and *N. capensis* var. *zanzibariensis:* tender: fls. large, medium blue, open 8 A.M. to 5 P.M.

polysépala: *Nuphar polysepalum.*

pulchérrima. Hybrid between *N. cærulea* and *N. capensis:* tender: under surface of lvs. green, densely blotched with purplish-black, margin purplish-red, 16 in. across: fls. light blue, 10–22 in. across.

pygmæ̀a: *N. tetragona.*

Ríchardsonii: *N. tuberosa* var.

Róbinsonii. Hybrid between *N. alba* var. *rubra* and *N. mexicana.*

rubicúnda. Hybrid between *N. rubra* and *N. Lotus:* fls. reddish-pink.

rùbra. Red India W. Tender: lvs. 12–18 in. across, bronzy reddish-brown but becoming greenish, hairy beneath: fls. 6–10 in. across, deep purplish-red, opening 3 or 4 nights till nearly noon. India.—The parent of many hybrids.

Seignorétii. Hybrid between *N. alba* var. *rubra* and *N. mexicana.*

somptuòsa. Large-fld. hybrid between *N. alba* and *N. odorata* var. *rosea.*

speciòsa. An improved form of the hybrid between *N. odorata* var. *rosea* and *N. tuberosa.*

spléndida: hort. name.

stellàta. Blue Lotus of India. Lvs. blue-violet beneath: fls. 3-7 in. across, pale blue, whitish at base (pink and white forms are known), opening 3 days in the forenoon and early afternoon. India.

Stúrtevantii. Hybrid between *N. rubra* and *N. Lotus:* fls. reddish-pink.

sulphùrea: *N. odorata* var.

supérba: *N. caroliniana.*

tetragòna (*N. pygmæa*). Pygmy W. Hardy, smallest species cult., has been used much in hybridization, contributing to the Marliacea, Laydeckeri and other hybrids: lvs. reddish beneath, 3–4 in. across: fls. white, 1½–2½ in. across, open 3 or 4 days from noon to 5 P.M. Siberia to Japan, also in N. Ida. and Ont. Var. **álba** is listed, but may not differ from type. Var. **hélvola** (*N. helvola*). Probably hybrid between *N. mexicana* and *N. tetragona.* Hardy: lvs. floating, 3–4 in. across, blotched all over with brown: fls. floating, small, yellow, 2 in. across, open during the afternoon.

tuberòsa. Magnolia or Tuberous W. Hardy: rootstocks bearing detachable short tuber-like branches: lvs. green beneath: fls. 4–9 in. across, pure white, opening 3 to 4 days till shortly after noon, faint or no fragrance. N. Amer. Var. **máxima** is a smaller form from N. J. Var. **Ríchardsonii,** more numerous petals, forming a globe when fl. fully open. The vars. **ròsea** and **rùbra** are forms of the hybrid between *N. odorata* var. *rosea* and *N. tuberosa.* Var. **sulphùrea,** a pale yellow form.

venústa: *N. alba.*

virginàlis: hort. form of unknown parentage.

zanzibariénsis: *N. capensis* var.

NYMPHÆÀCEÆ. Water-Lily Family. Per. aquatic herbs of wide distribution, with usually large floating lvs. that commonly arise from a submerged rootstock, bisexual regular showy or sometimes inconspicuous fls. having 4 or more sepals, few or many petals which pass into the numerous stamens, and fr. of separate or united carpels, the seeds sometimes discharged through apical apertures. The genera grown in ponds or aquaria are Brasenia, Cabomba, Euryale, Nelumbium, Nuphar, Nymphæa, Victoria.

NYMPHOÌDES (*Limnanthemum*). Floating-Heart. *Gentianaceæ* (or *Menyanthaceæ*). Aquatic perennials with broad floating lvs. heart-shaped at base and yellow or white fls.; grown in ponds or tubs.

Tubs should be filled two-thirds full of loam covered with sand and the remainder water. Propagated by pieces of the leaf containing flower-buds.

índicum. Water-Snowflake. Lvs. orbicular, to 8 in. across: fls. white, yellow toward base, borne in umbels at top of petioles. Tropics. Var. **aùreum** is a deep yellow form.

lacunòsum. Lvs. ovate-orbicular, 2 in. across, purplish beneath: fls. nearly white, ½ in. across. in umbels, accompanied by clusters of tubers. N. Amer.

nymphæoìdes: *N. peltatum,*

peltàtum (*N. nymphæoides*), Lvs. ovate-orbicular, to 4 in. across, the margins wavy: fls. bright yellow, 1 in. across, in umbels in axils of lvs. Eu., Asia; sparingly nat. in N. Amer.

NYMPHOZANTHUS: *Nuphar.*

NÝSSA. Tupelo. *Nyssaceæ.* Asian and N. American trees with alternate simple deciduous lvs. which turn scarlet in autumn, minute greenish-white unisexual fls., and small but conspicuous drupaceous frs.; sometimes grown for ornament in moist situations, prized also for the crooked brushy branching of some of the species.

Propagated by seeds sown at once or stratified, and by layers. Trees do not transplant well from the wild.

aquática. Cotton or Tupelo Gum. To 100 ft.: lvs. to 7 in. long, entire or angular-toothed: fr. dark purple, 1 in. long, solitary. Swamps, Va. to Fla. and Tex.

biflòra: *N. sylvatica* var.

multiflòra: *N. sylvatica.*

sylvática (*N. multiflora*). Pepperidge. Sour or Black Gum. To 100 ft.: lvs. to 4 in. long, entire: fr. dark blue, to ⅔ in. long, 1–3 together. Me. to Fla. and Tex. Var. **biflòra** (*N. biflora*) has mostly obtuse rather than acute lvs. and much flattened ribbed stones. N. C. to Fla. and La.

NYSSÀCEÆ. Nyssa Family. Three genera of trees and shrubs native in N. Amer. and Asia, with alternate simple lvs., bisexual or diœcious fls. having very small calyx, 5 or more petals or lacking, inferior 1- or 6–10-celled ovary, and mostly drupaceous fr. Camptotheca, Davidia and Nyssa are cult.

O

OAK: *Quercus.* **Jerusalem-:** *Chenopodium Botrys.* **Poison-:** *Rhus diversiloba* and *R. radicans.* **She-:** *Casuarina.* **Silk-:** *Grevillea robusta.* **Tanbark:** *Lithocarpus densiflora.*

OAKESIA: *Uvularia.*

OAKESIELLA: *Uvularia.*

OAT, FALSE: *Trisetum.*

OATS: *Avena.*

OBELISCARIA: *Lepachys columnifera* var.

OBLONG: a rather broad leaf or other part, longer than wide and with the sides nearly or quite parallel most of their length.

OBREGÒNIA. *Cactaceæ.* One species native in Mex. and related to Echinocactus. **O. Denégrii.** Obconic, to 5 in. diam., with numerous densely imbricated keeled tubercles, areoles white-woolly; spines many and soon deciduous: fls. white, 1 in. long.

OBTUSE: blunt, rounded, not pointed.

OCEANORUS: *Zigadenus leimanthoides.*

ÓCHNA. *Ochnaceæ.* Trop. trees and shrubs in both hemispheres with alternate toothed leathery lvs., yellow fls., and fr. of sessile drupes surrounding a central receptacle.

One species is grown under glass or out-of-doors in southern California. The best soil in greenhouse culture is fibrous loam well drained. Propagated by cuttings of half-ripened wood in summer or fall.

multiflòra. Shrub to 5 ft.: lvs. oblong, to 5 in. long: fls. yellow, the sepals turning red: fr. with bright red receptacle and black seed-like drupes. Trop. Afr.

OCHNÀCEÆ. Ochna Family. About 20 trop. woody genera with alternate simple or pinnate lvs., bisexual polypetalous fls. with mostly 5 sepals and petals, 10 or more stamens, deeply lobed ovary, and fr. a drupe, berry or caps. The family is near Hypericaceæ in the series. Ochna is sometimes planted.

OCHROCODON: *Fritillaria pudica.*

OCHRÒMA. Balsa. *Bombacaceæ.* Trop. American trees furnishing very light wood used for commercial purposes: lvs. large, soft, alternate: fls. very large, terminal, petals 5: fr. a caps. with seeds immersed in dense wool.

Lágopus: *O. pyramidale.*

pyramidàle (*O. Lagopus*). To 60 ft. with smooth trunk to 16 in. diam.: lvs. nearly orbicular, to 1 ft. across, toothed or lobed: fls. solitary, nearly white, petals 4 in. long: caps. linear, to 1 ft. long, having reddish wool. W. Indies, N. S. Amer.

OCHRÒSIA. *Apocynaceæ.* A small genus of trees from southern hemisphere having milky juice, opposite or whorled lvs., yellow fls. in terminal or subterminal peduncluate cymes, and fr. a 1- or 2-seeded drupe. Propagated by seeds or cuttings.

ellíptica. Tree to 20 ft. or less: lvs. obovate-oblong to elliptical, obtuse or very briefly acuminate, to 6 in. long, in whorls of 3 or 4 or occasionally opposite: fls. cream-colored, sessile, in dense corymbose cymes: fr. scarlet, ellipsoid with acuminate apex, to 2 in. long, usually in pairs, with violet-like odor when crushed. New Caledonia. —It has been planted under the name *Kopsia arborea.*

ÒCIMUM. *Labiatæ.* Very aromatic ann. and per. herbs or small shrubs, the basil grown for seasoning and for the pleasing fragrance: fls. mostly small, in terminal or branching racemes.

Basils are sweet herbs tender in the North and should be started indoors or in a hotbed; otherwise they are easily grown The herbage is cut while the plant is growing and dried, and often a second crop is obtained. The roots may be lifted for a winter supply of foliage.

Basílicum (*O. bullatum*). Basil. Ann. or grown as such, much branched, to 2 ft.: lvs. ovate, to 2 in. long, often purplish: fls. white or purplish, to ½ in. long. Trop. Asia, Afr., Pacific Isls.

bullàtum: *O. Basilicum.*

críspum. Erect per.: lvs. ovate, to 1 in. long, acuminate, serrate to entire, glabrous, petiolate: fls. in lax terminal racemes. Japan.—Best treated as an ann.

mínimum. Bush Basil. Probably a small form of *O. Basilicum.*

sánctum. Ann. to 2 ft., sts. purplish, hairy: lvs. elliptic-oblong, to 2 in. long, pubescent on both sides, glandular-dotted: fls. purplish, in racemes to 8 in. long with pedicels longer than calyx. Malaysia, Australia and W. Asia.—Sometimes known as Holy Basil, as it is considered the most sacred plant in the Hindu religion.

suàve. Tree Basil. Shrub to 8 ft., much branched: lvs. ovate, densely woolly: fls. whitish or purplish, ¼ in. long, in dense and much panicled racemes to 9 in. long. India, Afr.

OCONEE-BELLS: *Shortia galacifolia.*

OCOTILLO: *Fouquieria splendens.*

OCTADESMIA: *Lælia monophylla.*

OCTOMÈRIA. *Orchidaceæ.* American epiphytes with tufted sts., solitary lvs. and small fls. clustered in the axils of lvs., the sepals and petals similar, the small lip 3-lobed. See *Orchids* for cult.

diáphana. Sts. to 4½ in. tall: lf. elliptic-lanceolate, petioled, to 3 in. long: fls. about ⅜ in. long, translucent, yellowish-white. Dec.–Apr. Brazil.

ODONTIÒDA. *Orchidaceæ.* Group of orchid hybrids between the genera Odontoglossum and Cochlioda.

Brádshawiæ (*O. crispum* × *C. Noezliana*).

Brèwii (*Odontioda Charlesworthii* × *Odontoglossum Harryanum*).

Chárlesworthii (*O. Harryanum* × *C. Noezliana*).

Coòksoniæ (*O. armainvillierense* × *C. Noezliana*).

heatonénsis (*O. cirrhosum* × *C. sanguinea*).

keighleyénsis (*O. cirrhosum* × *C. Noezliana*).

Sánderæ (*O. percultum* × *C. Noezliana*).

Thwàitesii (*O. Harryanum* × *C. vulcanica*).

Vuylstékeæ (*O. nobile* × *C. Noezliana*).

ODONTOGLÓSSUM. *Orchidaceæ.* Epiphytic trop. American orchids with 1- or 2-lvd. pseudobulbs and fls. in lateral racemes or panicles, the sepals and petals nearly equal, the lip with claw parallel to column and spreading mid-lobe. The cult. species are mostly native in high elevations and are usually difficult to grow in N. Amer. because of the hot summers; they require a cool house. See remarks under *Orchids.*

Ádrianiæ. Hybrid between *O. crispum* and *O. Hunnewellianum.*

Áireworthii. Hybrid between *O. crispum* and *O. Japonais*

Áliciæ. Hybrid between *O. Edwardii* and *O. spectabile.*

áltum. Hybrid between *O. armainvillierense* and *O Hallii.*

amábile. Hybrid between *O. spectabile* and *O. crispum.*

amándum. Hybrid between *O. Denisoniæ* and *O. nobile.*

amœnum. Hybrid between *O. nobile* and *O. spectrum.*

Andersoniànum: *O. crispum* var.

ardentíssimum: *O. armainvillierense.*

armainvillierénse (*O. ardentissimum*). Hybrid between *O. nobile* and *O. crispum.*

Ashworthiànum. Hybrid between *O. Edwardii* and *O. Ossultonii.*

bictoniénse. Pseudobulbs surrounded by lf.-bearing sheaths, 1–3-lvd.: lvs. to 15¼ in. long and about 1 in. wide: infl. to about 30 in. tall, commonly racemose, many-fld.;

fls. about 1½ in. across; sepals and petals commonly yellow-green blotched with brown or purplish; lip violet or whitish with a pair of erect yellow basal crests. Aug.–Jan. Cent. Amer.

Cervántesii. Pseudobulbs clustered, 1-lvd.: lf. petioled, to 6 in. long: infl. longer than lf., to 6-fld.; fls. 1½–2½ in. across; sepals and petals white with numerous concentric chocolate streaks near the base; lip white with yellow basal crest. Oct.–May. Mex., Guatemala.

Chárlesworthii. Hybrid between *O. Harryanum* and *O. triumphans.*

cirrhòsum. Pseudobulbs with 1–2 lvs. to 12 in. long: infl. to 3 ft. long, nodding; fls. to 4 in. across, white spotted with red-brown; lip with yellow side lobes streaked with red. Apr.–July. Ecuador.

citrósmum: *O. pendulum.*

Cookiànum. Hybrid between *O. blandum* and *O. triumphans.*

Coradínei. Perhaps a natural hybrid: racemes many-fld.; fls. pale yellow with large brown spots, to about 3 in. across. Colombia.

cordàtum. Pseudobulbs with 1 lf. to 8 in. long: infl. to 2 ft. high, to 10-fld.; fls. to about 3 in. across; sepals greenish-yellow barred with brown; petals yellowish spotted with brown; lip white with brown spots. Jan., Apr.–July. Cent. Amer.

Crawshayànum. Hybrid between *O. Hallii* and *O. Harryanum.*

crispodínei. Hybrid between *O. crispum* and *O. Coradinei.*

críspum. Pseudobulbs with 2 lvs. to 12 in. long: infl. exceeding the lvs., usually racemose and 5–15-fld., rarely paniculate; fls. to 3½ in. across, variable in size and color, wavy margined, often white and more or less blotched with red; lip with large yellow blotch near base. Feb.–Apr. Colombia. Var. **Andersoniànum** (*O. Andersonianum*) has yellowish fls. spotted with brown.

Dénisoniæ (*O. Wilckeanum*). Hybrid between *O. crispum* and *O. luteo-purpureum.*

Édwardii. Pseudobulbs 2-lvd.: lvs. 2 ft. long and 1½ in. wide: infl. paniculate, to 4 ft. high, many-fld.; fls. small, about 1 in. across, mauve or puce with yellow callus at base of lip. Jan.–Apr. Ecuador.

Edwardìnum. Hybrid between *O. Edwardii* and *O. eximium.*

excéllens. Hybrid between *O. nobile* and *O. triumphans.*

exímium. Hybrid between *O. armainvillierense* and *O. crispum.*

Fletcheriànum. Hybrid between *O. Edwardii* and *O. cirrhosum.*

gránde. Pseudobulbs 2–3-lvd.: lvs. to 14 in. long and about 2½ in. wide: infl. longer than lvs., rarely to 7-fld.; sepals yellow barred with cinnamon-brown; petals with basal half reddish-brown and anterior half yellow; lip cream-white spotted with brown near edges. Aug., Oct.–Mar. Guatemala.

Hállii. Pseudobulbs bearing 1 or 2 lvs. to 15 in. long: infl. to 5 ft. long, racemose, many-fld.; fls. about 3–4 in. across; sepals and petals bright yellow blotched with chestnut-brown; lip pale yellow or white spotted with red, toothed. Mar.–Apr. Ecuador, Peru.

Harryànum. Pseudobulbs with 2 lvs. to 1 ft. long: infl. to 3 ft. high, many-fld.; fls. variable, 2½–4 in. across; sepals chestnut-brown marked irregularly with yellowish; petals chestnut-brown with basal half traversed by longitudinal white and mauve lines; lip basally violet with white stripes on the sides and with central yellow blotch, white in front. July–Aug. Colombia.

harvengténse (*O. loochristiense*). Hybrid between *O. crispum* and *O. triumphans.*

hastilàbium. Pseudobulbs with 2 lvs. to about 1 ft. long: infl. paniculate, to 4 ft. or more long; fls. 3 in. across; sepals and petals pale green to cream-color, barred and spotted with purple; lip white with purple at base. Jan.–Aug. Colombia.

helleménse. Hybrid between *O. harvengtense* and *O. crispum.*

Hénryi. Hybrid.

Hòlmesii. Hybrid between *O. spectabile* and *O. Adrianiæ.*

Hunnewelliànum. Pseudobulbs 1-lvd.: lf. to 8 in. long: infl. longer than lf., racemose, several-fld.; fls. 2 in. across; sepals and petals greenish-yellow spotted with brown; lip white or yellowish spotted with brown. Aug., Nov.–Jan. Colombia.

illustríssimum. Hybrid between *O. armainvillierense* and *O. Japonais.*

Ínsleayi. Plant similar to *O. grande:* pseudobulbs with 2 lvs. about 8 in. long: infl. exceeding the lvs., 5–10-fld.; fls. to about 3 in. across; sepals and petals greenish-yellow barred with red-brown; lip bright yellow with a border of red spots. Aug.–Sept., Dec., Jan. Mex.

Japonàis (*O. Lambeauianum*). Hybrid between *O. Rolfeæ* and *O. crispum.*

Keighyelénsii. Hybrid.

læve: *Miltonia lævis.*

Lambeauiànum: *O. Japonais.*

Lóbbii. Hybrid between *O. amabile* and *O. nobile.*

loochristiénse: *O. harvengtense.*

lùteo-purpùreum. Pseudobulbs with 2 lvs. to 1 ft. or more long: infl. about as long as lvs., racemose, many-fld.; fls. 3–4 in. across; sepals chestnut-brown tipped with yellow; petals yellow blotched with brown; lip white or yellowish with large brown spot, fringed. Mar.–Aug. Colombia. Var. **scéptrum** (*O. sceptrum*). Fls. smaller, sepals brown with narrow yellow border.

maculàtum. Pseudobulbs crowded, with 1 lf. to 10 in. long: infl. longer than lvs., commonly many-fld., pendulous; fls. 2–3 in. across; sepals brown; petals and lip yellow spotted with brown. Jan.–May. Mex.

miríficum. Hybrid between *O. crispum* and *O. luteo-purpureum* var. *sceptrum.*

nebulòsum. Pseudobulbs with 2–3 lvs. to 9 in. long: infl. slightly exceeding lvs., 3–7-fld.; fls. 2½–3 in. across, white spotted around the center with red-brown. May-July. Mex.

nítidum. Cross between the hybrids *O. spectabile* and *O. Denisoniæ.*

nóbile (*O. Pescatorei*). Pseudobulbs 2-lvd.: lvs. to 12 in. long: infl. to 2 ft. high, racemose or paniculate; fls. numerous, 2–3½ in. across, variable, white; lip with yellow crest and often with crimson spots. Mar.–May. Colombia.

Oberthùri. Hybrid between *O. Adrianiæ* and *O. harvengtense.*

Ossultònii. Hybrid between *O. spectabile* and *O. nobile.*

péndulum (*O. citrosmum*). Pseudobulbs with 2 lvs. to 1 ft. long: infl. pendulous, longer than lvs., many-fld., commonly racemose; fls. about 2 in. across, variable; sepals and petals white or sometimes rose-tinted; lip rose to lilac. Apr.–July. Mex. Var. **gigantèum** is listed.

Pescatòrei: *O. nobile.*

pulchéllum. Pseudobulbs 2–3-lvd.: lvs. linear, to 13 in. long: infl. to 15½ in. long, to 10-fld.; fls. 1–1½ in. across, fragrant, white except base of lip which is yellow dotted with red. Dec.–May. Cent. Amer.

Reìchenheimii: *Miltonia Reichenheimii.*

Rólfeæ. Hybrid between *O. nobile* and *O. Harryanum.*

Róssii. Pseudobulbs with 1 lf. to about 5½ in. long: infl. little surpassing the lf., 1–5-fld.; fls. about 2–3 in. across; sepals white or pale rosy spotted with brown; petals white or rosy, spotted with brown at base; lip white, rosy or pale yellow with yellow basal crest. Feb.–Apr., Aug., Oct. Mex., Guatemala.

Sánderæ. Hybrid.

scéptrum: *O. luteo-purpureum* var.

Schlieperiànum. Plant similar to *O. grande:* pseudobulbs 2-lvd.: lvs. to 1 ft. long: racemes surpassing lvs., 3–6-fld.; fls. to 3½ in. across; sepals and petals pale yellow with brown spots in lower part; lip paler yellow spotted with brown at base. May–July. Costa Rica, Panama. Var. **álbum** has white fls. Var. **citrìnum** is a listed name. Var. **xánthinum** is listed, with brighter yellow fls.

Thompsoniànum. Hybrid between *O. Edwardii* and *O. crispum.*

tigrìnum. Hybrid between *O.* Fascinator and *O. Harryanum.*

triúmphans. Pseudobulbs with 2 lvs. to 15 in. long: infl. usually racemose, to 3 ft. high, to 10-fld.; fls. large, to 3½ in. across; sepals and petals golden-yellow blotched with red-brown; lip white or yellowish at base, cinnamon-brown bordered with white or yellow above. Mar.-May. Colombia.

triumphòsum. Hybrid between *O. triumphans* and *O. cirrhosum.*

Uroskínneri. Pseudobulbs with 1 or 2 lvs. to 1.ft. long: infl. to 36 in. tall, usually racemose, 9–20-fld.; fls. about 2 in. across; sepals and petals green and brown mottled; lip pale rose mottled with white. Mar.–Apr., July–Aug. Guatemala.

Vuylstékei. Hybrid between *O. Denisoniæ* and *O. triumphans.*

warnhaménse. Hybrid between *O. Hallii* and *O. nobile.*

Wilckeànum: *O. Denisoniæ.*

Williamsiànum. Natural hybrid between *O. grande* and *O. Schlieperianum.*

ODONTONÈMA (*Thyrsacanthus*). *Acanthaceæ.* Herbs and shrubs of trop. Amer. with opposite entire lvs. and red tubular 5-lobed or 2-lipped fls. in terminal spike-like racemes; three species are grown in S. U. S. and sometimes under glass. Propagated by cuttings.

callistàchyum. Shrub to 15 ft.: lvs. oblong to elliptic-ovate, to 1 ft. long: fls. red or pink, to 1¼ in. long, in raceme-like panicles. Mex., Cent. Amer.

Schomburgkiànum (*T. rutilans*). Shrub to 6 ft.: lvs. oblong-lanceolate: fls. red, 1½ in. long, in drooping racemes to 3 ft. long. Colombia.

stríctum. Shrub to 6 ft.: lvs. oblong, to 6 in. long, often wavy-margined: fls. crimson, to 1 in. long, with short lobes, in erect close long infl. Cent. Amer.—Sometimes grown as *Justicia coccinea.*

ODONTÒNIA. *Orchidaceæ.* Group of hybrids between the genera Odontoglossum and Miltonia.

Lairésseæ (*O. crispum* × *M. Warscewiczii*).

ODONTOPHÒRUS. *Aizoaceæ.* Succulent perennials of S. Afr., bearing opposite lvs. having several slender teeth on keel and edges, dotted, velvety: fls. solitary; stigmas 8–10: segregate from Mesembryanthemum.

Márlothii (*M. Marlothii*). Much branched: lvs. 3-angled, united at base, 1¼ in. long and ¼ in. wide and thick, white-warted: fls. yellow, to 2 in. across.

nànus. Similar to *O. primulinus* but smaller, with white fls.

primúlinus. Lvs. 3-angled, to 1¼ in. long, ¾ in. wide, and ½ in. thick, velutinous and warted: fls. pale yellow, to 2 in. across.

ODONTOSÒRIA. *Polypodiaceæ.* Trop. ferns formerly included with Davallia but differing in characters of the indusium. One is readily grown under glass. See *Ferns.*

chinénsis (*Davallia tenuifolia. O. tenuifolia*). Fronds to 1½ ft. long and 9 in. wide, 3–4-pinnatifid into fine segms. about ⅛ in. long. Trop. Asia, Polynesia.

tenuifòlia: *O. chinensis.*

ODONTOSPÉRMUM. *Compositæ.* Herbs and shrubs of the Buphthalmum group from the Medit. region and Canaries, with solitary terminal rather large heads of ray- and disk-fls.; pappus of scales. One species grown as a greenhouse or tub-plant, and may be wintered as are hydrangeas. Propagation by cuttings or seeds.

seríceum. Dwarf shrub: lvs. opposite, oblong-spatulate, silky-hairy: heads golden-yellow, 2–3 in. across, in summer. Canary Isls. Var. **grandiflòrum** is listed.

ODOSTEMON: *Mahonia.*

ŒNOTHÈRA. *Onagraceæ.* Herbs of wide distribution but mostly in western hemisphere, including the evening-primroses that open late in the day and close in morning (nocturnal), and the sundrops that remain open in the day (diurnal) and make attractive flowering clumps; some of the evening-primroses have very large fls. and are interesting for the sudden opening of the corolla and the attracting of nocturnal moths. The prevailing color in Œnothera is yellow but there are red and pink kinds, and fls. of some species open nearly or quite white and change to rose. The group is separated by some authors into about a dozen genera but it is here kept together, as Anogra, Hartmannia, Kneiffia, Lavauxia, Megapterium, Meriolix, Pachylophus, Raimannia, Sphærostigma. Some of these plants, particularly the *Œ. biennis* group (incl. *Œ. Lamarckiana*), have been the subjects of extensive studies in mutation. The species are ann., bien. and per.

Œnotheras are sun-loving dry-land plants of simple cultivation, commonly grown from seeds or the clumps of the perennial kinds may be divided. Some of them are tall erect plants to 2 or 3 feet, and others are stemless; a number of them are more or less prostrate. Some of the decumbent and stemless kinds are useful in the rock-garden.

acaùlis (*Œ. taraxacifolia*). DANDELION-LEAVED SUNDROP. Bien. or per., stemless at first but making prostrate branches: lvs. pinnatifid, with large terminal segm.: fls. to 4 in. across, white to blush, long-tubed, shorter than radical lvs.: fr. short, 4-winged at top, short-stalked or nearly sessile. Chile.—This species is Burbank's "America." A var. **lùtea** is listed.

albicaùlis (*Anogra albicaulis. Œ. pinnatifida*). Ann. or bien. to 15 in., branches decumbent or ascending: basal lvs. spatulate, toothed, obtuse; st.-lvs. deeply pinnatifid: fls. yellow, diurnal, about 1½ in. long. Man. to Mont. south to Tex. and New Mex.

alyssoìdes. To nearly 2 ft., mostly glabrous: lvs. narrowly lanceolate to obovate, to 4 in. long: fls. white fading to pink, to ¼ in. long, many in dense spikes. Rocky Mts. Var. **decórticans** has nodding spikes with caps. tapering to apex and very thick-walled. Calif.

argillícola. Glabrous plant to 4½ ft.: st.-lvs. linear-lanceolate, to 3½ in. long: fls. yellow, petals to 1¾ in. long. Va. and W. Va.

Berteriàna (*Raimannia Berteriana*). Erect to 2 ft., ann. or bien., hairy: lvs. narrow-lanceolate to oblong-lanceolate, more or less crenate and undulate, upper ones nearly or quite sessile: fls. nocturnal, yellow, 1 in. or more across: fr. linear, 1½ in. long. Chile, Argentina.

biénnis (*Onagra biennis*). COMMON EVENING-PRIMROSE. Tall coarse variable simple or branched erect weedy bien. to 6 ft., in old fields and waste places and nat. in Eu. and elsewhere: lvs. lance-ovate or narrower: fls. 1–2 in. across, nocturnal, yellow: fr. oblong, to 1½ in. Var. **grandiflòra** is a larger-fld. form, in southern states, sometimes regarded as a distinct species; forms in the trade under this name need special study.

bistórta. Rather showy ann. lightly pubescent sundrop, ascending, 10–16 in.: lvs. narrow-lanceolate to ovate, denticulate: fls. to 1 in. across, yellow, with purple spots in center: fr. about ¾ in. or more long, somewhat 4-sided, not beaked. S. Calif. Known in cult. mostly in the var. **Veitchiàna** (*Œ. Veitchiana, Sphærostigma Veitchianum*), which differs in having a longer less angled beaked pod.

brachycárpa (*Lavauxia brachycarpa*). Stemless pubescent per.: lvs. long and narrow, thickish, pinnatifid to entire: fls. yellow, 2 in. or more across, long-tubed: fr. sessile on the crown, short, winged. Kans., northwest and southwest.

cæspitòsa (*Pachylophus cæspitosa*). Nearly or quite stemless bien. or per. with woody root: lvs. pubescent, narrow, sinuate or dentate to pinnatifid: fls. to 3 in. across, white or pink: fr. short, tuberculate and winged. S. D., west and south.

califórnica (*Œ. pallida* var. *Anogra californica*). Ascending per. from a rootstock, 20 in. or less, hoary-pubescent: lvs. narrow-oblanceolate, dentate or pinnatifid: fls. white turning pink, 2 in. more or less across, remaining open in early morning: fr. linear and ribbed, to 2 in. long. Calif.—Another *Œ. californica* or *Eulobus californicus* is properly *Œ. leptocarpa*, apparently not cult.; it is an erect hairy ann. with small yellow or orange fls. that frequently have reddish spots inside.

campylócalyx (sometimes written *campylocarpa. Œ. coccinea. Œ. versicolor*). Ann. or bien., erect to 2½ ft., simple or branched, more or less pubescent: lvs. linear-lanceolate, nearly or quite sessile, denticulate: fls. 1 in. or more across, nocturnal, red with yellowish margins: fr. short, oblong, sessile, hairy. Bolivia, etc.

canadénsis: *Œ. fruticosa.*

cheiranthifòlia (*Œ. spiralis. Sphærostigma spirale*). Prostrate or somewhat ascending tap-rooted per., with oblong to oblanceolate white-pubescent lvs.: fls. yellow, about 1 in. across: fr. nearly linear, short, coiled. Coasts, Calif.

Chìldsii: *Œ. Kunthiana.*

cinnabarìna: see *Œ. odorata.*

Clùtei. Bien. to 5 ft., pubescent: lvs. linear or oblong, entire or slightly toothed: fls. yellow, to 3 in. across: fr. short, about 1 in. long. Ariz.

coccínea: *Œ. campylocalyx, Œ. rosea.*

Cóckerellii. Erect very leafy bien., 2–3 ft., more or less pubescent or hirsute: lvs. lanceolate, entire or somewhat denticulate: fls. light yellow, nocturnal, 1 in. or more across: fr. narrow-oblong, sessile, about 1 in. long. Colo.

consólida: see *Œ. odorata.*

coronopifòlia (*Anogra* and *Raimannia coronopifolia*). Erect branched gray-pubescent per. to 2 ft.: lvs. narrow, deeply pinnatifid into narrow lobes: fls. diurnal, white turning pink, 1 in. or more across, buds drooping: fr. oblong, pubescent. Kans., north and west.

cruciàta (*Œ. biennis* var. *cruciata*). Erect mostly simple glabrous or slightly hairy ann., to 4 ft.: lvs. lanceolate to long-oblong, remotely denticulate or entire: fls. yellow, small, about ¾ in. across, nocturnal, the petals about as narrow as sepals: fr. oblong-angled, sessile, about 1 in. long. New England, N. Y.

densiflòra: *Boisduvalia densiflora.*

dentàta (*Sphærostigma dentatum*). Ann. to 9 in., branched, glabrous or nearly so: lvs. linear, to nearly 2 in. long: fls. yellow changing to reddish, small. Calif. to Chile.

Drúmmondii (*Raimannia Drummondii*). Diffuse hairy-pubescent ann., sts. rising 1–2 ft.: lvs. mostly lance-oblong, denticulate to entire: fls. yellow to cream-color, 2–3 in. across, delicate and attractive, nocturnal: fr. linear, 1–2 in. long. Tex. Var. **nàna** is listed.

exímia (*Pachylophus eximius*). Leafy per. to 1 ft. high: lvs. oblanceolate to spatulate, dentate or lobed, hairy at least on margins: fls. white turning pink, 2 in. or more across, nocturnal: fr. narrow-ovoid, to 1½ in. long. Colo. to New Mex.—Much like *Œ. cæspitosa.*

floribúnda: *Œ. riparia.*

fràgrans: listed name.

Fràseri: *Œ. glauca* var.

fruticòsa (*Œ. serotina. Œ. canadensis. Kneiffia fruticosa*). Per. sundrop, becoming semi-woody at base, 1–3 ft. tall, sts. reddish, nearly glabrous to thinly hairy: lvs. lanceolate to oval-lanceolate, sparsely denticulate to entire, often short-stalked: fls. to 2 in. across, showy, yellow: fr. short-oblong, winged, about ⅓ in. long, glabrous or with glandular hairs. N. S. south and west, on dry land. Var. **màjor** is very floriferous and makes a bushy plant. Var. **Yoúngii** (*Œ. Youngii*). strong and stocky, profuse bloomer: lvs. mostly large, shiny and slightly glaucous.

glàbra: perhaps *Œ. biennis.*

glaùca (*Kneiffia glauca*). Sundrop much like *Œ. fruticosa* but glabrous and somewhat glaucous, fr. longer and broadly winged, lvs. sessile, ovate or oval. Va. and Ky. south. Var. **Fràseri** (*Œ. Fraseri*) has rather ovate-lanceolate and mostly slightly stalked lvs.

grandiflòra: *Œ. biennis* var.

grándis: *Œ. laciniata* var. *grandiflora.*

heterántha: *Œ. subacaulis.*

Hoòkeri. Bien., of the *Œ. biennis* group, to 4 ft., canescent or hairy: lvs. ovate to oblanceolate, to 9 in. long: fls. yellow, nocturnal; the petals to 2 in. long and as broad. Calif.

imperiàlis: the plant so grown is probably one of the *Œ. fruticosa* group.

Jóhnsonii. The true *Œ. Johnsonii* (properly *Œ. primiveris*), acaulescent and with pinnatifid lvs., of W. N. Amer., is apparently not in cult.; the ornamental large-fld. sweet-scented plant grown under this name is one of the *Œ. Lamarckiana* group: fls. opening in evening and closing next forenoon or midday; calyx reddish; bien. to 4 ft., but mostly blooming first year from seed.

Kunthiàna (*Œ. Childsii. Œ. tetraptera* var. *Childsii*). Differs from *Œ. tetraptera* in having petals only ½–⅝in. long and winged fr. about ⅙ in. diam. Tex. to Cent. Mex.

laciniàta (*Œ. sinuata. Raimannia laciniata*). Diffuse bien. or per., thinly hairy to glabrous, to 2 ft. high: lvs. narrow, sinuate-dentate to pinnatifid: fls. pale yellow, mostly small and not showy, nocturnal: fr. linear, to 1½ in. long. N. J. to S. D., Fla. and Mex. Var. **grandiflòra** (*Œ. grandis*) has fls. 2 in. or more across. Mo., Kans. to Tex.

Lamarckiàna. Much like a large-fld. *Œ. biennis*, but sts. red-tuberculate, lvs. broad and crinkled, fl.-buds densely pilose and viscid, stigmas longer. Unknown wild; an old garden plant seen in various forms.

lavandulæfòlia (*Galpinsia lavandulæfolia*). Tufted per. to 8 in., gray-pubescent: lvs. linear, entire: fls. yellow, to 3 in. long, with long funnelform tube: fr. cylindrical, 1 in. long. Wyo. to Tex. and Ariz.

leptocárpa: see *Œ. californica.*

lineàris (*Kneiffia linearis*). Slender bien. or per. sundrop, to 20 in., nearly glabrous to hairy: lvs. variously spatulate to narrow-lanceolate, nearly or quite entire: fls. bright yellow, to 1¾ in. across, but usually smaller: fr. club-shaped, pubescent and not glandular. Conn. to Ga.

longiflòra: see *Œ. odorata.*

lùtea is listed.

macrántha. The plant grown under this name is one of the *Œ. Lamarckiana* group.

macrocárpa: *Œ. missouriensis.*

marginàta (*Pachylophus marginatus*). Tufted nearly stemless per., hairy: lvs. oblanceolate, wavy-toothed: fls. white, turning pink, to 3 in. long, with long tube: fr. spindle-shaped, with tubercles on angles. Ore. to Colo.

mexicàna. Similar to *Œ. tetraptera* from which it differs in its slightly smaller dull rose-red fls. and its long narrow non-ridged nearly sessile cylindrical fr. N. Mex. to S. Amer.

mìcans: see *Œ. odorata.*

minùta: hort. name.

missouriénsis (*Œ. macrocarpa. Megapterium missouriense*). Canescent per. with sts. ascending to about 1 ft.: lvs. narrow-oval to lanceolate to broad-linear, denticulate or entire: fls. yellow, 4–6 in. across, long-tubed, showy: fr. becoming 2–3 in. long and nearly as broad, widely winged. Neb. and Mo. west and south.

mollíssima. Ann. or grown as such in gardens, to 2½ ft., branched, loosely hairy: lvs. linear-lanceolate, to 3 in. long, remotely denticulate to entire: fls. nocturnal, small, yellow, about ¾ in. across. Argentina.—The plant grown under this name is weedy and not very attractive, and some of the stock passing as *Œ. Sellowii* and *Œ. villosa* are apparently the same.

montàna (*Pachylophus montanus*). Stemless per.: lvs. oblanceolate, to 4 in. long, coarsely wavy-toothed, margins hairy: fls. white, becoming pink, night-blossoming, to 2½ in. across: fr. tubercled on blunt ridges. Neb. to Ida. and Nev.

muricàta: *Œ. parviflora.*

odoràta. Ann. or so grown, erect, branched, to 4 ft., glabrous to sparsely hairy: lvs. long-linear-lanceolate, or the upper ones lance-ovate, remotely toothed: fls. nocturnal, yellow fading to reddish, fragrant, 1–2½ in. across. Chile.—Plants sometimes grown as *Œ. cinnabarina, consolida, longiflora, micans, prostrata, suaveolens, sulphurea, undulata*, apparently belong here.

ovàta. Golden-Eggs. Stemless per.: lvs. in basal rosette, oblong to ovate, entire or slightly toothed: fls. yellow, the filiform calyx-tube to 4 in. long, petals orbicular, ½ in. long: fr. linear. Calif.

pállida (*Anogra pallida*). Per. to 14 in.: lvs. lanceolate, entire, lobed or toothed, glabrous: fls. white turning pink, to 1½ in. long, blooming in evening: fr. narrow-linear, 8-ribbed. Calif. to Rocky Mts.

parviflòra (*Œ. muricata*). Like *Œ. biennis* but usually not as tall and less branched: lvs. rather thick and glabrous or only thinly hairy, tip of sepals separated in bud (rather than in contact), upper bracts persistent and equalling or exceeding the pods. Northeastern states to Newf.

perénnis (*Œ. pumila. Œ. pusilla. Kneiffia pumila*). Small or slender finely pubescent per. sundrop, sometimes to 2 ft. but commonly lower and often blooming when 2 in. high: lvs. oblanceolate or oblong, entire: fls. yellow, 1 in. or less across: fr. short, club-shaped, short-stalked or sessile. Newf. to Ga., Man. and Kans.

Pílgrimii: form of *Œ. perennis.*

pinnatífida: *Œ. albicaulis.*

praténsis (*Kneiffia pratensis*). Attractive stoloniferous sundrop, per. to 2 and 3 ft., soft-hairy: lvs. oblong-lanceolate or somewhat elliptic, sinuate or entire: fls. yellow, profuse and showy, to 2 in. across, buds purplish: fr. short, club-shaped. Fields, Me. to Ia. and Ark.

prostràta: see *Œ. odorata.*

pùmila: *Œ. perennis.*

pusílla: *Œ. perennis.*

rhizocárpa: *Œ. triloba.*

rhombipétala (*Raimannia rhombipetala*). Bien. to 4 ft., pubescent: lvs. linear-lanceolate, slightly toothed: fls. yellow, to 2 in. across: fr. curved. Ind. to Tex.

ripària (*Œ. floribunda. Kneiffia riparia*). Like *Œ. linearis*, but more pubescent and the fls. larger (to about 2 in. across), floriferous. Near the coast, L. I. to Ga.

ròsea (*Œ. coccinea* of lists. *Hartmannia rosea*). Low diffuse bien. or per., blooming first year from seed, finely pubescent, sts. slender and 1–2 ft. long: lvs. ovate-lanceolate or narrower, sparsely denticulate or entire, small: fls. small and not showy, ½ in. or less across, rose-purple, opening at evening and remaining to next day: fr. club-shaped, long-tapering. Tex. and New Mex. to S. Amer.

ròsea mexicàna is a form of *Œ. mexicana.*

rubrícalyx. Afterglow Evening-Primrose. Form of *Œ. Lamarckiana* or derivative from it, with attractive red calyx-tube.

Sarrazìnii: *Œ. tetraptera.*

Sellòwii: see *Œ. mollissima.*

serótina: *Œ. fruticosa.*

serrulàta (*Meriolix serrulata*). Erect mostly finely pubescent per. or bien., more or less woody at base, to 1½ ft. high: lvs. mostly linear, sharply dentate: fls. yellow, diurnal, to 2 in. across, petals crenulate: fr. linear, canescent. Man. to Tex. and New Mex.

sinuàta: *Œ. laciniata.*

speciòsa (*Hartmannia speciosa*). Erect or ascending finely pubescent per.: lvs. linear to lance-oblong, sinuate, dentate or pinnatifid: fls. diurnal, white or whitish changing to pink, to 3 in. across: fr. club-shaped, 4-ribbed. Mo. west and south, and nat. eastward; showy. Var. **álba,** fls. white; var. **grandiflòra** is listed; var. **ròsea,** fls. rose; var. **rùbra,** fls. dark red.

spinulòsa (*Meriolix spinulosa*). Similar to *Œ. serrulata* but with spinulose-toothed lvs. and larger fls. and frs. Ark. to New Mex.

spiràlis: *Œ. cheiranthifolia.*

suavèolens: see *Œ. odorata.*

subacaùlis (*Œ. heterantha. Taraxia subacaulis*). Stemless, nearly glabrous: lvs. lanceolate, entire or toothed: fls. pale yellow, ½ in. long. Mont. to Calif. Var. **taraxacifòlia** (*Œ. heterantha* var. *taraxacifolia*), lvs. lyrate-pinnatifid.

sulphùrea: *Œ. odorata.*

taraxacifòlia: *Œ. acaulis.*

tetráptera (*Œ. Sarrazinii. Hartmannia tetraptera*). Decumbent diffuse or erect thinly hairy ann. to 20 in.: lvs. lanceolate to narrow-ovate, coarsely toothed to pinnatifid: fls. whitish becoming rose or rose from the first, diurnal, petals ¾–1½ in. long, showy: fr. swollen, 1 in. or more long and ¼–⅜ in. diam., with long st.-like base, 5-ridged. Tex. to Ariz. to S. Amer. Var. **Chìldsii** is *Œ. Kunthiana.* Var. **ròsea** is listed.

trichócalyx (*Anogra trichocalyx*). Bien. or per. to 12 in. high, silky-hairy: lvs. linear or nearly so to lanceolate or ovate, usually sinuate-pinnatifid, to 2 in. long: fls. white, petals to 1¼ in. long, the buds nodding. Colo. and Wyo. to Calif.—Variable.

trîloba (*Œ. rhizocarpa. Lavauxia triloba* and *flava*). Per., stemless, slightly pubescent or glabrate, with dandelion-like lvs., blooming first year from seed: fls. white or pink, to 2½ in. across, very long and slender-tubed, shorter than lvs.: fr. short, winged, in a cluster at the crown. Ky. and Tenn. to Calif. and Mex.

undulàta: see *Œ. odorata.*

Veitchiàna: *Œ. bistorta* var.

versícolor: *Œ. campylocalyx.*

villòsa. S. African, considered to be *Œ. biennis* nat. there, but plants grown under this name may be *Œ. mollissima.*

viridéscens (*Œ. spiralis* var. *viridescens. Sphærostigma viridescens*). Tap-rooted bien. or per., green, sts. 1½–2½ ft. prostrate or ascending: lvs. thickish, round-ovate and cordate, hairy, denticulate: fls. yellow becoming greenish, 1 in. or less across: fr. linear, 4-angled, coiled. Seashore, S. Calif.

Whítneyi: *Godetia grandiflora.*

Yoúngii: *Œ. fruticosa* var.

ŒNOTHERACEÆ: *Onagraceæ.*

OKA: *Oxalis crenata.*

OKRA, GUMBO. The large green erect pods of *Hibiscus esculentus.* From these pods is made the well-known gumbo soup of the South, where the plant is more extensively grown than in the North. The pods are also employed in their green state for stews, and are dried and used in winter, when they are nutritious and form no little part of the diet in certain sections of the country. The seeds are sensitive to cold and moisture, and should not be sown until the ground has become warm. The seed should be sown in a drill 1 inch deep, the plants thinned to 12 inches in the row for the dwarf varieties and 18–36 inches for the tall varieties; the rows are usually far enough apart to admit of horse tillage. One ounce of seed supplies 50–100 feet of drill, depending on the thickness of sowing. The tall kinds reach 4–7 feet. The culture given corn or cotton is suitable.

OLD MAN: *Artemisia Abrotanum.* **-Man-and-Woman:** *Sempervivum tectorum.* **-Mans-Beard:** *Clematis Vitalba.* **Woman:** *Artemisia Stelleriana.*

ÒLEA. Olive. *Oleaceæ.* Attractive evergreen trees and shrubs native in eastern hemisphere with opposite commonly entire lvs. silvery-scurfy underneath, small white or whitish unisexual or bisexual fls. in panicles, and fr. a drupe, usually 1-seeded. One species is grown widely for the edible fr. and others for ornament in Calif. and other mild climates. See *Olive.*

Aquifòlium: *Osmanthus ilicifolius.*

chrysophýlla. Small tree: lvs. lanceolate, to 4 in. long, yellow beneath: fr. globose, blackish. Trop. Afr.

commùnis: see *O. europæa.*

Cúnninghamii. To 70 ft.: lvs. variable, linear to ovate-lanceolate, to 10 in. long: fr. ovoid, about ½ in. long, red. New Zeal.

europæ̀a. Common O. To 25 ft.: lvs. oval to lanceolate, to 3 in. long, silvery-scaly beneath: fls. fragrant: fr. oblong, to 1½ in. long, shining black when ripe. Medit. region.—Grown for fr. in Calif. and for ornament and curiosity in Fla. and elsewhere. The wild form has been distinguished as var. **Oleáster,** with thorny branches, and the cult. olive as var. **commùnis.**

fràgrans: *Osmanthus fragrans.*

ilicifòlia: *Osmanthus ilicifolius.*

lanceolàta. To 50 ft., diœcious: lvs. linear to ovate-lanceolate, to 6 in. long: fr. ovoid, ½ in. long, red or orange. New Zeal.

montàna. To 50 ft., diœcious: lvs. linear or linear-lanceolate, to 3½ in. long: fr. ovoid, red, to ⅓ in. long. New Zeal.

OLEÀCEÆ. Olive Family. Widely distributed trees and shrubs in trop. and temp. regions in both hemispheres, of more than 20 genera, grown for ornament and shade, and the olive for the edible fr.: lvs. prevailingly opposite, simple or pinnate: fls. regular, bisexual or unisexual, having commonly 4-lobed calyx and corolla, the latter gamopetalous (sometimes apetalous in Fraxinus), 2 stamens, superior 2-celled ovary: fr. a berry, drupe, caps. or samara. Genera herein treated are Abeliophyllum, Chionanthus, Fontanesia, Forestiera, Forsythia, Fraxinus, Jasminum, Ligustrum, Menodora, Nyctanthes, Olea, Osmanthus, Osmarea, Phillyrea, Siphonosmanthus, Syringa.

OLEANDER: *Nerium.* **Yellow:** *Thevetia nereifolia.*

OLEÀRIA (*Shawia*). Tree Aster. Daisy-Tree. *Compositæ.* Many evergreen shrubs and small trees with mostly alternate lvs. tomentose beneath and heads of white, blue or purple ray- and disk-fls. solitary or in corymbs or panicles; pappus of bristles; native in New Zeal. and Australia. Several species are grown out-of-doors in Calif. for ornament. Propagated by cuttings of half-ripened shoots, as well as by seeds.

álbida. Tree to 20 ft.: lvs. oblong or ovate-oblong, to 4 in. long, entire, white-tomentose beneath: heads of 3–6 fls., ¼ in. long, in large panicles. New Zeal.

angulàta. Shrub to 12 ft.: lvs. oblong or oval, to 2½ in. long, white-tomentose beneath, undulate: heads of 3–5 fls., ⅕ in. long, in panicles longer than lvs. New Zeal.

arboréscens (*O. nitida*). Shrub to 12 ft.: lvs. ovate, to 3½ in. long, sinuate-toothed, satiny-tomentose beneath: heads of 15–20 fls., ¼ in. long, in large branched corymbs. New Zeal. Var. **angustifòlia** has lanceolate or linear-lanceolate lvs. Var. **capillàris** (*O. capillaris*) has lvs. to 1 in. long.

argophýlla. Tree to 25 ft.: lvs. ovate to oblong-lanceolate, to 5 in. long, toothed or rarely entire, silvery-silky-pubescent beneath, reticulated above: heads few-fld., in large corymbs. Australia.

avicenniæfòlia. Tree to 20 ft.: lvs. oval-lanceolate, to 4 in. long, entire, white- or buff-tomentose beneath: heads of 2 or 3 fls., ⅕ in. long, in long-stalked branched corymbs. New Zeal.

capillàris: *O. arborescens* var.

Colensòi. Shrub to 10 ft.: lvs. obovate to lanceolate, to 6 in. long, mostly acute, sharply toothed: heads discoid, dark brownish-purple, to 1 in. across, 4–10 in hairy racemes to 8 in. long. New Zeal.—Sometimes becomes a small tree to 30 ft. high with larger lvs.

Cúnninghamii. Shrub or tree to 25 ft.: lvs. ovate to linear-oblong, to 6 in. long, coarsely toothed, white-tomentose beneath: heads of 12–24 fls., ⅛ in. across, in large branching panicles. New Zeal. Var. **coloràta** has narrower lvs.

erubéscens: *O. myrsinoides* var.

Fórsteri: *O. paniculata.*

fragrantíssima. Shrub to 15 ft., with dark brown or black bark: lvs. elliptic-lanceolate to -ovate, to 1½ in. long, entire, silky-tomentose beneath: heads of 4–8 yellowish fragrant fls., ⅕ in. long, in sessile clusters. New Zeal.

furfuràcea. Shrub or tree to 20 ft.: lvs. oblong to ovate, to 4 in. long, entire or slightly toothed, silvery-tomentose beneath: heads of 5–12 fls., ⅓ in. long, in branched corymbs. New Zeal.

Gunniàna: *O. stellulata.*

Haàstii. Shrub to 8 ft.: lvs. oblong, to 1¼ in. long, entire, shining above, white-tomentose beneath: heads of 8–10 fls., ⅓ in. long, in long-stalked corymbs. New Zeal.

ilicifòlia. Shrub or tree to 20 ft., with musky odor: lvs. linear to lanceolate, to 4 in. long, spiny-toothed and undulate, yellowish-tomentose beneath: heads of 8–12 florets, ⅓ in. long, in large corymbs. New Zeal.

lineàta. Shrub with branches often drooping: lvs. clustered, narrow-linear, to 2 in. long, margins revolute, white-tomentose beneath: heads of numerous fls., in clusters. New Zeal.

macrodónta. Resembling *O. ilicifolia* but with ovate or oblong lvs. toothed but not spiny. New Zeal

moschàta. Shrub to 12 ft., with musky odor: lvs. obovate-oblong, to ¾ in. long, entire, white-tomentose beneath: heads of 12–20 florets, ¼ in. long, in small long-stalked corymbs. New Zeal.

myrsinoìdes. Low shrub: lvs. obovate or oblong, to ½ in. long, finely toothed, shining and reticulated above, tomentose beneath: heads of 4–8 fls., in leafy panicles. Australia. Var. **erubéscens** (*O. erubescens*) has lvs. to 2 in. long and larger heads.

nítida: *O. arborescens.*

nummularifòlia. Shrub to 10 ft.: lvs. orbicular to obovate, to ½ in. long, margins recurved, very thick, shining and reticulated above, tomentose beneath: heads of 6–12 fls., ½ in. long, solitary. New Zeal.

odoràta. Shrub to 12 ft.: lvs. opposite or clustered, linear-obovate, to 1 in. long, entire, white-tomentose beneath: heads of 20–35 fls., in clusters. New Zeal.

oleifòlia. Shrub to 8 ft.: lvs. lanceolate or oblong-lanceolate, to 3 in. long, entire, reticulated above, white-tomentose beneath: heads of 4–8 fls., ⅓ in. long, in loose corymbs. New Zeal.

pachyphýlla. Shrub to 8 ft.: lvs. ovate or oblong-ovate, to 5 in. long, entire or undulate, very thick, silvery-tomentose beneath: heads of 7–10 fls., ¾ in long, in corymbs to 5 in. across. New Zeal.

paniculàta (*O. Forsteri*). Shrub or tree to 20 ft.: lvs. oblong or ovate, to 3 in. long, undulate, white-tomentose beneath: heads of 1 fl., ⅕ in. long, in branched corymbs. New Zeal. Var. **ellíptica** has narrower lvs.

pannòsa. Shrub: lvs. ovate-cordate to oblong, to 3 in. long, entire, reticulated above, densely tomentose beneath: fls. to 1 in. long, in solitary heads. Australia.

parvifòlia: *O. virgata.*

Solándri. Shrub to 15 ft.: lvs. opposite or clustered, linear-obovate, to ½ in. long, margins recurved, yellowish-tomentose beneath: heads of 8–20 florets, ⅓ in. long, solitary. New Zeal.

stellulàta (*O. Gunniana*). Shrub to 5 ft.: lvs. oblong or lanceolate, to 3 in. long, sinuate-toothed, white-tomentose beneath: heads of 20 or more fls., in leafy panicles. Australia.

suàvis. Shrub or tree to 18 ft.: lvs. linear-oblong to ovate, to 1½ in. long, entire, yellowish-tomentose beneath: heads of 6–10 fls., ⅕ in. long, in branched panicles. New Zeal.

Thómsonii. Tree to 15 ft.: lvs. oblong-obovate, to 6 in. long, entire, reticulated above, silvery-tomentose beneath: heads ⅓ in. long, in large corymbs. New Zeal.

Tràversii. Tree to 30 ft.: lvs. opposite, oblong or ovate, to 2½ in. long, entire, white-tomentose beneath: heads of 5–15 disk-fls., ¼ in. long, in branching panicles. New Zeal.

virgàta (*O. parvifolia*). Shrub to 10 ft.: lvs. opposite or clustered, linear-obovate, to ½ in. long, white-tomentose beneath: heads of 5–12 fls., ¼ in. long, solitary or clustered. New Zeal.

OLEASTER: *Elæagnus angustifolia.*

OLIVE. The developed fruit of *Olea europæa*, grown extensively in Mediterranean countries, and in North America well adapted to parts of California, Arizona, and often grown for ornament and interest in other southern regions.

Olive is somewhat more tender, or requires more sum total of heat, than the wine grape (*Vitis vinifera*). The olive attains great size with age, and eventually the trees should stand 40 feet or more apart each way, but plantations are commonly set at 25 to 30 feet, often with the idea of thinning out the trees in time. The crop demands a deep fertile soil but well drained, and a clear fogless atmosphere is desired for the best results. Although drought resistant, the olive thrives well under intelligent irrigation, the requirements being 30 to 40 acre-inches a year, including rainfall.

Propagation of the olive is readily accomplished by means of softwood cuttings 4 or 5 inches long, only the leaves on the tip being retained and those usually cut back somewhat. The cuttings are started in sand under artificial heat and then removed to the nursery. Much larger and heavier cuttings of old wood are sometimes employed, the lower part being variously cut or wounded to stimulate root and stem production. The suckers about the base of the tree, taken with a heel from the trunk, are also employed. Seeds are also used in propagation, but the seedlings must be grafted to the desired variety. Cutting off the end of the stone or pit will hasten germination. When one year in the nursery the seedlings may be whip-grafted or side-grafted.

For best results the olive orchard should be given clean tillage. On neglected trees without good moisture supply, the fruit is small or it may not set freely. Attention is given to pruning, and insects and diseases must be promptly met.

For making the ordinary pickled olive, the fruits are gathered when they have reached practically full size but while still good green in color. Ripe pickles rich in eupeptic oil and high in food value are also in demand, and the fruit is taken from the tree when it is black. In any case the fruit is picked by hand to avoid bruising; this is true even when the crop is designed for oil, to prevent rot and mold. The fruit is mechanically graded for pickles, producing different lines or quotations of the product. It is then cleaned, the bitterness removed by lye, and the pickling process completed by hardening and preserving in salt. It requires about 6 pounds of olives to make 1 gallon of pickles, and about 1 ton to yield 35 gallons of oil. The average production of fruit is perhaps 1½ tons to the acre, but greater yields are obtained on the best plantations.

OLIVE, BLACK: *Bucida Buceras.* **False:** *Elæodendron orientale.* **Russian:** *Elæagnus angustifolia.* **Spurge-:** *Cneorum tricoccon.* **-Wood Bark, Bermuda:** *Elæodendron Laneanum.*

OLIVERANTHUS: *Echeveria Harmsii.*

OLNÈYA. *Leguminosæ.* A spiny tree to 25 ft., native in the deserts of Ariz. to Lower Calif. **O. Tesòta.** Desert Ironwood. Lvs. pinnate, the lfts. to ¾ in. long, grayish: fls. papilionaceous, violet-purple, in racemes about 1 in. long: pods oblong, to 3 in. or more long, slightly constricted between seeds.—The seeds or beans have been utilized as food by the Indians.

OLSYNIUM: *Sisyrinchium.*

OMPHALÒDES. Navelwort. Navel-seed. *Boraginaceæ.* Ann. and per. low herbs much like Myosotis but differing in technical characters, mostly in Eu. and Asia, with alternate simple lvs. and white or blue fls. in loose racemes resembling forget-me-nots.

A few species are grown in the flower-garden. They succeed in moist partially shady or sunny situations. Propagated by seeds sown in spring or by division.

cappadócica (*O. cornifolia*). Per. to 10 in.: lvs. ovate, heart-shaped at base: fls. rich blue with white in center, ⅓ in. across, in spring. Asia Minor.

cornifòlia: *O. cappadocica.*

japónica. Probably per., to 6 in.: lvs. spatulate-oblong to oblanceolate, sessile, acute, base somewhat wedge-shaped, margins entire or remotely wavy: fls. to ⅛ in. across, calyx ciliate and pilose with lanceolate lobes. Japan.

linifòlia (*Cynoglossum linifolium*). Ann. to 1 ft.: lvs. spatulate to linear-lanceolate: fls. white, to ½ in. across, in summer and autumn. Spain, Portugal. Var. **cæruléscens** has bluish fls. sometimes tinged rose.

Lucíliæ. Per. to 8 in.: lvs. ovate or oblong: fls. rose turning to blue, ½ in. across, in spring. Greece, Asia Minor.

lusitánica (*O. nitida*). Per. to 2 ft.: lvs. oblong-lanceolate, shining above: fls. blue with white center, ⅓ in. across, in spring. Portugal.

nítida: *O. lusitanica.*

vérna. Creeping Forget-Me-Not. Per. to 8 in., bearing stolons: lvs. ovate to ovate-lanceolate: fls. blue, ½ in. across, in spring. Eu. Var. **álba** has white fls.

OMPHALOGRÁMMA. *Primulaceæ.* Small Asiatic genus closely allied to Primula, differing in fls. solitary, before the lvs., calyx-lobes 5–8, seeds much compressed and attached by a narrow linear hilum on the ventral side.

vinciflòrum (*Primula vinciflora*). To 9 in.: lvs. oblong or oval, erect and overlapping, ciliate, papery: fls. purple-violet or blue, 1½ in. across. China.

ONAGRA: *Œnothera.*

ONAGRÀCEÆ (*Œnotheraceæ*). Evening-Primrose Family. Herbs or only rarely shrubs, of various habit, terrestrial or aquatic, ann., bien., per., yielding ornamental subjects in several genera. The ovary, mostly elongated, is inferior and prominent, crowned with the calyx and polypetalous corolla, and commonly with projecting or conspicuous essential organs. The species are several hundred in many parts of the world, in about 40 genera. Most of them are of easy cult. The genera treated in this book are Boisduvalia, Circæa, Clarkia, Epilobium, Eucharidium, Fuchsia, Gaura, Godetia, Jussiæa, Lopezia, Ludwigia, Œnothera, Trapa (sometimes referred to Trapaceæ or Hydrocaryaceæ), Zauschneria.

ONCIDIÒDA. *Orchidaceæ.* A group comprising a few hybrids between the genera Oncidium and Cochlioda.

Chárlesworthii (*O. incurvum* × *C. Noezliana*).

ONCÍDIUM. *Orchidaceæ.* Epiphytic orchids of trop. Amer. with commonly 1-2-lvd. pseudobulbs and fls. in lateral racemes or panicles, the sepals and petals often nearly equal, the lip usually 3-lobed and crested or tubercled at base. They are plants both of cool mts. and hot regions, of various requirements in cult. from coolhouse to warmhouse, depending on the species; they usually require considerable sun and air; see *Orchids* for cult.

alàtum. Pseudobulbs ovoid, to ¾ in. long, 1-lvd. at the apex, flattened: lf. oblong, to about 3 in. long, acute: scape to 10 in. long, flattened, winged; fls. yellow; sepals and petals with dark markings. W. Indies.

altíssimum. Pseudobulbs with 1 or 2 lvs. to 16 in. long: fls. in nodding racemes to about 4 ft. long, yellow barred with brown. W. Indies.

ampliàtum. Pseudobulbs with 1–2 lvs. to 15½ in. long and 3½ in. wide: infl. a many-fld. raceme or panicle to about 3 ft. long; fls. bright yellow with red-brown blotches near center, white on the back. Dec.–May. Cent. Amer., Trinidad, Colombia. Var. **màjus** has larger fls.

anthocrène. Pseudobulbs with 2 lvs. to 1 ft. long and 2 in. wide: infl. arching, racemes or panicles many-fld., to 4 ft. long; fls. brown banded and edged with yellow. Colombia.

auròsum: *O. excavatum.*

barbàtum. Pseudobulbs with 1 lf. to 4⅓ in. long: infl. racemose or paniculate, loosely few-fld., to 2 ft. long; sepals and petals yellow blotched with brown; lip 3-lobed, yellow, having crest dotted with red. Jan.–June. Brazil.

carthaginénse. Pseudobulbs much reduced, 1-lvd.: lf. oblong to elliptic, fleshy, to 19½ in. long: infl. loosely paniculate, many-fld., to 5 ft. long; fls. white spotted with purplish-rose, to 1 in. across, segms. crisped. Blooms all year. Cent. Amer., W. Indies, N. S. Amer. Var. **ròseum,** fls. smaller, yellowish with deep red spots.

Cavendishiànum. Pseudobulbs much reduced, with 1 oblong-elliptic lf. to about 1 ft. long: infl. usually paniculate and many-fld., to nearly 4 ft. long; fls. rather large, yellow; sepals and petals commonly spotted with brown. Oct.–May. Mex., Guatemala.

Cebollèta. Pseudobulbs very small, with 1 slender cylindrical lf. to about 23 in. long: infl. commonly paniculate and many-fld., to 32 in. long; fls. dull yellow; sepals and petals spotted with red-brown. Jan.–May. Cent. Amer., W. Indies, S. Amer.

cóncolor (*O. unguiculatum*). Pseudobulbs with 2 lvs. to 6 in. long: fls. citron-yellow, in 6–12-fld. drooping racemes to 1 ft. long. Oct.–May. Brazil.

cornígerum. Pseudobulbs with 1 lf. to 6 in. long: infl. paniculate, many-fld., to 2 ft. long; fls. small, about ¾ in. across, yellow spotted with dark red. Nov.–Feb. Brazil, Paraguay.

críspum. Pseudobulbs with 2–3 lvs. to 8 in. long: infl. loosely paniculate, to 45 in. long, many-fld.; fls. to 3 in. across, very wavy, chestnut-brown sometimes spotted with yellow. May–Aug., Nov.–Dec. Brazil.

cúrtum. Pseudobulbs with 2 lvs. to 1 ft. long: infl. loosely paniculate, many-fld., to about 3 ft. long; fls. to 2 in. across; sepals chestnut-brown barred with yellow, petals brown with yellow margin; lip yellow with broad brown margin. Spring and summer. Brazil.

divaricàtum. Pseudobulbs with 1 lf. to 1 ft. long: fls. brown tipped with yellow, about 1 in. across, in much branched panicles to about 6 ft. high. Aug.–Oct. Brazil.

excavàtum (*O. aurosum*). Pseudobulbs with 1–2 lvs. to 20 in. long: fls. yellow spotted with brown, 1½ in. across, in many-fld. panicles to 3 ft. long. Oct.–Mar. Peru, Ecuador.

flexuòsum. Pseudobulbs with 1–2 lvs. to 9½ in. long: infl. paniculate, many-fld., to 3 ft. high; fls. yellow spotted near base of each segm. with brown, ¾–1¼ in. across. Oct.–Mar., June–Aug. Brazil, Paraguay.

Fórbesii. Pseudobulbs with 1–2 lvs. to 10 in. long: infl. usually paniculate, many-fld., to 3 ft. high; fls. chestnut-brown edged with yellow, 2–2½ in. across. Mar.–Apr., Oct.–Nov. Brazil.

fuscàtum: *Miltonia Warscewiczii.*

Gárdneri. Pseudobulbs with 2 lvs. to 1 ft. long: infl. paniculate, many-fld., to 3 ft. long; fls. about 2 in. across; sepals brown barred with yellow; petals brown margined with yellow; lip yellow with marginal band of red-brown spots. Aug.-Dec. Brazil.

Harrisoniànum. Pseudobulbs with 1 lf. to 6 in. long: infl. paniculate, many-fld., to about 1 ft. long; fls. about ¾ in. across, yellow spotted with red. Oct.–May. Brazil.

hastàtum. Pseudobulbs with 1–2 lvs. to 9 in. long: infl. loosely paniculate, to 5 ft. long; fls. about 1½ in. across; sepals and petals marked with yellow-green; lip with white or yellow side lobes and red mid-lobe tipped with green. Mex.

incúrvum. Pseudobulbs with 2–3 lvs. to 16 in. long: infl. loosely paniculate, many-fld., to about 5 ft. long; fls. to 1½ in. across, rose-lilac spotted with white. July–Jan. Mex.

intermèdium. Pseudobulbs lacking: lvs. clustered at the base, distichous, equitant, oblong-lanceolate, falcate, to 4 in. long, margins denticulate: fls. in racemes or panicles, golden-yellow. W. Indies.

Jonesiànum. Pseudobulbs very small, with 1 almost cylindrical lf. to 16 in. long and ⅓ in. wide: infl. racemose, loosely 3–16-fld., to 20 in. long; fls. about 2 in. across; sepals and petals whitish-yellow or greenish spotted with brown; lip white with yellow base spotted with red. Aug.–Feb., May. Paraguay, Bolivia.

Krameriànum. Pseudobulbs flattened-orbicular, 1-lvd.: lf. to 9 in. long: infl. to 30 in. long, with swollen nodes, several-fld. in succession; fls. very large, about 5 in. in vertical diam.; dorsal sepal and petals chocolate-brown, lateral sepals orange-red mottled with yellow; lip wavy, citron-yellow bordered by reddish-brown. Mar.-May, Nov.–Dec. Ecuador, Colombia.

Lanceànum. Pseudobulbs minute, 1–lvd.: lvs. to 20 in. long and 5 in. wide, spotted with violet: infl. exceeding the lvs., racemose or paniculate, few- to many-fld.; fls. to 2½ in. across; sepals and petals yellow or green thickly spotted with brown; lip violet-purple at base and rose above. May–Aug. British and Dutch Guiana, Trinidad. Var. **Louvrexiànum** has the apical half of lip white.

leucochìlum. Pseudobulbs with 2 lvs. to over 2 ft. long: infl. paniculate, loosely many-fld., to 7 ft. high; sepals and petals greenish barred and spotted with dark brown; lip white with lavender dots at base. Mar.–Aug., Nov. Mex. to Honduras.

lùridum. Differs from *O. carthaginense* in its larger fls., and dull red to yellowish-brown sepals and petals which are sometimes tinged with violet. Fla., W. Indies, Cent. Amer., S. Amer.

macránthum. Pseudobulbs with 2 lvs. to almost 2 ft. long: infl. an elongate climbing panicle to 10 ft. long; fls. very large, to 4 in. across; sepals olive- or brown-yellow; petals golden-yellow; lip yellow with central white crest and dark red or purplish basal lobes. Blooms nearly all year. Colombia, Ecuador, Peru.

Marshalliànum. Pseudobulbs with 2–3 lvs. to about 1 ft. long: infl. a lax many-fld. panicle to about 5 ft. high; fls. to 2½ in. across; sepals greenish-yellow barred with brown; petals golden-yellow with brown spots, wavy; lip yellow with red spots at base. Apr.–June. Brazil.

microchìlum. Pseudobulbs with 1 lf. to 1 ft. long: infl. loosely paniculate, to 4 ft. long, many-fld.; fls. 1¼ in. across; sepals brownish edged with yellow; petals similar, chestnut-brown or brown-purple; lip white spotted with reddish-purple. Aug. Guatemala.

oblongàtum. Pseudobulbs with 2 lvs. to 18 in. long: infl. paniculate, many-fld.; fls. sulfur-yellow with reddish-brown spots at base of segms. July-Aug. Mex., Guatemala.

ornithorhýnchum. Pseudobulbs with 2 lvs. to 10 in. long: infl. a drooping many-fld. panicle to 1½ ft. long; fls. rose-lilac with yellow crest on lip, about ¾ in. across. Aug.–Dec. Mex. to Salvador. Var. **albiflòrum** has whitish fls.

Papìlio. Butterfly Orchid. Pseudobulbs with 1 lf. to 9 in. long and 2¾ in. wide, mottled with purplish-brown: infl. to 4 ft. long; fls. 1–several, successive, very large, to about 4 in. across; dorsal sepal and petals linear, reddish-brown sparingly marked with yellow; lateral sepals oblong, wavy, chestnut-brown with yellow markings; lip yellow with broad brown marginal band. Blooms all year. Trinidad, Venezuela, Brazil, Peru.

phymatochìlum. Pseudobulbs with 1 lf. to 14 in. long: infl. loosely paniculate, many-fld., to 5 ft. long; fls. 2 in. across; sepals and petals greenish-yellow spotted with brown (sometimes yellowish-white spotted with orange); lip white with red spots around the basal yellow crest. Apr.–May. Brazil.

Pùbes. Pseudobulbs with 1–2 lvs. to 5 in. long: infl. paniculate, to 2 ft. high, many-fld.; fls. about 1 in. across; sepals and petals brown barred with yellow, lateral sepals united; lip red-brown or purplish bordered with yellow. Dec.–Mar. Brazil, Paraguay.

pulvinàtum. Pseudobulbs with 1–2 lvs. to 1 ft. long: infl. loosely paniculate, many-fld., to 9 ft. long; fls. to 1 in. across; sepals and petals with basal half brown and apical half yellow; lip yellow spotted with red. June–Dec. Brazil, Paraguay, Argentina.

rupéstre. Pseudobulbs with 1 lf. to 15 in. long: infl. paniculate, few-fld.; sepals and petals bright yellow spotted with reddish-brown at base; lip golden-yellow with reddish-brown blotch. Apr.–Sept. Colombia, Ecuador.

sarcòdes. Pseudobulbs with 2–3 lvs. to 10 in. long: infl. loosely paniculate, many-fld., to 6 ft. long; sepals and petals chestnut-brown bordered with yellow; lip bright yellow with red-brown spots around the crest. Apr.–July. Brazil.

sphacelàtum. Pseudobulbs with 2–3 lvs. to about 2 ft. long: infl. loosely paniculate, many-fld., to 5 ft. long; fls. 1 in. across; sepals and petals yellow spotted with brown; lip golden-yellow with red-brown band in front of crest. Feb.–Sept. Mex. to Honduras.

spléndidum: *O. tigrinum* var.

tigrìnum. Pseudobulbs with 2–3 lvs. to 12 in. long: infl. usually loosely paniculate, to about 48 in. high; fls. large, to nearly 3 in. across; sepals and petals greenish-yellow blotched with red-brown; lip large, yellow. Oct.–Feb. Mex. Var. **spléndidum** (*O. splendidum*). Pseudobulbs 1–2-lvd.: claw of lip broader than in *O. tigrinum* with smaller lateral lobes. Dec.–Feb. Guatemala.

unguiculàtum: *O. concolor*.

uniflòrum. Plant small: pseudobulbs with 1 lf. to about 6 in. long: infl. racemose, 1–2-fld., about length of lvs.; sepals and petals greenish-yellow spotted with brown; lip bright yellow spotted with tawny-purple below. Apr., July–Aug., Dec. Brazil.

varicòsum. Pseudobulbs with 2–3 lvs. to 12 in. long: infl. a many-fld. nodding panicle to 5 ft. long; fls. about 1 in. across; sepals and petals dull yellow or greenish barred with red-brown; lip large, golden-yellow. Sept.–July. Brazil, Paraguay, Bolivia. Var. **Rógersii** has larger fls. to 2 in. across.

Wentworthiànum. Pseudobulbs with 1–2 lvs. to 12 in. long: infl. loosely paniculate, to 12 ft. long; fls. about 1 in. across, yellow spotted with brown. Apr.-June. Guatemala.

ÓNCOBA. *Flacourtiaceæ.* Trop. polygamous shrubs or small trees with alternate lvs., white, reddish or yellow fls. in clusters or solitary, and fr. a leathery berry; one species is planted in Calif.

Roútledgei. Spiny shrub to 20 ft.: lvs. oblong, wavy-toothed: fls. white, 2 in. across, fragrant. Trop. Afr.

ONION (species of *Allium*). Well-known hardy cool-season biennials and perennials, cultivated in the vegetable-garden for the edible bulbs and sometimes for the leaves that are used in seasoning. Others of the genus are grown for the ornamental flowers, for which see *Allium.*

The common onion is *Allium Cepa,* native in western Asia, ordinarily biennial, with fistulose or hollow leaves and a prominent bulb. The Welsh onion is *A. fistulosum,* also Asian, a more leafy plant and with bulb soft and little thicker than the neck. The shallot is *A. ascalonicum,* probably Asian but not identified as an indigen; it differs from the onion in small stature, slender awl-like leaves and small more or less angular bulbs that part into several bulbs cohering by the base; the usual shallot of cultivation, however, is a small cluster onion, a form of *Allium Cepa.*

Another fistulose species is the perennial tufted *A. Schœnoprasum,* chive, native in Europe and Asia. It does not produce distinct bulbs. The leaves are used for seasoning, being cut as needed. It is a durable plant and makes an attractive border; the rose-purple flower-heads are ornamental when allowed to develop. The chive (or cive) is readily raised from seeds and propagates well by division. It is hardy and requires no special care, although it is well to divide and reset the stools when they become weak from over-cutting or crowding.

Flat-leaved alliums grown for eating are leek and garlic, which see in their alphabetic order. The leek has a simple bulb, not much thicker than the crown. Garlic is a much smaller plant with the thin-skinned bulb breaking into several integral parts or cloves. Rocambole is a larger plant than garlic (*Allium Scorodoprasum*), grown the same but little seen in North America.

The common field onion is propagated directly from seeds. Other races of the same species are propagated asexually, as by (*a*) sets, (*b*) multipliers, (*c*) "tops" or "acorns"; these races are grown for small green early bunch onions. (*a*) Sets are small onions, the size of a hazelnut more or less, that were arrested in their development by being grown very thickly (from seed) and ripened off early in the season; when planted the next spring they resume their growth. (*b*) Multipliers or potato onions are a form in which the bulb divides into separable parts; each part is planted the following spring (or autumn far South) as are the sets. (*c*) Top onions are little bulbels that appear in the flower-cluster in the place of blossoms; they are handled the same as sets.

Being hardy, onions are started as early in the spring as the ground is dry and settled and can be made fit. The land should be in good tilth, fine and mellow. In the far South, they may be sown in autumn.

Rows stand 12 to 18 inches apart. Seed is sown thickly, covered ½–1 inch deep, and the seedlings or young plants thinned to 2 inches or more apart, depending on the variety. In the home garden, these young onions may be used on the table. Good tillage must be provided until the onions are nearly grown. Soil should hold moisture well as the plants are not deep-rooted; it should be liberally supplied with available plant-food. Soils that bake and become very dry are not adapted to onion growing. For these reasons, well-drained swamp lands are popular for onion culture, but good crops can be grown in the ordinary garden if the earth is deeply prepared, fertile, well supplied with humus, and in superior tilth. Tillage is usually by means of hand tools. Raw rough stable-manure is not used for onions.

After being pulled or lifted, the mature bulbs are allowed to cure a day or two before placed in storage; sometimes they are cured under cover so that they become dry and free from earth. After curing the tops are cut off, about a half inch above the bulb. For home use, onions are stored in the cellar, much as are potatoes.

There are many varieties, differing in season, size, shape, color, flavor. Danvers, Wethersfield, Southport, are standard kinds or races. The large Bermuda, Spanish, and Italian onions require a long season and are usually mild in flavor. A good crop of field onions is 300–500 bushels to the acre, but greater yields are frequently obtained.

Onions are sometimes transplanted when very young, the seeds having been sown in a seed-bed usually under glass, as in a hotbed. Early onions of uniform size, for table use green and for sale as "bunch onions," may be produced by this method.

The onion is subject to serious diseases and pests. The most recent advice should be available from the experiment stations. Smut is treated by applying formaldehyde solution in the drill at seeding time.

The Welsh onion or ciboule is grown for its leaves, employed as seasoning; raised from seeds sown in spring, the foliage being ready in autumn or following spring.

ONION, SEA-: *Urginea maritima.*

ONÓBRYCHIS. *Leguminosæ.* Per. herbs or spiny shrubs with pinnate lvs., papilionaceous fls. in axillary racemes or spikes, and flattened often spiny or crested pods; *O. viciæfolia* is grown for forage and others occasionally for ornament. Seeds should be sown in spring or fall where the plants are to grow. Sainfoin is adapted to dry soil.

Cáput-gálli. Ann. to 18 in., white-pubescent: lfts. 10–14: fls. purple, very small, usually 3–6 in compact racemes, the peduncle nearly as long as lvs. Medit. region.

Cristagálli. To 1 ft.: lfts. less than ½ in. long: fls. flesh-colored: pods with deeply lobed crest on back, to ¾ in. long. Medit. region.

sativa: *O. viciæfolia.*

viciæfòlia (*O. sativa*). Sainfoin or Saintfoin. Holy Clover. Esparcet. To 2 ft.: lfts. 1 in. long: fls. pale pink: pods toothed on back, ¼ in. long. Eu., N. Asia.

ONOCLÈA. *Polypodiaceæ.* One coarse and not very attractive fern with creeping rhizomes and two knds of fronds, native of north temp. regions, sometimes transferred to grounds. See *Ferns.* **O. sensíbilis.** Sensitive-Fern. Sterile fronds to 4½ ft. long, deeply pinnatifid, pinnæ wavy-toothed; fertile fronds to 2½ ft. long, 2-pinnate, the segms. rolled up into bead-like bodies forming panicles. Newf. west and south to Gulf states, in moist pastures and similar places. For *O. Struthiopteris* and *nodulosa* see *Pteretis.*

ONÒNIS. Rest-Harrow. *Leguminosæ.* Herbs and shrubs native to Eu., N. Afr. and W. Asia, with lvs. mostly of 3 lfts., papilionaceous fls. solitary or in racemes, and cylindrical or swollen pods; grown in borders and rock-gardens. Of easy cult.; propagated by seeds or division.

aragonénsis. Subshrub to 10 in., branches contorted, very pubescent: lfts. orbicular, glabrous, leathery, margins dentate: fls. yellow, in terminal non-leafy racemes. Medit. region.

arvénsis: *O. spinosa*, but material so listed may be *O. hircina.*

cenísia. Per. to 10 in., slightly woody at base: lfts. oboval, denticulate: fls. rose, solitary on naked axillary peduncles, in summer. S. Eu.

Colúmnæ: *O. pusilla.*

fruticòsa. Shrub to 2 ft.: lfts. oblong-ovate, coarsely serrate: fls. pink or whitish, 2–3 together. June–Aug. S. Eu., N. Afr.

hircìna. Shrubby, to 2 ft.: lfts. oblong-lanceolate: fls. rose and white, usually 2 together, in summer. Eu.

minutíssima. Per. to 18 in., somewhat woody at base: lfts. obovate, denticulate, terminal lft. sessile: fls. yellow, in leafy spikes, May–Sept.: pod glabrous. S. Eu., N. Afr.

Nàtrix. Per. to 1½ ft.: lfts. oblong: fls. yellow, solitary. June–July. S. Eu.

pusílla (*O. Columnæ*). Per. to 10 in.: lfts. oval, terminal lft. petioled: fls. yellow, in leafy spikes, May–June: pod pubescent. S. Eu.

rèpens. Prostrate or ascending: lfts. ovate or obovate: fls. pink, soiitary. June–July. S. Eu.

rotundifòlia. Shrubby, to 1½ ft.: lfts. round to ovate: fls. bright rose, 2–3 together, in summer. S. Eu.

spinòsa (*O. arvensis*). Per. to 2 ft., sometimes thorny: lfts. oblong: fls. pink, 1–2 together. June–July. Eu.

ONOPÓRDUM. *Compositæ.* Coarse ann. and bien. woolly thistle-like herbs with large alternate prickly-toothed or -lobed lvs. and solitary or clustered heads of purple or white disk-fls., the bracts of involucre often spiny-tipped; pappus of bristles; native of the Old World, a few planted for ornament. Propagated by seed.

Acánthium. Scotch Thistle. Bien. to 9 ft., white-tomentose all over: lvs. oblong, prickly, lobed and toothed, the lower often 1 ft. long: heads to 2 in. across, usually solitary, pale purple, spiny. Eu., Asia; nat. in E. N. Amer. Var. **álbum** has white fls.—The plant, or a form of it, is sometimes listed as "Robert Bruce."

acaùle. Bien., st. very short and seemingly absent: lvs. oblong, pinnatifid, woolly on both sides, lobes spiny: heads cushioned in basal rosette of lvs., very large, solitary, white. Medit. region.

alexandrìnum: *O. Sibthorpianum* var.

anatólicum: *O. Sibthorpianum.*

arábicum. Bien. with swollen deeply winged sts.: lvs. ovate-lanceolate, sinuate, spiny: heads solitary, purplish-red. Medit. region.

bracteàtum. Bien., tall, tomentose: lvs. oblong-lanceolate, shallowly lobed, spiny: heads large, globose, the involucral bracts recurved. E. Medit. region.

illýricum. Bien., sts. with spiny wings: lvs. oblong-lanceolate, pinnate into spiny lobes, white-tomentose: heads purple. S. Eu.

polycéphalum. Bien., densely tomentose, tall, sts. grooved: lvs. lanccolate, lobed, spiny: heads in corymbs, rose, spiny. E. Eu.

Sálteri: a hort. plant of unknown origin, to 5 ft., pyramidal, shining and silvery.

Sibthorpiànum (*O. anatolicum*). Bien. to 3 ft., white-tomentose: lvs. oblong-lanceolate, pinnate into spiny segms., sts. with spiny wings: heads to 3 in. across, purple, spiny. Medit. region. Var. **alexandrìnum** (*O. alexandrinum*) is less woolly.

taùricum. To 6 ft.: lvs. elliptic-oblong, lobed, spiny: infl. many-headed. S. Eu.

ONÓSMA. *Boraginaceæ.* Hairy ann., bien. and per. herbs of the Medit. region and Himalayas, sometimes undershrubs, with alternate simple lvs. and yellow, purple or white fls. in one-sided racemes; corolla tubular or urn-shaped, stamens commonly included. Sometimes grown in borders and rock-gardens. Propagated by seeds and cuttings in summer.

álbo-ròseum. Per. to 6 in., densely tomentose: lvs. oblong: fls. white changing to rose or violet, velvety, about 1 in. long. Asia Minor.

cássium. Per. to 1½ ft.: lvs. oblong: fls. yellow, about ¾ in. long. Syria.

decípiens: *O. nanum.*

echioìdes. Bien. or per. to 1½ ft.: lvs. spatulate or linear-lanceolate: fls. cylindrical, pale yellow or whitish, drooping. S. Eu. to W. Asia.

emòdi. To 1½ ft., hairy: lvs. oblanceolate: fls. purple, ⅓ in. long. Himalayas.

helvéticum: a Swiss form of *O. stellulatum.*

nànum (*O. decipiens*). Probably per., to 5 in.: lvs. linear-lanceolate, bristly: fls. white, glabrous. Asia Minor.

rupéstre. Per. to 6 in.: lvs. linear-lanceolate, to 1 in. long, soft-hairy, acute or obtuse, sessile: fls. pale yellow in bud becoming ivory-white, narrowly urn-shaped, to ¾ in. long on short red pedicels. Caucasus.

stellàris: listed name.

stellulàtum. Per. to 8 in.: lvs. linear-oblong: fls. tubular, yellow, 1 in. long. S. Eu. Var. **taùricum** (*O. tauricum*) has revolute lvs. and fls. to 1½ in. long.

taùricum: *O. stellulatum* var.

tubiflòrum. Lvs. linear, stellate-hairy: fls. to 1½ in. long, in lax elongate racemes. Bulgaria.

venústum: listed name.

Visiànii. Bien., sts. setose, violaceous: lvs. linear, white-hairy beneath, sessile: fls. white becoming yellowish, calyx softly setose. N. E. Medit. region.

ONOSMÒDIUM. False Gromwell. *Boraginaceæ.* Hairy per. herbs of N. Amer. and Mex., with alternate lvs. and white, yellowish or greenish tubular fls. in scorpioid spikes or racemes; may be transplanted but of little ornamental value.

occidentàle. To 3½ ft.: lvs. lanceolate or ovate-lanceolate, to 3 in. long: fls. to ¾ in. long, pubescent outside. Ill. to New Mex.

ONÝCHIUM. Claw-Fern. *Polypodiaceæ.* Small graceful ferns with 3–4-pinnate fronds of two kinds and sori borne at tips of segms.; native in Asia, Afr. and trop. Amer. Grown as pot and pan plants in conservatories and similar places. See *Ferns.*

japónicum. Fronds to 1½ ft. long, thin, light green, 2–4-pinnate into very small segms. Himalayas to Java and Japan.

OOPHÝTUM. *Aizoaceæ.* Two species of tufted per. succulents of the S. African Mesembryanthemum group: plant-bodies ovoid, the solitary fls. borne in the small fissure; petals many, in 2–3 series; stamens many; stigmas usually 6, filiform.

nànum (*M. nanum*). Growths to about ½ in. high and thick, glabrous, with minute dots: fls. rose, ⅓ in. across.

OPHIOGLOSSÀCEÆ. Adders-Tongue Family. Three genera, in both hemispheres, of more or less fleshy ferns with simple or compound lvs. from a short rootstock, and with yellow spores in sporangia borne in separate fertile spikes or panicles. Some of the species are very small and commonly overlooked when in grass or other herbage. The species of this family are planted sparingly as wild-garden or perhaps rock-garden subjects. Genera herein treated are Botrychium and Ophioglossum.

OPHIOGLÓSSUM. Adders-Tongue-Fern. *Ophioglossaceæ.* Small ferns with solitary or few succulent lvs., consisting of a sterile usually entire blade and a contracted long-stalked fertile spike bearing 2 rows of fleshy spore-clusters; of wide distribution, but not often seen by the casual observer and little planted. See *Ferns.*

Éngelmannii. Lvs. usually 2–5, to 9 in. long, the sterile lf.-blade to 3½ in. long and 2 in. wide, sessile: fertile spikes to 1 in. long, on stalks to 4 in. long. Va. to Ariz. and Mex.

vulgàtum. Hardy: lf. usually solitary, to 16 in. long including the stalk, lf.-blade to 5 in. long and 2 in. wide, sessile: fertile spikes about 2 in. long, on stalks to 10 in. long. N. S. to Fla., Eu., Asia, mostly in moist meadows and woods.

OPHIOPÒGON (*Mondo*). Lily-Turf. *Liliaceæ.* Evergreen sod-forming stemless per. narrow-lvd. herbs of E. Asia, not many species, valuable as ground-cover and as pot and porch plants, sometimes seen in the conservatory. The following species are adaptable in parts of N. Y.: fls. small, bluish or white, drooping, borne in racemes among the foliage, the ovary inferior, the filaments very short and anthers pointed: fr. berry-like and 1-seeded, blue.

The culture is simple in sun or shade. Propagated by division. The oldest name for this genus is Mondo, and combinations have been made under it, but Ophiopogon has been long in use and is now officially conserved.

Jabùran (*M. Jaburan*). Jaburan or White L. Roots stout and cord-like, tubers none: lvs. long and grass-like, to 2 ft. or more, and about ½ in. broad: fls. white, ½ in. or more long, in a short terminal raceme: fr. oblong, violet-blue. Japan. Var. **vittàtus** has lighter-striped lvs. Leaf color forms are known as vars. **aùreus** and **variegàtus.**—*Liriope Muscari* often passes as *O. Jaburan.*

japónicus (*M. japonicum*). Dwarf L. Low, with long underground stolons and the roots tuber-bearing: lvs. many, to 10 or 12 in. long, dark green, commonly curved: fls. small, light lilac, in a short loose raceme: fr. blue, size of pea. Japan, Korea.—An excellent sod-forming plant.

ÒPHRYS. *Orchidaceæ.* Terrestrial orchids bearing basal and cauline lvs. and fls. in terminal racemes, the petals smaller than sepals, lip entire or 3-lobed. For cult. see *Orchids.*

apífera. Plant to 20 in. high: lvs. oblong to lanceolate-elliptic: racemes loose, few-fld.; sepals pink; petals reddish-green or dark green; lip dark purple or velvety-brown with yellow-green markings. Eu., N. Afr.—Sometimes planted in rock-gardens or similar places.

cordàta: *Listera cordata.*

OPHTHALMOPHÝLLUM. *Aizoaceæ.* Stemless dwarf succulents from S. Afr., allied to Conophytum and a segregate of the Mesembryanthemum group: lvs. united into a plant-body with small fissure at top, pubescent, transparent at tips: fls. white or rose, short-stalked.

Frièdrichiæ (*M. Friedrichiæ*). Plant-body cylindrical, to 1½ in. high and ¾ in. thick, reddish: fls. purplish or white, ⅓ in. across.

Hérrei. Plant-body to 1½ in. high and ¾ in. thick, olive-green, velutinous: fls. white or pale rose, to 1 in. across, slightly fragrant.

Maùghanii (*Conophytum Maughanii*). Plant-body 1 in. high and ⅓ in. wide and thick, smooth and light or yellowish-green: fls. ⅗ in. across.

Schléchteri. Similar to *O. Friedrichiæ* but smaller, about ½ in. high.

Schúldtii. Plant-body to 1 in. high and ⅝ in. wide and thick, cylindrical or somewhat obconical, fissure to ¼ in. wide: fls. creamy-white, 1 in. long, nocturnal.

Trièbneri. Distinguished from *O. Friedrichiæ* by the flattened rather than rounded lobes, thickly dotted and less transparent.

OPIUMA: *Pithecellobium dulce.*

OPLÍSMENUS. *Gramineæ.* Per. grasses weak or decumbent at base, lvs. broad and flat, spikelets in interrupted spikes; native in tropics and subtropics and planted in greenhouses for hanging-baskets and edgings of beds; propagated by rooting sts. See *Grasses.*

compósitus. Basket-Grass. Sts. to 3 ft. or more long, somewhat trailing: lvs. to 4 in. long and 1 in. wide: spikes to 4 in. long, awned. Afr., trop. Amer.—Has been cult. under the erroneous name of *O. Burmannii.* Var. **vittàtus** has lvs. striped with white and pink.

hirtéllus. Sts. to 2½ ft., usually about 14 in., creeping with fruiting culms generally erect or ascending: purple awned spikes in panicles to 4 in. long. Mex., W. Indies, S. Amer.—A variegated-lvd. form is known to florists as *Panicum variegatum.*

OPLÓPANAX (*Echinopanax*). *Araliaceæ.* A few prickly deciduous shrubs native in W. N. Amer. and E. Asia, with alternate palmately 5–7-lobed lvs. and greenish-white fls. in panicled umbels. Propagated by seeds, suckers, and root-cuttings.

hórridum. Devils-Club. To 12 ft.: lvs. orbicular-ovate, to 10 in. across, toothed, prickly on both sides, bright green: fr. scarlet, ⅓ in. long. Alaska to Calif.

OPOPANAX: *Acacia Farnesiana.*

OPULASTER: *Physocarpus.*

OPÚNTIA. Prickly-Pear. Tuna. Cholla. *Cactaceæ.* Many species, 250 or more, although more than three times this number of names are known in the genus, native from Canada to the straits of Magellan. For the most part they are coarse and awkward plants from the cultivator's point of view and do not lend themselves well to pot or tub culture, and relatively few of them are well known to hort. although any number may be transferred to grounds. The frs. of some of them, as the tunas and Indian-fig, are edible, and some of the spineless forms are recommended for forage; in times of need, spines are burned off wild plants to provide forage for cattle. Some kinds of opuntia have run wild extensively in Australia, S. Afr. and elsewhere. The opuntias are of various habit, from small tree-like plants or spreading or prostrate, sometimes more or less clambering, areoles mostly carrying spines and also glochids or fine barbed bristles, but some species are naturally spineless or nearly so: fls. commonly 1 at an areole, yellow, red, greenish or white, opening wide: fr. a dry or juicy berry. Two main groups may be recognized by the non-botanist,—the species with flat and mostly broad pads or joints (or at least some of them flat) as the prickly-pears and tunas; those with cylindrical or terete joints or branches as the chollas and tasajos; in the following account the species belonging to the first group are marked 1, and those to the second or cylindric group are indicated as 2. The first group or subgenus (1) is Platyopuntia, the second (2) Cylindropuntia. There is a third subgenus, Tephrocactus, with short usually clustered joints, not much represented in hort. For cult., see *Cacti.*

The odd or even grotesque form of the opuntias and their ability to withstand hardship make them adaptable, as ornamental subjects, to exposed and rocky banks, to rock-gardens and to waste corners where little attention can be given them. A good number of them are hardy practically all over the country. They may be propagated from the joints, and they grow very readily from seeds. The flowers are showy and interesting although of short duration. The spines and glochids, however, restrict their use. *O. Ficus-indica* and *O. Tuna* are grown in tropical and subtropical countries for the abundant edible fruits.

aciculàta. 1: to 3 ft. high and 9 ft. across, lower branches decumbent; joints obovate, to 8 in. long and glaucous, areoles with several slender spines and numerous glochids: fls. golden-yellow, to 4 in. across. Tex.

albiflòra: *O. Salmiana.*

Alcàhes. 2: to 3 ft., much branched, very spiny; spines about 12 and covered with white sheaths: fls. greenish-yellow, brownish outside. Lower Calif.

ammóphila. 1: erect and branched, to 8 ft. or more tall and st. 10 in. diam. at base, somewhat tree-like, with unjointed trunk; joints elongate to oval, usually 2–8 in. long; spines about 2½ in. long, reddish to gray: fls. bright yellow, about 3 in. across. Fla.

Amyclæa. 1: joints oblong or elliptic, to 16 in. long and twice as wide and somewhat glaucous, areoles with 1–2 short bristles and 1–4 stiff spines: fls. yellow. Probably Mex.

Andeàda: listed name.

andícola. Tephrocactus: low, much branched and spreading; joints ovate, somewhat acute, to 3½ in. long, dark green to blackish, glochids pale yellow, abundant; central spines 3–5, to 2½ in. long, somewhat flattened: fls. pale yellow. W. Argentina.

angustàta. 1: sts. ascending; joints narrow, to 10 in. long, tapering basally, glaucous green; spines to 1¼ in. long, sharply angled, whitish with brown base: fls. not known. Ariz.

antillàna. 1: prostrate, forming clumps 3 ft. across; joints obovate, to 8 in. long; spines 3–6 and unequal, glochids yellow: fls. yellow turning reddish, to 3 in. long. W. Indies.

aoracántha. Of the Tephrocactus group: forming clumps to 20 ft. across and 8 in. high; joints globular, to 3 in. diam. and strongly tuberculate; spines 1–7, to 5 in. long, brown: fls. white. Argentina.

arboréscens: *O. imbricata.*

arbúscula (*O. neoarbuscula*). 2: much branched bush to 10 ft. with short trunk; joints to 3 in. long and ⅓ in. thick; spines 1 or several to 1½ in. long: fls. greenish-yellow tinged red, 1½ in. long. Ariz., Mex.

arenària. 1: st. prostrate, to 1 ft. long; joints somewhat turgid in growing season but becoming thinner, to 3 in. long and half as broad; spines 5–8: fls. red, about 3¾ in. broad. Tex., New Mex.

arizónica: *O. Engelmannii.*

atrispìna. 1: low spreading plant forming clusters to 6 ft. diam. or more; joints somewhat orbicular, to 6 in. diam.; spines from upper areoles only, flattened, dark brown, base black: fls. yellow to orange. Tex.

atrovíridis. 2: low; joints globose or ovoid, to 1½ in. diam., olive-green, areoles with white wool and yellow bristles; spines 3–5, 1 in. long: fls. yellow. Peru.

Aùberi: *Nopalea Auberi.*

aurantìaca. 1: low and much branched; joints fragile and linear, about 3 in. long, to 1 in. broad; spines 2 or 3: fls. yellow, 1 in. broad. Uruguay, Argentina.

aùrea. 1: prostrate; joints oval to obovate, to 4½ in. long and 1 in. thick, light green; spines usually absent, but solitary and yellow when present, glochidia golden-brown: fls. yellow to apricot-pink. Ariz.

austrìna. 1: roots tuberous, to 6 in. long and 2½ in. diam., sts. somewhat erect; joints narrowly to broadly ovate or suborbicular, to 4½ in. long, bright green; spines 1–6, about 1 in. long, twisted or wanting, white to pink: fls. bright yellow, to 3 in. across. Fla.

azùrea. 1: erect, branching from base or with single trunk; joints orbicular to obovate, to 6 in. diam., glaucous blue-green; spines to 1¼ in. long, unequal, nearly black, glochids brown: fls. deep yellow becoming reddish-pink: fr. spineless, dull crimson, edible. Mex.

bàla: listed name.

basilàris. 1: in clumps, sts. prostrate or erect, sometimes to 4 ft.; joints broad-obovate, to 8 in. long; spines mostly none; fls. purple or white, to 3 in. long. S. Utah, Nev., W. Ariz., S. Calif., Mex. Listed vars. include **álba, humistràta, intricàta** and **ràmosa.**

bellapérone: listed name.

Bergeriàna. 1: often making thickets, to 10 ft. and trunk to 16 in. thick, top spreading or clambering; joints narrow-oblong and becoming somewhat glaucous; spines 2 or 3 or 5, unequal: fls. deep red and many, petals 1 in. long. Unknown native; now spread on Riviera and N. Italy.

Bígelovii. 2: usually with an erect trunk to 3 ft. with short branches conspicuous near the top and beset with pale yellow spines; joints 2–6 in. long: fls. magenta to crimson, about 1½ in. long. Characteristic in S. Nev., Ariz., S. Calif., N. Mex.

Blakeàna: *O. phæacantha.*

Bóldinghii. 1: plant bushy, to 7 ft. tall; joints obovate, to ¾ in. long, usually spineless: fls. rose-pink, to 2 in. long. Venezuela.

bondàta: listed name.

borinquénsis. 1: forming clumps to 6 ft. across and 1½ ft. high; joints oblong, to 3 in. long, 1½ in. wide and ½ in. thick; spines 2–3, to 2½ in. long. Puerto Rico.

brachyárthra: *O. fragilis.*

brachyclàda. Similar to *O. basilaris*, but differing in having some joints flattened and others cylindrical.

Bradtiàna: *Grusonia Bradtiana.*

brasiliénsis. 1: to 12 ft., with cylindric naked or spiny trunk and small top; terminal joints flat and leaf-like: fls. yellow, about 2 in. long. S. Brazil to Argentina, Bolivia; nat. in S. Fla.

Bravoàna. 1: erect, branching from base, to 7 ft. tall; joints oblong to obovate, to 15 in. long and half as wide, thin; spines none to 5, to 2 in. long, flattened, glochids yellow surrounded by white wool: fls. yellow, shading to red with age. Lower Calif.

bulbispìna. 2: prostrate, forming clumps to 4 ft. across; joints ovoid, 1 in. long and ½ in. diam. with prominent tubercles; radial spines 8–12; central spines 4½ in. long and bulbose at base. Mex.

Burrageàna. 2: to 3 ft. or less, densely spiny; joints cylindric, to 6 in. long; spines numerous and covered with thin yellow sheaths: fls. brownish-red with green base, 1½ in. across. Lower Calif.

cacanàpa: *O. Lindheimeri.*

Calmalliàna. 2: joints cylindrical, to ¾ in. diam., tubercles present, linear-oblong, to 1 in. long; spines about 4, unequal, to 1 in. long: fls. said to be purple. Lower Calif.

camánchica: *O. phæacantha.*

camuéssa: *O. robusta.*

canìna. 1: erect becoming decumbent, plant to 14 ft. across; joints narrowly oblong, to 14 in. long and about 2 in. wide, glossy green; spines 1–3, to 1½ in. long, grayish tipped yellow: fls. yellow. Argentina.

cantabrigiénsis. 1: to 6 ft., bushy; joints orbicular or obovate, to 8 in. long, areoles with brown wool and yellowish glochids; spines 3–6 or more, to 1½ in. long: fls. yellowish with reddish center, 2 in. long. Mex.

Cardénche. 2: described as intermediate between *O. Kleiniæ* and *O. imbricata:* to 8 ft., with trunk to 4 in. diam.; joints tuberculate; spines usually 4, to 1 in. long, translucent: fls. pale purple, 1½ in. across. Mex.

catacántha: *O. rubescens.*

cenèsa: listed name.

chlorótica: 1: to 6 ft. or more with definite trunk; joints ovate or orbicular, to 8 in. long and glaucous; spines several, 1½ in. long, yellow, glochids numerous and yellow: fls. yellow, 3 in. across. Calif., Nev., New Mex., Ariz., Utah, Mex.

Chólla. 2: mostly tree-like, to 10 ft., with trunk to 6 in. diam., in age spineless; joints often in whorls, with large compressed tubercles; spines commonly numerous: fls. deep purple, about 1 in. or more broad. Lower Calif.

cirìbe. 2: to 3 ft. tall; joints to 2 in. long and 3 in. diam., strongly tuberculate; larger spines 4–6, to 1¼ in. long: fls. yellow: fr. globose, spineless. Lower Calif.

clavaroìdes. 2: low, straggling; joints cylindrical to conical, terminal ones often cristate; spines 4–10, radiating, hair-like: fls. pale greenish-brown, to 2 in. across. Chile.—Usually best grafted on other species of Opuntia or on Cereus. Requires half-shade.

clavàta. 2: spreading, patch-forming, to 6 in. high and 7 ft. across; joints clavate, to 3 in. long; radial spines 6–12, to ⅝ in. long; centrals 4–7, to 1¼ in. long: fls. yellow, to 1¾ in. long. New Mex.

clavellìna. 2: loosely branched erect shrub, to 3 ft. tall; ultimate joints spreading or ascending, club-shaped, to 4 in. long and ½ in. diam., with conspicuous elongated tubercles; spines 3–6, to 3 in. long or more with loose sheaths: fls. yellow. Lower Calif.

cochenillífera: *Nopalea cochenillifera.*

comonduénsis. 1: low, spreading, to 8 in. high; joints obovate to orbiculate, about 6 in. long, soft-pubescent; spines 1–3, to 2 in. long or more, yellow: fls. yellow: fr. purple. Lower Calif.

compréssa (*O. Opuntia, humifusa, mesacantha, nana, Rafinesquei*). 1: low and spreading or sometimes ascending; joints orbicular to oblong, to about 5 in. long; spines 1 or 2 from an areole or wholly wanting: fls. yellow, 2–3 in. across. Ont. and Mass. to Ala. and Mo.; nat. in Eu.—There are several cult. forms. This low N. American plant had been improperly known as *O. vulgaris.*

congésta: said probably to represent a race of *O. arbuscula.*

corallícola (*Consolea corallicola*). 1: to 6 ft. or more, tree-like; joints elliptic, to 12 in. long; spines 5–9 and to 7 in. long: fls. bright red, to ¾ in. across. Fla.

cordobénsis. 1: tree-like, the very spiny trunk to 7 ft. high and 8 in. diam.; joints oblong-obovate, to 1 ft. long; spines 1–6, about 1 in. long, white: fls. yellow: fr. yellowish, pear-shaped. Argentina.

Còvillei (*O. megacarpa*). 1: thicket-forming; joints nearly orbicular, to 8 in. long or more; spines 3–6, to 2½ in. long, unequal, white to brown: fls. yellow. S. Calif.

crássa. 1: to 6 ft., somewhat branched; joints ovate to oblong, to 5 in. long and glaucous; spines 1 or 2 or wanting, the areoles with brown wool: fls. not described. Unknown wild, probably Mex.

crinífera: *O. orbiculata.*

cumulícola. 1: erect, to 5 ft., branched, tuberous; joints obovate to nearly orbicular, to 12 in. long, thick, bright green; spines 1–2, light yellow to gray or brownish: fls. deep yellow, to 4½ in. across. S. Fla.

curassávica. 1: sts. prostrate or hanging; joints usually 5, oblong-ovate, to 2 in. long, thick; spines 4 or more, about 1 in. long, yellow to white, needle-like: fls. not known. Curacao.

cylíndrica. 2: to 12 ft., more or less branched; joints cylindric and obtuse at apex; spines short and white and sometimes wanting: fls. scarlet, about 1 in. broad. Ecuador, Peru. Var. **cristàta** is listed.

Dàvisii. 2: to 1½ ft. and densely covered with pale yellow spines; joints to 3 in. long and ½ in. diam., strongly tuberculate; spines 6–12, to 2 in. long, glochids numerous and yellow: fls. olive-green or yellow, 1½ in. long. W. Tex., New Mex.

decumàna: *O. maxima.*

decúmbens. 1: to 1 ft., often creeping or trailing; joints oval or oblong, to 8 in. long, pubescent, areoles with yellow glochids and wool; spines normally solitary, to 1½ in. long, yellow: fls. deep yellow, 1½ in. long. Mex., Guatemala.

dejécta: *Nopalea dejecta.*

delicàta. 1: procumbent; joints ovate, to 3 in. diam., areoles with brown glochids; spines 1–2, to 1½ in. long: fls. yellow, 2 in. long. Ariz.

diademàta. Tephrocactus: plant spreading; joints ovate, to 3½ in. long, brown- to gray-green; spines 1–4, reddish-brown, 1–4 in. long: fls. pale yellow, to 1½ in. across. W. Argentina.—Erect forms are known.

Diguètii: *Pereskiopsis Diguetii.*

Dillènii (*O. horrida*). 1: low and spreading or tall and branching to 10 ft. high; joints obovate or oblong, to 16 in. long; spines sometimes few or none but on young areoles often as many as 10 and usually not exceeding 2½ in. long: fls. lemon-yellow but sometimes red, about 3 in. long. Near coast S. C. to S. Amer.—It has been erroneously known as *O. Tuna.*

discàta. 1: spreading, shrub-like, to 5 ft. tall; joints orbicular or nearly so, to 10 in. across, glaucous blue-green; spines 2–4, rarely to 9, about 1 in. long: fls. light yellow with darker center, to 4 in. across. Ariz.

dístans. 1: to 12 ft. with short trunk and many branches; joints obovate, to 10 in. long, 6 in. wide and ¾ in. thick, areoles few with many glochids and no spines: fls. orange-red, ¾ in. long. Argentina.

Dobbieàna. 2: thicket-forming, usually only to 3 ft. high but occasionally to 12 ft. or more; joints orbicular to obovate, to 10 in. long, very spiny; spines 5–12, white, to 12 in. long, areoles usually with 2–4 reflexed hairs: fls. chocolate-brown, to 1 in. long, filaments and style pinkish: fr. red, to 2 in. long, spiny becoming smooth. Ecuador.

Drúmmondii (*O. frustulenta. O. pes-corvii*). 1: prostrate or spreading, 8 in. or less high; joints narrow-linear to broad-oblong, to 4½ in. long and half as broad; spines 1, 2 or 4 or wanting: fls. yellow, about 2¼ in. broad. N. C. to Fla. in sand.

durangénsis. 1: probably of bushy habit; joints broadly obovate, to 8 in. long and nearly as wide, pale green; spines 3–5, to ⅝ in. long, yellow to brown: fls. yellow, to 2 in. long. Mex.

echinocárpa. 2: mostly low but sometimes to 4 ft. or more high, much branched; joints short and strongly tubercled; spines many: fls. yellowish, often tipped red outside, ovary densely spiny. Utah, Nev., Ariz., Calif., Lower Calif.

Èichlamii. 1: tree-like to 40 ft. tall; joints broadly obovate, to 8 in. long; spines 4–6, unequal, to ¾ in. long, rose-pink to white: fls. carmine-red. Guatemala.

elàta. 1: to 3 ft.; joints oblong, to 10 in. long and half as broad, areoles white-woolly and usually spineless: fls. orange-yellow, 2 in. across. Brazil, Paraguay. Var. **obovàta,**

joints obovate, spines on upper areoles and 2 in. long. Var. **elongàta** is listed.

elàtior (*O. nigricans*). 1: much branched, to 15 ft.; joints obovate to oblong to nearly orbicular, to 1 ft. or more long; spines 2–8: fls. dark yellow striped red or sometimes salmon-rose, about 2 in. across. N. S. Amer.

Ellisiàna. 1: to 6 in. high and 6 ft. across, loosely branched; joints obovate or ovate, to ¾ in. long and glaucous, spineless: fls. deep yellow or orange, 2½ in. across. Tex.

Émoryi: *O. Stanlyi.*

Éngelmannii (*O. Wootonii. O. arizonica*). 1: wide-spreading; joints oblong to orbicular, to 1 ft. long; spines mostly 3 or 4 but sometimes only 1 or even wanting or more numerous on old joints: fls. yellow, large. Tex. to Ariz., Mex.

erinàcea (*O. ursina*). 1: small low clump with branches ascending or erect; joints ovate to oblong, to 4 in. or more long; spines many: fls. red or yellow, about 2½ in. long. Utah, Ariz., Nev., Calif.

Fìcus-índica. Indian-Fig. 1: large and bush-like or sometimes tree-like and to 15 ft.; joints oblong to spatulate, to 15 or 20 in. or more long, commonly spineless: fls. yellow, to 4 in. across. Nativity undetermined; widely spread over the world.

filipéndula: *O. Pottsii.*

Físheri: listed name.

flavéscens. 1: to 3 ft. high, forming clumps to 5 ft. across; joints obovate, to 10 in. long, areoles about 1¼ in. apart; spines usually 1–3, to 1½ in. long, stout. Ariz.

floccòsa (*O. senilis* of some authors). One of the Tephrocacti with short oblong or globular joints: in clumps or low mounds sometimes 6 ft. diam. with very many erect branches hidden in a mass of long white hairs; spines 1–3 from an areole: fls. yellow, about 1 in. long. Andes, Peru, Bolivia.

flórida: listed name.

frágilis (*O. brachyarthra*). 1: small and mostly not conspicuous but sometimes making mounds a few in. high; joints fragile, from nearly globular to flattened; spines 5–7: fls. pale yellow, about 2 in. across. Wis. to B. C. and south to Tex. and Ariz.

frustulénta: *O. Drummondii.*

frutéscens: *O. leptocaulis.*

fúlgida (*O. mamillata*). 2: to 10 ft. with woody trunk 8 in. diam.; joints to 8 in. long and 2 in. diam., strongly tuberculate and breaking off easily; spines 2–12 and 1½ in. long and yellowish, glochids light yellow: fls. pink, 1 in. across. Ariz., Mex.

fulvispìna: *O. leucotricha.*

fuscoátra. 1: prostrate; joints orbicular or obovate, to 3 in. long; spines 1–3, 1 in. long, yellow or dark brown, glochids numerous: fls. yellow, 3 in. across. E. Tex.

glomeràta: seemingly a confused name; plants so listed may be *O. diademata* or *O. Turpinii.*

Gosseliniàna. 1: 3 ft. or more, the old trunk with long spines; joints to 8 in. long and broad, red or purplish; spines 1–2 or lacking, to 4 in. long, brown, glochids numerous. Mex.

grácilis: *O. leptocaulis.*

Gràhamii. 2: much branched, forming low mounds; joints club-shaped, to 2 in. long, with oblong tubercles; spines 8–15, to 2½ in. long, glochids numerous: fls. yellow, 2 in. across. Tex., New Mex., Mex.

grandiflòra. 1: low with ascending branches; joints to 6 in. long; spines usually none: fls. yellow with red center, to 5 in. across. E. Tex.

Greènei: *O. tortispina.*

haitiénsis: *O. moniliformis.*

Hámiltoniæ: listed name.

Hanburyàna. 1: shrub-like, to 7 ft. high; joints narrowly oblong, to 12 in. long, bright green; spines usually 3–7, to 1¼ in. long, slightly flattened and twisted, yellow-brown: fls. yellow. Not known from wild.

Híldemannii. Similar to *O. sulphurea* in habit and fls., differing in smaller joints, longer glossy deep yellow spines and glossy fr. S. Amer., probably Bolivia.

hórrida: *O. Dillenii.*

humifùsa: *O. compressa.*

hùmilis: *O. Tuna.*

humistràta. 1: prostrate or ascending, forming clumps to 1 ft. high and 3 ft. across; joints obovate, to 6 in. long and 2½ in. diam., glaucous, areoles without spines and with numerous brown glochids: fls. purplish. Calif.

hypsóphila. 2: cespitose, to 4 in. high; joints globose or cylindric, to 1 in. long, spines 3–5 and weak. Argentina.

hyptiacántha. 1: to 3 ft., much branched; joints oblong or obovate, to 1 ft. long; young spines 1 and with 2–3 white hairs, spines on older plants 4–6 and ¾ in. long: fls. red. Mex.

hystricìna. 1: joints ovate or orbicular, to 8 in. long; spines numerous and to 4 in. long, glochids yellow: fls. yellow, 2 in. long. New Mex., Ariz., Nev.

ignéscens. Of the Tephrocactus section: forming clumps to 8 in. high; joints to 4 in. long and very fleshy; spines 6–15, 2 in. long, yellow: fls. deep red. Peru, Chile.

imbricàta (*O. arborescens*). 2: tree-like, to 10 ft. and more; ultimate joints about 1 in. diam. and strongly tubercled; spines 8–30 and sheathed: fls. purple, 2 in. more or less long. Colo., Tex., New Mex., Mex.

inamœ̀na (*O. quipa*). 1: often prostrate, forming clumps to 4 ft. across; joints orbicular or oblong, to 6 in. long and 1 in. thick, bluish-green; spines usually none, glochids numerous and yellowish-brown: fls. brick-red. Brazil.

inérmis: *O. stricta.*

invícta. 2: forming clumps to 1½ ft. high and 6 ft. across; joints obovoid or club-shaped, to 4 in. long and strongly tuberculate; radial spines 6–10; centrals 10–12 and flattened: fls. yellow, 2 in. across. Lower Calif.

jocoquílla: listed name.

keyénsis. 1: erect, clump-forming and freely branched; joints broadly oval to spatulate, to 12 in. long, bright green; spines 4–13, very short and stout, usually concealed by the bristles: fls. salmon-colored, to 1½ in. across. Fla. Keys.

Kleìniæ. 2: to 8 ft., glaucous, areoles with white wool and bristle-like spines; spines usually 1 and covered with yellow sheaths: fls. purplish, 1 in. long. Tex., Mex.

Labouretiàna: *O. maxima.*

læ̀vis. 1: low, bush-like, to 5 ft. or more; joints oblong-obovate, to 12 in. long; spines 1–3, often absent: fls. pale yellow, tinged red, to 3 in. across. Ariz.

lagùnæ: thought to be inseparable from *O. robusta.*

lanígera: *O. orbiculata.*

lasiacántha. 1: somewhat tree-like with definite trunk; joints obovate-oblong, to 12 in. long; spines about 1–3, to 1¾ in. long: fls. yellow to dark orange, about 3 in. across. Mex.

leptocaùlis (*O. frutescens. O. gracilis*). 2: commonly bush-like but sometimes with trunk 3 in. diam. and several ft. high, branches cylindric and slender; spines very slender and mostly solitary at young areoles but 2 or 3 on older ones: fls. greenish or yellowish, about ¾ in. long. S. W. U. S., Mex.

leucótricha (*O. fulvispina*). 1: to 12 or 15 ft., covered with long white bristles; joints oblong to orbicular, pubescent: fls. yellow, about 2 in. long. Mex.

Lindheìmeri (*O. cacanapa*). 1: commonly erect, to 12 ft., sometimes only spreading; joints orbicular to obovate and somewhat glaucous; spines mostly 1–6: fls. yellow to dark red, to 3½ in. across. La., Tex., Mex.

linguifórmis. 1: bushy, 3–4 ft.; joints oblong to lanceolate, to 20 in. or more; spines yellow: fls. yellow, about 3 in. across. S. Tex.

littoràlis. 1: spreading; joints orbicular or oblong and to 6 in. long, areoles with brown wool; spines numerous and yellow: fls. yellow, to 5 in. across. Coast, S. Calif.

Llóydii. 2: to 10 ft. high and across, much branched; joints cylindrical and ¾ in. diam., tubercles prominent; spines few, ½ in. long: fls. dull purple, 1 in. long. Mex.

longispìna: an uncertain species. S. Amer.

Loòmisii. 1: to 1½ ft. high; joints obovate-orbicular, to 6 in. long, areoles 1 in. apart; spines 1–4, to 1½ in. long: fls. yellow fading to salmon-pink. Ariz.

lùbrica. 1: low spreading plant; joints obovate to orbicular, about 7 in. long, glossy green; spines often absent, but sometimes abundant and to 1 in. long: fls. yellow, to 1 in. long. Mex.

lùrida: name of no botanical standing.

Macateèi. 1: prostrate; joints orbicular or obovate, to 2½ in. long; spines 1–3, to 1 in. long: fls. yellow with red center, to 3 in. across. Tex.

Macdougaliàna. 1: tree-like, to 25 ft. tall; joints oblong, to 2 ft. long, soft-pubescent; spines about 4, one to 1¾ in. long, yellow to white, flattish. Mex.

Máckensenii. 1: low, spreading, with some branches erect; joints ovate-orbicular, to 8 in. long, pale to dark green with age; upper areoles with 1–4 white or brown spines: fls. yellow, to 3 in. long: fr. rose-purple. Tex.

macrócalyx. 1: to 3 ft. high and broad, much branched; joints obovate, to 8 in. long and 3 in. diam., velvety-pubescent, areoles with yellowish wool and reddish-brown glochids, spineless: fls. yellow, green outside. Probably Mex.

macrocéntra. 1: more or less bushy, to 3 ft.; joints mostly orbicular to oblong, to 8 in. long; commonly with 1 or 2 spines at upper areoles but sometimes spineless: fls. yellow drying red, 3 in. across. W. Tex. to Ariz., Mex.

macrorhìza. 1: commonly nearly prostrate and making a clump; joints orbicular to obovate, to 6 in. long; spines 1–4 and to 1 in. long or wanting: fls. yellow with reddish center, about 3 in. across. Mo. and Kans. to Tex.—Has tuber-like roots.

mamillàta: *O. fulgida.*

margaritàna (*O. pycnantha* var.). 1: much branched bush-like form to 4 ft. tall; joints oblong to orbicular, to 10 in. long, rather thick; spines about 4–9, to ⅓ in. long, needle-like, reddish-brown: fls. pale yellow, becoming deep maroon with age. Lower Calif.

máxima (*O. decumana. O. Laboureliana*). 1: plants large and much branched; joints long-spatulate, to 1 ft. or more; spines 1 or 2 and white or wanting: fls. orange-red, 3 in. across. Known only in cult.

megacántha. 1: to 15 ft. or more, often with trunk; joints obovate to oblong, to 2 ft. or more long; spines 1–5 and white: fls. yellow to orange, about 3 in. across. Mex.; escaped in some regions.

megacárpa: *O. Covillei.*

mesacántha: *O. compressa.*

micrócalyx: listed name.

micródasys. 1: creeping to nearly erect, to 2 ft.; joints oblong to orbicular, to 6 in. long, spineless: fls. yellow or tinged red, to 2 in. long. N. Mex.

Míllspaughii. 1: trunk cylindrical, to 2 ft. high and 3 in. diam., branches ascending from top; joints narrowly oblong to lanceolate, to 18 in. long; spines on trunk dense, to 6 in. long, purple to gray, those on branches and joints shorter: fls. crimson-lake, to ½ in. across: fr. spiny. Bahama Isls.

mínima: probably *O. curassavica.*

missouriénsis: *O. polyacantha.*

Mòelleri. 1: somewhat spreading; joints erect, somewhat club-shaped, to 3 in. long; spines setose or needle-like, about ⅝ in. long: fls. salmon-colored. Mex.

mojavénsis. 1: prostrate; joints nearly orbicular; spines 2–6 and to 2½ in. long, angular and compressed, bristles yellow. Mojave Desert, Calif.

molésta. 2: to 7 ft. tall; joints cylindric, tapering basally, to 16 in. long and to 2 in. diam. at top, tubercles low, somewhat elongate, to 1½ in. long; spines 6–10, unequal, to 2 in. long, pale yellow, sheaths papery, loose: fls. purple, 2 in. long. Lower Calif.

monacántha. 1: erect shrub or tree-like, to 7 ft. with thick st.; joints ovate becoming elongated, to 1 ft. long; areoles usually with single brown spine to 1¾ in. long: fls. yellow, to 3½ in. across: fr. red, pyriform, spineless, to 3 in. long. S. Brazil to Argentina.

monilifórmis (*O. haitiensis*). 1: trunk to 12 ft. high and armed with spines to 5 in. long and with yellowish-white wool at their bases, branching at top; joints to 1 ft. long 5 in. wide and ½ in. thick, areoles of older joints with 5–8 yellowish spines and brown glochids: fls. yellow or orange, 1 in. across. W. Indies.

multiflòra: *O. Tuna.*

nàna: *O. compressa.*

neoarbúscula: *O. arbuscula.*

nígricans: *O. elatior.*

nigrispìna. Of the Tephrocactus group: much branched shrub to 8 in.; joints cylindrical, to 1½ in. long and ¾ in. diam., bearing spirally arranged tubercles, areoles with wool and glochids; spines 3–5, 1 in. long, purplish-black: fls. purple, 1 in. long. Argentina, Bolivia.

occidentàlis. 1: erect or ascending, to 4 ft. tall, forming dense cespitose clumps; joints oblong-obovate, to 12 in. long; spines 2–7, to 2 in. long, unequal and occasionally absent: fls. yellow: fr. purple. S. Calif.

Opúntia: *O. compressa.*

orbiculàta (*O. crinifera. O. lanigera. O. senilis* of some authors). 1: to 3 ft. or so, often broader than high; joints orbicular to obovate or spatulate, to 6 in. long; spines several and yellow: fls. yellow. N. Mex.

Órpetii: listed name.

ovàta. 1: cespitose, low; joints ovate to occasionally club-shaped, to 1¼ in. long, rarely to 3 in., yellowish-green to purplish; spines 5–9, about ⅓ in. long, brown becoming white with age. Argentina, Chile.

pállida. 2: sts. to 3 ft. high and 2 in. diam., branching; spines 20 or more and to 1½ in. long with white papery sheaths: fls. pale rose. Mex.

papyracántha: a confused name; plants so listed may be *O. diademata* or *O. platyacantha.*

Pàrishii. 2: sts. creeping, forming dense clusters, very spiny; joints club-shaped; radial spines numerous; central spines 4 and to 1½ in. long, glochids numerous. S. Calif., Nev.

Párryi. 2: shrub-like to 18 in. tall; joints cylindrical, to 12 in. long and ¾ in. diam.; tuberculate; spines about 10, to 1¼ in. long, unequal, dark brown: fls. yellow. S. Calif.

Péntlandii. Tephrocactus section: much branched, forming clusters to 3 ft. across; joints obovoid, to 4 in. long and tubercled, areoles with wool and yellow glochids; spines when present 2–10 and bright yellow: fls. lemon-yellow to deep red, 1 in. long. Peru, Bolivia, Argentina.

pés-córvii: *O. Drummondii.*

phæacántha (*O. camanchica. O. Blakeana*). 1: commonly prostrate, some of the branches ascending; joints mostly longer than broad, 4–6 in. long; spines 1–4: fls. yellow, 2 in. across. Tex. to Ariz., N. Mex.

pilífera. 1: to 15 ft. with woody trunk and broad top; joints oblong or orbicular and to 1 ft. long; spines 2–9 and white, areoles with white hairs: fls. red. Mex.

piscàta: probably *O. discata.*

Pittièri. 1: tree-like, to 20 ft. tall, trunk terete, spiny; joints narrowly oblong, to 20 in. long, areoles about 1¼ in. apart; spines 3–6, to 1 in. long, unequal, white: fls. dark orange becoming scarlet. Colombia.

platyacántha. Tephrocactus: plant low, prostrate; joints ovate, to 2½ in. long; spines 5–7, whitish, to 1¾ in. long: fls. yellow, to 1½ in. across. S. Chile to Patagonia.

Póllardii. 1: prostrate, resembling *O. compressa* in habit; joints oblong, to 6 in. long and ¾ in. thick; spines usually solitary when present, to 1¾ in. long, stiff and sharp: fls. yellow, to 3½ in. across. N. C. to N. Fla., Ala. and Miss.

polyacántha (*O. missouriensis*). 1: low and spreading and commonly making small clumps; joints orbicular and usually less than 4 in. across; spines 9 or fewer: fls. lemon-yellow, tinged red outside, to 2 in. long. N. D. to Alta., Wash., Tex. and Ariz. Var. **boreàlis** does not differ from the type.

polyántha: *O. Tuna.*

polycárpa. 1: erect, much branched, to 3 ft. tall, thicket-forming; joints somewhat elliptic, to 15 in. long; spines 1–3, often absent, to 1¼ in. long: fls. bright yellow, to 3 in. across. Fla.

Póttsii (*O. filipendula*). 1: to 1 ft. high, spreading; joints broad-obovate and to 5 in. long; spines 1–2, to 1½ in. long and white or purplish, glochids yellow: fls. deep purple, 3 in. across. Tex., New Mex., Mex.

prolífer. 2: somewhat tree-like, to 8 ft. tall, trunk and older branches woody, cylindrical; upper joints to 5 in. long, tubercled, fragile; spines 6–12, to ½ in. long, brown: fls. dark red, small. S. Calif.

pubéscens. 1: to 16 in., much branched; joints nearly cylindrical and to 3 in. long; spines numerous and short: fls. lemon-yellow. Mex. to Guatemala.

pùmila. 1: low, thicket-forming; joints terete or somewhat flattened, to 8 in. long, soft-pubescent, tubercled, fragile to touch; spines 2–8, to 1¼ in. long, unequal: fls. yellow, tinged red, about ½ in. long. Cent. and S. Mex.

pycnántha. 1: low, somewhat cespitose, to 10 in. tall; joints oblong to orbicular, to 8 in. long, areoles close together; spines 8–12, to 1¼ in. long, yellow to brown: fls. bright yellow. Lower Calif.

Quimìlo. 1: to 12 ft. high, much branched; joints elliptic or obovate, to 1½ ft. long and 1 in. broad and thick; spines usually 1, to 6 in. long and twisted: fls. red, 3 in. across. Argentina.

quìpa: *O. inamœna.*

quiscalòra: listed name.

Rafinésquei: *O. compressa;* see *O. tortispina.*

ramosíssima. 2: shrubby, to 6 ft. high, branches 3 in. long and covered with low diamond-shaped tubercles, areoles with wool and glochids; spines usually 1 or none and covered with yellow papery sheaths: fls. greenish-yellow tinged red, 1½ in. long. Nev., Ariz., Calif., Mex.

rastrèra. 1: creeping; joints circular or obovate and to 8 in. diam.; spines several, to 1½ in. long, white, glochids yellow: fls. yellow. Mex.

rèpens. 1: forming dense clusters to 1½ ft. high and 12 ft. across; joints oblong to linear, to 6 in. long and 1½ in. diam., areoles with brown wool and white hairs and yellow glochids; spines numerous and to 1½ in. long: fls. yellow, 1½ in. across. W. Indies.

retrórsa. 1: sts. prostrate and creeping; joints linear-lanceolate; spines 1–3 and reflexed: fls. yellowish, 2 in. across. Argentina.

rhodántha (*O. xanthostemma*). 1: joints obovate to oblong and to 5 in. long; spines 3–4, to 1 in. long and 2–3 shorter ones, glochids brown: fls. red or pink, 3 in. across. Neb., Colo., Utah.

robústa (*O. camuessa*). 1: often erect to 15 ft., mostly much branched; joints orbicular to oblong, to 10 in. long and glaucous; spines in the wild 8–12: fls. yellow, 2 in. across. Cent. Mex. Var. **màjor** is listed.

rosàrica: listed name.

rotundifòlia: *Pereskiopsis rotundifolia.*

rubéscens (*O. catacantha*). 1: tree-like to about 30 ft., trunk sometimes 6 in. diam.; joints oblong to oblong-obovate, to 10 in. long; spines several to many or sometimes wanting: fls. yellow, orange or red, about ¾ in. across. W. Indies.

rùfida (*O. microdasys rufida*). 1: to 5 ft., with definite trunk; joints nearly orbicular, to 10 in. diam., velvety-tomentose, areoles with many brown glochids: fls. yellow or orange, to 2 in. long. Tex., Mex.

Salmiàna (*O. albiflora*). 2: bushy, to 6 ft., branches terete and to about ½ in. diam. and not tubercled; spines usually several but sometimes wanting: fls. pale yellow to white, 1 in. more or less across. S. Brazil to Argentina.

santamarìa: see *Grusonia santamaria.*

sánta-rìta. 1: to 4½ ft., with short trunk; joints orbicular and bluish-green, areoles with numerous brown glochids and sometimes brown spines: fls. deep yellow, 3 in. across. Ariz.

Scheèri. 1: to about 3 ft., lower branches sprawling; joints oblong to orbicular, to 1 ft. longest way; spines 10–12 and yellow: fls. pale yellow becoming salmon, large. Mex.

Schickendántzii. 1: much branched and shrub-like, to 7 ft. tall; joints cylindric or flattened, warty, gray-green; spines 1–2, to ¾ in. long, awl-shaped: fls. yellow, to nearly 2 in. across: fr. green. N. Argentina.

Schóttii. 2: prostrate, rooting from areoles, forming clusters to 10 ft. across; joints club-shaped, to 3 in. long and ¾ in. diam. and strongly tubercled; spines several and to 2½ in. long, wool and glochids white turning brown: fls. yellow, 1½ in. long. Tex., Mex.

Schweriniàna. Similar to *O. polyacantha*, differing in joints to 2 in. long, glochids red not yellow, and spines weak not rigid. Colo.

senìlis: *O. floccosa, O. orbiculata.*

serpentìna. 2: sts. slender to 1 in. diam. and sometimes prostrate, strongly tubercled; spines 7–20 and covered with yellowish-brown papery sheaths: fls. greenish-yellow, 1¾ in. across. S. Calif. and Lower Calif.

serràna is listed.

silvéstris: listed name.

Sœderstromiàna. 1: usually erect, to 4 ft. tall; joints obovate, to 15 in. long, bright green to gray-green; spines 2–10, about 1½ in. long, unequal, reddish to gray, very conspicuous: fls. yellow to orange and brick-red, to 2½ in. long. Ecuador.

Sœhrénsii. 1: prostrate, in clusters to 3 in. across; joints orbicular, to 2½ in. diam. and very spiny; spines several and to 2 in. long: fls. pale yellow, 1 in. long. Peru, Bolivia, Argentina.

spathulàta: *Pereskiopsis spathulata.*

sphǽrica. Of the Tephrocactus section: low; joints globular and to 1 ft. diam., areoles with brown wool; spines few to many and to 1½ in. long: fls. deep orange, 1½ in. long. Peru, Chile. Var. **violaciflòra** is said to have violet fls.

spinòsior. 2: to 12 ft., tree-like; joints to 1 ft. long and 1 in. diam. and strongly tubercled; spines 6–12 or more and ½ in. long, glochids yellowish-white: fls. purple, pink, yellow or white, 2 in. across. Ariz., New Mex., Mex.

spinosíssima. 1: to 15 ft. with spiny trunk 3 in. diam.; joints oblong; spines 1–3, to 3 in. long, yellowish or whitish, glochids brown: fls. yellow turning red. Jamaica.

spinulífera. 1: tall and much branched; joints orbicular or oblong or obovate, to 1 ft. long, with white bristle-like spines or none: fls. purple. Mex.

Stánlyi (*O. Emoryi*). 2: sts. commonly less than 1 ft. high and creeping, much branched and making broad masses; joints 4–6 in. long and strongly tubercled; spines many and stout: fls. yellow, about 2 in. across. New Mex., Ariz., Mex.

stenárthra. 1: shrubby, creeping; joints oblong to lanceolate and yellowish-green; spines 1–3 or none: fls. yellow. Paraguay.

stenopétala. 1: thicket-forming bush-like plant; joints obovate to orbicular, to 8 in. long, purplish- to gray-green, areoles to 1¼ in. apart; spines 2–4, to 2 in. long, reddish-brown to black: fls. orange-red, inner segms. very narrow. Cent. Mex.

streptacántha. 1: to 15 ft. with trunk to 1½ ft. diam. and many branches; joints obovate or orbicular and to 1 ft. long; spines numerous and white: fls. yellow or orange, to 3½ in. across. Mex.

strícta (*O. inermis*). 1: bushy and spreading and making large clumps 2½ ft. high; joints obovate to oblong, 3–6 in. long, spineless or sometimes 1 or 2 or more spines to a joint: fls. yellow, about 2½ in. long. Cuba, Fla. to S. Tex.

strìgil. 1: ascending to 2 ft. tall; joints orbicular to obovate, to 5 in. long, areoles about ½ in. apart; spines 5–8, to 1 in. long, reddish. Tex.

subterrànea. Of the Tephrocactus section: nearly buried in sand, with thick root; joints cylindrical and to 1½ in. long; spines 1–7, short and recurved: fls. brownish. Argentina, Bolivia.

subulàta (*Pereskia* and *Pereskiopsis subulata*). 2: to 12 ft., sometimes with a single trunk to 4 in. diam., branches many and clustered, tubercles large and depressed; spines usually few and yellow but sometimes none: fls. orange or greenish-yellow, reddish outside. Probably Argentina.

sulphùrea. 1: forming clumps to 8 ft. across and 1 ft. high; joints oblong to obovate, about 10 in. long, green or purplish-green, tubercled; spines 2–8, to ½ in. long, curved, twisted or straight: fls. yellow, to 1¾ in. across. Argentina, Chile, and possibly Bolivia.

tapòna. 1: clump-forming, to 2 ft. high; joints orbicular to obovate, to 10 in. across, pale green; spines 2–4, one to nearly 3 in. long, yellow: fr. purple outside, red within, spineless. Lower Calif.

tardospìna. 1: semi-prostrate, spreading, to about 1½ ft. high; joints orbicular to obovate, to 10 in. long; spines often present at top only, usually 1–3, to 2 in. long, brown: fls. yellow: fr. red. E. Tex.

tenuiflòra. 1: to 3 ft. or decumbent and much branched; joints spatulate, to 16 in. long; spines 3–6 and 1 in. long: fls. salmon-colored, 1 in. across. Fla. Keys.

tères: *O. vestita.*

Tesàjo. 2: to 1 ft. high and broad; joints to 2 in. long; spines 2 and small, central spine 1 and 2 in. long: fls. yellow, ½ in. long. Lower Calif.

tetracántha. 2: much branched and bush-like, to 5 ft. tall; joints cylindrical, to 12 in. long and ⅝ in. diam., purplish-green, tubercles becoming less prominent with age; spines 3–6, to 1½ in. long: fls. greenish-purple, to ¾ in. across. Ariz.

Thúrberi. 2: bush-like, to 14 ft. tall; joints elongated, to 10 in. long and ½ in. diam.; spines 3–5, to ½ in. long, brown: fls. yellowish-brown, to 1½ in. across. W. Mex.

tomentòsa. 1: to 20 ft. with smooth trunk to 1 ft. diam.; joints oblong to narrow-obovate, to 8 in. long, soft-pubescent; spines none or very few: fls. orange, about 2 in. long. Cent. Mex.; escaped elsewhere.

tortispìna (*O. Greenei*). 1: prostrate and creeping, with ascending orbicular to obovate joints 6–8 in. long; spines about 6–8 and white, yellow or brown: fls. sulfur-yellow, to about 3 in. across. Wis. and S. D. to Tex. and New Mex. —Some of the plants known as *O. Rafinesquei* may belong here, but the spines in *O. tortispina* are 2 or more to each areole rather than 1 or 2 or none.

Tràceyi. 1: low, much branched, to 8 in. high; joints oblong, to 3½ in. long and 1 in. wide, young ones nearly terete; spines 1–4, to 1½ in. long, needle-like, gray with dark tips: fls. yellow, to 1¾ in. across. Miss.

Trelèasei. 1: spreading, to 1 ft. high; joints often erect, obovate, to 6 in. long, pale blue-green; spines present or absent, glochids dull yellow: fls. rose-pink. S. Calif.

triacántha. 1: semi-procumbent or clambering or even erect but low; joints thick and oblong, to 3 in. long; spines mostly 3: fls. brownish-yellow to cream-color, 2 in. long. W. Indies.

trichóphora. 1: forming clumps to 3 ft. across; joints orbicular or obovate and to 4 in. diam.; spines numerous, to 1½ in. long: fls. yellow. New Mex., Tex., Okla.

Tùna (*O. humilis. O. multiflora. O. polyantha*). 1: to 3 ft. or less; joints to 6 in. long but mostly smaller, obovate to oblong; spines 2–6, light yellow and slightly spreading: fls. yellow and slightly tinged red, about 2 in. across: fr. red, 1 in. or more long. Jamaica. Var. **amarílla** is listed. —See also *O. Dillenii.* Tuna is the Mexican name for opuntias.

tunicàta. 2: to 2 ft. or forming low clumps; joints globular or oblong, to 6 in. long and strongly tuberculate; spines 6–10, to 2 in. long and covered with white papery sheaths: fls. yellow, 1 in. long. Mex. to Chile.

Túrpinii. Tephrocactus: plant low and spreading; joints sphérical to ovoid, smooth, to 1½ in. long; spines 1–3, flat and papery, to 1¼ in. long: fls. white or cream-colored, to 1½ in. across. Argentina.

ursìna: *O. erinacea.*

Vàseyi. 1: spreading, branches low, a few erect; joints ovate, to 5 in. long, thick, pale glaucous green; spines 1–3, about ⅝ in. long, brownish to gray, tipped yellow: fls. reddish-salmon-colored. S. Calif.

velùtina. 1: to 12 ft.; joints oblong or pear-shaped, to 8 in. long and 6 in. across, pubescent; spines 2–6, to 1½ in. long, bristles yellow or brownish: fls. yellow, 2 in. across. Mex.

Verschafféltii. 2: much branched, dense clumps; joints globose to short-cylindric, to 10 in. long and ⅝ in. diam., tubercled; spines absent, glochids white: fls. orange to blood-red. Bolivia.

versícolor. 2: to 12 ft., with woody trunk and open top to 15 ft. across; joints to 8 in. long and 1 in. diam. and variously colored; spines 5–11 and to 1 in. long, glochids reddish-brown: fls. yellow, greenish, reddish or brown, to 2 in. across. Ariz., Mex.

vestìta (*O. teres*). 2: clump-forming, with weak much branched st.; joints oblong to cylindric, to 8 in. long and ⅝ in. diam., fragile; spines about 6, to 1 in. long, brownish: fls. dark red, about ¾ in. across. Bolivia.

vivípara. 2: to 10 ft., much branched; joints to ¾ in. long and ½ in. diam., areoles with yellow wool; spines 1–4 and ¾ in. long: fls. purplish. Ariz.

vulgàris. 1: to 20 ft., often with cylindric trunk 6 in. diam.; joints ovate to oblong, to 1 ft. long; spines 1 or 2 or sometimes 10 or more on the trunk: fls. yellow or reddish, about 3 in. broad. Brazil, Paraguay, Uruguay, Argentina. Var. **variegàta** is listed.—See *O. compressa.*

Wéberi. Of the Tephrocactus section: forming clumps to 7 in. high and 1 ft. across; joints cylindric, to 2½ in. long and ½ in. diam., strongly tubercled and spiny; spines 5–7, to 2 in. long: fls. yellow. Argentina.

Wentiàna. 1: erect, branched, to 7 ft. tall; joints obovate to elliptic, to 10 in. long and ½ in. thick, pale glaucous green; spines 3–5, pale yellow to white: fls. pale yellow: fr. red, small. Venezuela, Curacao.

Whípplei. 2: much branched and low; joints usually 6 in. long or less and ½ in. diam.; spines about 12, to ¾ in. long, glochids pale yellow: fls. yellow, to ¾ in. across. N. New Mex., Ariz., S. Colo. and S. Utah.

Whítneyi. 1: prostrate; joints obovate to orbicular, to 6 in. long, nearly as wide and about 1¼ in. thick, reddish; spines absent, glochids very short: fls. red, to 3 in. across, margins of segms. wavy. Calif. Var. **albiflòra** has green joints to 3 in. wide and white fls.

Winteriàna. 1: similar to *O. Lindheimeri* from which it differs in its dark brown spines and by some authors the two are not considered distinct.

Woòtonii: *O. Engelmannii.*

xanthóstemma: *O. rhodantha.*

zebrìna. 1: to 3 ft., much branched; joints oval or obovate and to 8 in. long; spines 1–4 and red-brown finely banded: fls. yellow, 3 in. across. S. Fla. and Keys.

ORACH: *Atriplex hortensis.*

ORANGE: *Citrus;* see *Citrus Fruits* (page 182). **African Cherry-:** *Citropsis.* **Mexican-:** *Choisya ternata.* **Mock-:** *Philadelphus, Prunus caroliniana.* **Natal-:** *Strychnos spinosa.* **Osage-:** *Maclura pomifera.* **-Root:** *Hydrastis canadensis.* **Trifoliate-:** *Poncirus trifoliata.* **Wild-:** *Prunus caroliniana.*

ORBEXILUM: *Psoralea Onobrychis.*

ORCHID: see *Orchids.* **Butterfly:** *Epidendrum venosum, Oncidium Papilio.* **Crane-fly:** *Tipularia discolor.* **Grass-Pink:** *Calopogon pulchellus.* **Spider:** *Renanthera Maingayi.* **Swan:** *Cycnoches.* **-Tree:** *Bauhinia variegata.* **Windmill:** *Bulbophyllum refractum.*

ORCHIDS, ORCHIDACEÆ. ORCHID FAMILY. An extensive family of terrestrial and epiphytic monocotyledonous herbs of more than 500 widely distributed genera, of various habit but mostly with bulbous or thickened sts. often with thickened internodes or pseudobulbs: the group is characterized by the very irregular fls. having 3 sepals, 3 petals, of which the 2 lateral ones are alike and the third modified into a lip which is often spurred and saccate, the stamens and pistil united to form a column or gynandrium on which the pollen is borne in masses or pollinia, inferior ovary, and capsular frs. containing many minute seeds.

Many genera are grown by florists for cut-flowers, by fanciers, and some of the terrestrial kinds in gardens; there are many artificial hybrids in the greenhouse, often between genera. Any number of genera are to be found in the special collections of fanciers, but those most generally cultivated or known within the scope of this book are Acampe, Acineta, Ada, Aërangis, Aërides, Aëridovanda, Angræcum, Anguloa, Anota, Ansellia, Aplectrum, Arachnis, Arethusa, Arpophyllum, Ascocentrum, Ascotainia, Aspasia, Batemannia, Bifrenaria, Bletia, Bletilla, Brassavola, Brassia, Brassocattleya, Brassocattlælia, Brassolælia, Brassolæliocattleya, Broughtonia, Bulbophyllum, Calanthe, Calopogon, Calypso, Camarotis, Catasetum, Cattleya, Cephalanthera, Chysis, Cleistes, Cochlioda, Cœlia, Cœlogyne, Comparettia, Corallorrhiza, Coryanthes, Cycnoches, Cymbidium, Cyperorchis, Cypripedium, Cyrtopodium, Dendrobium, Dendrochilum, Diacrium, Disa, Doritis, Dossinia, Epicattleya, Epidendrum, Epipactis, Epiphronitis, Eria, Eriopsis, Eulophia, Galeandra, Galeola, Gastrochilus, Gomesa, Gongora, Goodyera, Grammatophyllum, Habenaria, Hæmaria, Hartwegia, Houlletia, Huntleya, Ionopsis, Isotria, Lælia, Læliocattleya, Leptotes, Liparis, Lissochilus, Listera, Lockhartia, Lycaste, Macradenia, Malaxis, Masdevallia, Maxillaria, Miltonia, Mormodes, Mystacidium, Neobenthamia, Octomeria, Odontioda, Odontoglossum, Odontonia, Oncidioda, Oncidium, Ophrys, Orchis, Ornithidium, Ornithochilus, Paphiopedilum, Peristeria, Pescatorea, Phaius, Phalænopsis, Pholidota, Phragmipedium, Physosiphon, Pleione, Pleurothallis, Pogonia, Polystachya, Promenæa, Renanthera, Restrepia, Rhynchostylis, Rodriguezia, Saccolabium, Sarcanthus, Sarcochilus, Sarcoglottis, Schomburgkia, Scuticaria, Selenipedium, Sigmatostalix, Sobralia, Sophrolæliocattleya, Sophronitis, Spathoglottis, Spiranthes, Stanhopea, Stenoglottis, Thrixspermum, Thunia, Tipularia, Trichopilia, Vanda, Vandopsis, Vanilla, Warscewiczella, Xylobium, Zygocolax, Zygopetalum. The literature of orchids is extensive and the intending grower should be in touch with it.

The native terrestrial orchids of the United States and Canada are many. They usually inhabit cool bogs and some of them are represented on sandy plains and in moist grass-lands. Many of them are not showy, as in the genera Aplectrum, Epipactis, Habenaria, Liparis, Listera, Malaxis, Spiranthes; others have showy or very prominent flowers, as in Arethusa, Calopogon, Calypso, Cypripedium, Orchis, Pogonia. Any of these orchids may be transferred to grounds and some of them are offered by dealers in native plants. The conditions under which they grow naturally are diverse; one must know these conditions and endeavor to reproduce them in order to make a success of the cultivation. The little native orchids add a particularly interesting touch to rock-gardens, bogs, and to wild places under control of the gardener.

The commercial orchids of house culture are from regions within the tropics, although many of them come from high elevations. Most of them are forest or shade-loving plants. These orchids are principally in the genera Brassavola, Calanthe, Cattleya, Cœlogyne, Cymbidium, Dendrobium, Lælia, Lycaste, Miltonia, Odontoglossum, Oncidium, Paphiopedilum, Phalænopsis, Phragmipedium, Vanda. One undertaking the culture of these and other exotic orchids should know whether they are epiphytes, and the approximate elevations and conditions as to moisture, shade and sunlight under which they grow in nature. The culture of the main orchid groups is now so well learned that many of the species are grown for the cut-flower trade.

The culture of orchids requires close observation and adaptability on the part of the grower, and he should not start out independently until he has had good experience under a competent man. The niceties of orchid growing are the result of much devotion to the subject. A difference of two or three degrees in temperature, or a slight variation in watering or shading, may make the distinction between success and failure. The resting period of the different kinds must be carefully understood and adjusted. Nearness to the glass or remoteness from it are important. If one is growing the usual run of common and commercial orchids, one kind of greenhouse may be sufficient, but if a wide assortment of fanciers' species is to be grown, there should be houses of different temperature and moisture conditions. For the warmest species, the winter temperature should not go below 65° to 70° at night; in such conditions one may raise the more tropical Cypripediums (Paphiopedilum, Phragmipedium), Angræcums, Aërides, Calanthes, Dendrobiums, Phalænopsis, Vanda. A cooler range, with minimum night winter temperature of 60–65°, should grow the more tropical Epidendrums and Lælias, the Cattleyas, some of the Miltonias, Stanhopeas. A range running a few degrees lower may be employed for the cooler or Mexican Lælias, many Maxillarias, Lycastes, Oncidiums, some of the Cœlogynes (as *C. cristata*), Phaius. The Odontoglossums usually require special treatment to reduce the sun's heat in summer; they are plants of high altitudes; houses should be moist, well ventilated, and in hot weather the roof may be sprayed outside with cold water; shading in summer is also necessary to reduce the temperature.

The two cultural groups of exotic orchids are the terrestrials and the epiphytes, although these divisions are not absolute; some growers make one cultural group to comprise the deciduous kinds and another the evergreen. As classes, the terrestrials and epiphytes do not differ in temperature and moisture requirements but the terrestrial kinds are grown in pots of soil and the true epiphytic kinds mostly on blocks or in baskets or cribs. In general, terrestrial orchids thrive in a soil comprised of about one-half fibrous loam to which is added approximately equal parts of leaf-mold and sharp sand. Some growers make a mixture of one-third good chopped sod with part of the fine silty soil removed, one-third live chopped sphagnum, one-third leaf-mold; ground bone may be added for vigorous plants. The purpose is to provide a medium containing sufficient plant-food at the same time that it is thoroughly well drained and aërated and yet retains the necessary moisture. The observing grower soon develops mixtures to suit his needs.

The epiphytic orchids require much fibrous or peaty material in which to grow. This material is usually obtained from the roots of wild ferns, particularly of the osmundas, which are chopped and rubbed on a sieve to remove the fine earth. This osmundine or orchid peat is now a standard base for potting mixture as it does not soon decay, permits abundant ventilation about the roots, and supplies the necessary physical properties. With the osmundine or similar material are combined chopped sod and leaf-mold for the semi-terrestrial orchids, but it may be used alone for the true epiphytes. Live sphagnum is sometimes added to it.

Propagation of orchids has undergone a radical revolution in recent years consequent on the federal restrictions of the importing of fresh plants from the tropics and the closer study of germination requirements. The old methods still are practiced of propagating by separation or offsets as in Dendrobium, by division and by cuttings. Just before active growth begins, well established plants of the Cypripediums and some others may be divided. Cuttings may be made of the stems of species that do not produce pseudobulbs; on some orchids, as Vandas, aërial roots develop along the continuing stem and the cutting may be made below this point; other shoots are likely to arise near the severed area and these may also be employed for cuttings.

A special kind of cutting or division obtains in the pseudobulbous species, as in Cattleyas, Cœlogynes, Odontoglossums and some of the Dendrobiums. Behind the active growing shoots are the old pseudobulbs attached to the rhizome; part of this rhizome bearing usually 5 or more pseudobulbs may be partially severed and allowed to remain until new growth begins on it, or completely severed and potted at once.

Propagation by means of seeds has been a difficult and dubious process, but recent investigation has put the practice on an assured successful basis. The difficulty was due in part to the minute size of the seeds which makes them especially susceptible to injury by various micro-organisms and insects. According to certain European investigators the orchid embryo must become infected by that particular fungus which is found in the root of orchid plants, and the fungus method has been put into practical use abroad. The investigations of Knudson in the United States reveal, however, that the fungus plays no direct part in the germinating process and that successful germination of orchid seed depends on a supply of available organic matter which constitutes food for the embryos. On this latter principle Knudson has devised a method that insures successful germination of orchid seeds and is now widely employed under commercial conditions.

The Knudson method of germinating seedlings under aseptic conditions is similar to those employed in culturing bacteria. For this purpose a nutrient solution is made up, consisting of calcium nitrate 1 gram, monobasic or primary potassium phosphate 0.25 gram, magnesium sulfate 0.25 gram, ferric phosphate (insoluble) 0.05 gram, ammonium sulfate 0.50 gram, agar 15 grams, cane-sugar 20 grams and distilled water one liter. The salts supply nutrients, the sugar supplies organic food, and the agar is to make the medium gel. The solution should be acid in reaction. Due to the variability in agar and salts the amount of acid to be added cannot be specified but the reaction should be in chemical terms pH 5.0 or 5.2. This culture medium is heated until the agar dissolves and then poured into culture tubes (Fig. 9). These tubes are then plugged with cotton and sterilized. After sterilization and when still hot, the tubes are placed in an inclined position to give a slope to the culture medium. The seeds are then sterilized by use of a solution of chloride of lime and transferred to the tubes by means of a looped platinum wire. The technique used in bacteriology must be followed. After the seeds have germinated they may be transferred to flasks (Fig. 9) containing the same medium but only $\frac{1}{10}$ per cent sugar. There they may be kept for a year or so until large enough to transplant in the open. The seedlings may also be transplanted from the tubes to the open, although greater care must be given the seedlings. From this point, the plantlets are given the same attentive care that is familiar to orchidists who are acquainted with propagation. The transplanting of any orchid seedlings requires great pains.

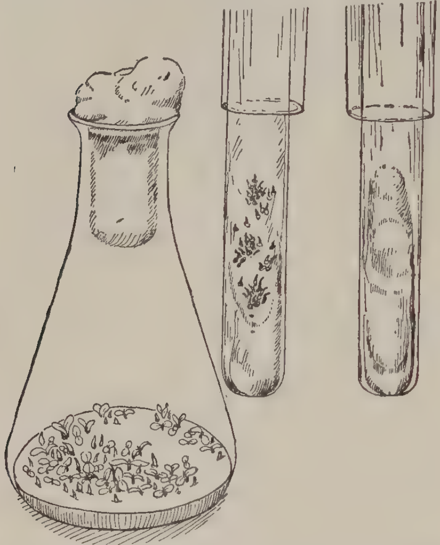

Fig. 9. Seed-propagation in orchids. Flask contains three-months-old seedlings, reduced; middle tube, good germination; right-hand tube, no germination because of absence of sugar.

Transplanting of the seedlings takes place when two or three leaves have appeared or when the rootlets become readily visible to the naked eye. This may be anywhere from two to eight months after sowing. They are placed in 2½-inch pots, with drainage and charcoal in the bottom. The pots should be sterilized. The soil should be fine peat or similar substance. As many as 100 seedlings may be set in one pot. The pots are placed in a moist warm glass frame or case free from drafts. In six months or so the seedlings may be transplanted again into 2½-inch pots, only 25 being set therein; at the third transplanting only 5 or 10 seedlings occupy a pot. In three to eight months from the first shift the plantlets of most kinds should be ready for separate or individual pots; about two years are usually allowed from the seed sowing to the individual potting; thereafter some four to six years are required to bring the plants into bloom, depending on the species and the general growing conditions.

If seeds are germinated in the Knudson or other nutritive solutions, the plantlets will be larger when removed and first transplanted, and only a few need be placed in a 2½-inch pot and fewer transfers are necessary, but otherwise the treatment is the same.

While the Knudson method is advisable for commercial establishments where loss and failure must be reduced to the minimum and also for the germination of very choice and rare seeds, the amateur and some large growers may nevertheless prefer sowing the seeds on soil or other stratum. The seeds are sown as soon as ripe. Early spring is a preferable time. Sometimes the seeds are dusted on the pots or baskets of the parent plant or of related species and then imbedded in the potting material by very careful watering. It may require three months or two years for the seed to germinate under this method, and in the meantime the material should not be disturbed. In another method osmunda fiber alone or mixed with dead or live sphagnum is used. This material is compacted in a 4-inch pot. A piece of burlap or Turkish toweling is stretched over the surface and secured by forcing the edges of the cloth between the pot and potting material. The seed is sown on the cloth and the pots then placed in a germinating case.

Germination by the fungus method consists of inoculating a sterilized peat mixture with a pure culture of the rhizoctonia or root fungus. When the mixture is permeated with the fungus, the seed is sown essentially as in other methods, and the young plants go through a similar course of transplanting.

ÓRCHIS. *Orchidaceæ.* Orchids of woods, swamps and moist places, with tuberous roots and growing on the ground, mostly basal lvs. and rather small fls. in terminal racemes or spikes, the sepals similar and either connivent or spreading, the petals usually smaller, lip entire or 3-lobed and spurred at base. Planted in moist situations in rock-gardens and elsewhere out-of-doors; see *Orchids;* also *Habenaria.*

maculàta. To about 20 in. high: lvs. cauline, elliptic to narrowly oblong or oblanceolate, often dark-spotted: fls. in dense spikes to 3½ in. long, pink with lip marked with purple. May–Aug. Eu., Asia.

militàris. To about 2 ft. high: lvs. oval to lanceolate-oblong, to 8 in. long: spike dense, oblong-cylindrical; fls. short-bracted; sepals and petals converging and arching over the lip, pale rose, white or grayish-white; lip rose with lilac-purple spots, 3-lobed with the large mid-lobe bilobed. Eu., Asia.

rotundifòlia. To 11 in. high: lf. single, basal, oval to nearly orbicular: spike short, few-fld.; fls. magenta; lip 3-lobed, white spotted with magenta. Que. to Yukon south to N. New England and Mont.

spectábilis (*Galeorchis spectabilis*). Showy Orchis. To 1 ft. high: lvs. 2, to 8 in. long and 4 in. wide: fls. about 1 in. long, in 2–7-fld. spikes; sepals and petals purple, united into a hood; lip white. May–June. N. B. to Ga. and Mo.

ORCHYLLIUM: see *Utricularia.*

OREOBATUS: *Rubus deliciosus* and relatives.

OREOBROMA: *Lewisia.*

OREOCÀRYA. *Boraginaceæ.* Bien. or per. herbs of the Cryptantha kind, native in W. N. Amer., having alternate hairy lvs. and white or yellowish salverform forget-me-not-like fls. borne in a panicle or thyrse.

glomeràta. To 1½ ft.: lvs. spatulate to linear, to 2½ in. long: fls. white, ⅓ in. across. Man. to Utah.

OREOCÈREUS. Mountain Cactus. *Cactaceæ.* Cacti native in the Andes, forming large clumps, areoles with long white hairs, ribs strongly spined: fls. diurnal, with cylindrical tube.

aureispìnus: probably *Parodia aureispina.*

Bruénnowii: *O. Celsianus* var.

Celsiànus (*Cereus* and *Pilocereus Celsianus*). To 3 ft. high, branches 3 in. thick; ribs 9–17, areoles ½–⅝ in. apart, hairs of tubercles matted; spines to 2 in. long and yellow: fls. dark red, to 7 in. long. Bolivia, Peru, Chile. Var. **Bruénnowii** (*O. Bruennowii*) has more slender sts., ribs 9–10, densely woolly. Var. **foveolàtus** (*O. foveolatus. O.* and *Pilocereus fossulatus*). Sts. more deeply notched with areoles ¾–1¼ in. apart, hairs not matted. Var. **lanuginòsior** has hairs woolly, abundant, short and matted. Var. **robústior** is of larger habit and has stouter spines.

Doelziànus (*Morawetzia Doelziana*). Sts. club-shaped, clump-forming, to 3½ ft. high and 4 in. diam., terminated by a cephalium; ribs 11, about ¼ in. high, rounded; spines yellow to dark brown, about 20, to 1¾ in. long, centrals 4 and scarcely distinguishable from the slightly shorter radials: fls. carmine, to 4½ in. long, zygomorphic: fr. ovoid, yellow-green. Cent. Peru.

fossulàtus: *O. Celsianus* var. *foveolatus.*

foveolàtus: *O. Celsianus* var.

giganteùs: probably *O. Celsianus* var. *robustior.*

Hendrickseniànus. Differs from *O. Trollii* in its long golden-yellow silky and glossy hairs and in its larger size. Bolivia and Peru.

lanuginòsior: *O. Celsianus* var.

Tróllii (*Cereus Irigoyenii. Pilocereus Trollii*). Cespitose, unbranched, to about 3 ft. high and 4 in. diam.; ribs usually 9, becoming indistinct with age; radial spines about 7, to ¾ in. long, reddish to white; centrals 1–3, to 2 in. long; hairs abundant from areoles, glossy and cream-colored, becoming grayish, to 2 in. long: fls. pale brownish-red, to 4 in. long. Bolivia and Peru.

OREÓCHARIS. *Gesneriaceæ.* Stemless per. E. Asiatic herbs. One species, **O. primuloìdes,** is offered. To 15 in. or more: lvs. oblong-cuneate, in basal rosettes, coarsely crenate-dentate: fls. blue, to 1 in. long, in many-fld. umbels or cymes: fr. a narrowly linear caps. Japan.—Propagated by seeds and adapted to the rockery.

OREODOXA (as to Florida and West Indian species): *Roystonea.*

OREÓPANAX. *Araliaceæ.* Shrubs or trees with entire, lobed or digitate lvs. and diœcious or polygamous fls. in heads borne in panicles or racemes, and berry-like fr.; native in trop. Amer. and grown under glass, in the open only in the warm parts of the country. Propagated by cuttings and seeds.

Thibaùtii: *O. xalapense.*

xalapénse (*O. Thibautii*). Shrub or small tree: lvs. of 5–9 oblong or obovate lfts. to 1 ft. long, nearly entire: heads ½ in. across, in racemes 1 ft. long: fr. black. Mex., Cent. Amer.

OREÓXIS. *Umbelliferæ.* Dwarf stemless alpine perennials from W. N. Amer., having pinnatisect lvs. and yellow fls. in small umbels: fr. globose-oblong and only slightly flattened laterally. Propagated by division or seed; adapted to the rockery.

alpìna. To 3 in.: lfts. 1–7, linear, to ⅕ in. long, pale green: fls. pink, yellow to whitish, in umbels to nearly ¾ in. across: fr. to ⅕ in. long. High elevations, Colo., Utah.

ORÍGANUM. Marjoram. *Labiatæ.* Per. herbs of the Old World, cult. for the aromatic foliage and attractive small purple-pinkish fls. borne in spikes.

Origanum is easily grown in all warm garden soils; the plants should stand 10 inches in rows 15 inches apart. Propagated by seed or usually by division in spring or early autumn.

Dictámnus. Crete Dittany. Procumbent, white-woolly, sts. often ascending: lvs. broadly ovate, entire, thick, to ¾ in. long, somewhat mottled: fls. pink to purplish, subtended by large bracts, in hop-like heads. Greece. —Probably not hardy N.

hírtum: *O. vulgare.*

Majoràna: *Majorana hortensis.*

Onìtes: *Majorana Onites.*

pulchéllum. To 1 ft. or less, gray-hairy, sts. ascending, woody at base: lvs. ovate, entire, obtuse: fls. rose-pink, in nodding head-like spikes. S. E. Eu.

vìrens: *O. vulgare.*

vulgàre (*O. hirtum* and *virens*). Hardy sweet herb to 2½ ft., rootstocks nearly horizontal: lvs. broad-ovate, 1½ in. long: fls. in clusters to 2 in. across. Eu.; nat. in N. Amer. Var. **aùreum** has golden or yellow lvs.

ORÍXA. *Rutaceæ.* Deciduous shrub to 10 ft. native in Japan and hardy in S. New England. **O. japónica** (*Celastrus Orixa*). Lvs. alternate, obovate, to 5 in. long: fls. diœcious, small, greenish, the staminate in racemes, pistillate solitary: fr. of 4 carpels.—Propagated by greenwood cuttings, root-cuttings, layers and seeds.

ORMÒSIA. Necklace-Tree. *Leguminosæ.* Trop. trees with pinnate leathery lvs., papilionaceous fls. usually in terminal panicles and compressed mostly thick and leathery pods; the ornamental seeds of several species are made into necklaces; sometimes planted in the tropics and subtropics.

dasycárpa: *O. monosperma.*

monospérma (*O. dasycarpa*). Large timber tree: fls. blue, the panicles rusty-tomentose: pods 1½ in. long, rusty-tomentose, with 1 large scarlet seed with a black patch. W. Indies.

ORNITHÍDIUM. *Orchidaceæ.* Epiphytes of trop. Amer. with elongate sts. usually concealed by distichously imbricating sheaths and bearing at intervals 1-lvd. pseudobulbs and clusters of axillary rather small fls.; sepals and petals often similar; lip 3-lobed. Grown in warm greenhouse; see *Orchids.*

dénsum (*Maxillaria densa*). Lvs. to about 15 in. long: fls. borne in dense clusters on peduncles about 1 in. long; sepals and petals white often tinted with rose or green; lip white or rosy with purple on disk. Dec.–May, July, Sept. Mex. to Honduras.

ORNITHOCHÌLUS. *Orchidaceæ.* Asiatic epiphytic orchids with fls. in pendulous racemes or panicles, the sepals and petals similar, the lip 3-lobed, clawed, and spurred at base. See *Orchids* for cult.

fúscus. Lvs. to 6 in. long and 2 in. wide: infl. a pendulous many-fld. raceme or panicle about 12 in. long; sepals and petals golden-yellow or greenish streaked with red; lip with a dark red fimbriate limb. May–Aug. Burma to China.

ORNITHÓGALUM. *Liliaceæ.* Bulbous herbs with either narrow or rather broad basal lvs. and white, yellow or reddish fls. in bracted racemes or corymbs at top of scape, the perianth-segms. distinct.

The hardy kinds may be planted out-of-doors and left undisturbed. The tender species, from Africa and Mediterranean region, may be grown in pots in the greenhouse or in frames, sometimes in window-gardens. Propagated by offsets.

arábicum. To 2 ft.: lvs. to 2 ft. long and 1 in. broad: fls. white with black pistil, 1 in. long, fragrant, in racemes. Medit. region.—Useful in conservatory.

ariànum. To 10 in.: lvs. 4–6, strap-shaped, to 8 in. long and about ½ in. wide, all basal: fls. to ¾ in. across, white, outer segms. greenish with white margins, in corymbs of 8–12. E. Russia.

aùreum: *O. thyrsoides* var.

Boucheànum: *O. nutans* var.

caudàtum. To 3 ft.: lvs. to 2 ft. long and 1½ in. across: fls. white with green center, 1 in. across, in long racemes. S. Afr.—Sometimes seen in windows.

Férgusonii: listed name of plant said to be 9 in. high with bright yellow star-like fls.: probably of hort. origin.

graminifòlium. Lvs. to 1 ft. long, cylindrical: fls. white. ⅓ in. long, in racemes to 3 in. long. S. Afr.

kewénse. Hybrid between *O. thyrsoides* and its var. *aureum:* fls. buff-yellow.

lácteum. To 2 ft.: lvs. to 1½ ft. long and 1 in. broad: fls. milk-white, ¾ in. long, in dense racemes. S. Afr.

maculàtum: *O. Thunbergianum.*

mauritánicum: listed name.

narbonénse. To 1½ ft.: lvs. to 1½ ft. long and ½ in. wide: fls. white keeled with green on outside, to 2 in. across, in racemes. S. Eu.

nùtans. To 2 ft.: lvs. to 1½ ft. long and ½ in. wide: fls. white inside, green with white margins outside, to 2 in. across, nodding, in racemes. Eu., S. W. Asia; run wild in Pa. and elsewhere. Var. **Boucheànum** (*O. Boucheanum*) has larger fls. with more prominent anthers and in denser racemes. Asia Minor; nat. in Germany.

oligophýllum (*O. platyphyllum*). To 6 in., bulb compressed-ovoid, to 1¾ in. diam.: lvs. lanceolate, falcate, to 6 in. long, glabrous: fls. pale creamy-white with narrow pure white margin, to 1 in. across, in short corymbose racemes with pedicels becoming shorter toward top, lanceolate bracts about half as long as pedicels. Greece to Asia Minor.

platyphýllum: *O. oligophyllum.*

pyramidàle. To 2 ft.: lvs. to 1½ ft. long and ½ in. across: fls. white keeled with green outside, 1 in. across, in long narrow racemes. S. Eu.

refléxum. To 4 in., bulb about ⅔ in. diam.: lvs. 2–3, linear-oblong, obtuse, to 5 in. long: fls. with abruptly recurved segms., in racemes to 1¾ in. long. Asia Minor.

Saùndersiæ. To 3 ft. or more: lvs. limp and strap-shaped, to 1 ft. long, many: fls. white, to 1 in. across, on pedicels to 2 in. long, pistil prominent, shining, greenish-black. S. Afr.

speciòsum. To 1 ft., rarely 1½ ft.: lvs. linear, short, thick, usually 4: fls. 3–5 in raceme having flexuous rachis, white with distinct purplish-black spot at tip of each perianth-segm., to 1 in. long, segms. not keeled, style very short and stout. S. Afr.

spléndens. To 15 in.: lvs. sword-shaped, to 4 in. long, glaucous, usually only 4: fls. satiny vermillion, to 1 in. long, cup-shaped, about 12 in raceme, anthers and style yellow. S. Afr.

suavèolens. To 1½ ft.: lvs. to 12 in. long, linear, glabrous, straight: fls. pale yellow, ½–¾ in. long, fragrant, few or many on lax racemes to 6 in. long on a stiff peduncle, segms. distinctly keeled, style ¼ in. long or less. S. Afr.

Thunbergiànum (*O. maculatum*). To 1¼ ft.: lvs. linear or lanceolate, shorter than st., usually 3 or 4: fls. yellowish, the 3 outer segms. with distinct black spot at tip, segms. not keeled, 1–6 on very short pedicels, style very short and stout. S. Afr.

thyrsoìdes. To 1½ ft.: lvs. to 1 ft. long and 2 in. wide: fls. white or yellow, ¾ in. long, in dense racemes. S. Afr. Var. **álbum** with white fls. represents the typical form. Var. **aùreum** (*O. aureum*), fls. golden-yellow.

umbellàtum. Star-of-Bethlehem. To 1 ft.: lvs. to 1 ft. long and ⅓ in. broad: fls. white, green margined with white outside, 1 in. across, in umbel-like corymbs. Medit. region; run wild in northern states.

ORNÍTHOPUS. *Leguminosæ.* Herbs with pinnate lvs., small papilionaceous fls. in axillary heads or umbels, and linear pods separating into 1-seeded joints; one species is grown to some extent as a forage and green-manure crop. Seed should be sown in spring in light or sandy soil.

satìvus. Serradella. Ann. to 1½ ft.: lfts. small and numerous: fls. rose-colored, in few-fld. umbels. Spain, Morocco.

ORNUS EUROPÆA: *Fraxinus Ornus.*

OROBUS: *Lathyrus* and *Vicia.*

ORÓNTIUM. *Araceæ.* Aquatic herb native in E. N. Amer., sometimes transferred to bogs and pond-margins where it roots deeply. **O. aquáticum.** Golden-Club. Lvs. oblong-elliptic, to 1 ft. long and 5 in. wide, floating or ascending, dark green above and paler beneath, on petioles to 20 in. long: spadices 2 in. long, yellow, borne on white scapes to 2 ft. long; spathes soon deciduous.

ORÓPHACA: plants listed under this name are here treated as belonging to the genus Astragalus. The names in the trade are as follows:

cæspitosa: *A. gilviflorus.*

sericea: *A. sericoleucus.*

tridactylica: *A. tridactylicus.*

OROSTACHYS: *Sedum.*

ORÓXYLON. *Bignoniaceæ.* One tree to 40 ft., native from India to Malaya, and grown in the open in S. U. S. It prefers rich soil and is propagated by seeds and cuttings over heat. **O. índicum** (*Pyrostegia indica*). Lvs. 2–3-pinnate, the ovate entire lfts. to 5 in. long: fls. white or purplish, bell-shaped with 5 crisped lobes, to 2½ in. long and 3½ in. across, in terminal panicles: fr. linear, to 3 ft. long. For *O. flavum* see *Radermachia pentandra.*

ORÒYA. *Cactaceæ.* Two depressed-globose solitary cacti native in the Andes of Peru. See *Cacti* for cult.

neoperuviàna. To 8 in. diam., bright green; ribs about 24, sometimes more, to ⅓ in. wide; radial spines 23–28, to ⅝ in. long, pectinate, white to yellowish; centrals 1–2, indistinct from radials: fls. yellow within, rose outside.

peruviàna (*Echinocactus peruvianus*). To 5 in. across; ribs usually 21 and low and tubercled; radial spines 18–20, ¾ in. long, yellowish tipped with red; central spines often lacking: fls. pink with yellow base, reddish outside, ½ in. long.

ORPINE: *Telephium.* **Family:** *Crassulaceæ.*

ORTHOCÁRPUS. Owls Clover. *Scrophulariaceæ.* Ann. and per. herbs in W. N. and S. Amer., allied to Castilleja, with alternate entire or cut lvs., those in the infl. often colored, and 2-lipped tubular white, yellow or cream-colored fls. in spikes; sometimes grown in the flower-garden.

purpuráscens. Ann., 1 ft.: lvs. cut into linear or thread-like segms.: fls. crimson or purple, to 1¼ in. long, the lower lip tipped white and with yellow or purple markings, in dense spikes to 4 in. long, fl.-bracts tipped with red. Calif.

tenuifòlius. Ann. to 8 in., sts. hairy and purplish: lvs. cut into linear-filiform segms.: fls. yellow, or sometimes tipped purplish, to ¾ in. long. Ida. to Wash. and B. C.

ORTHOSTEMON: *Feijoa.*

ORÝZA. *Gramineæ.* Ann. and per. marsh grasses, one much grown for the grain: lvs. flat: spikelets large, flattened, in terminal panicles. See *Grasses.*

satìva. Rice. Ann. to 4 ft.: lvs. to 2 ft. long and ½ in. wide: panicles to 1 ft. long, curved or nodding, branches ascending: grains yellow or straw-colored, white when polished (as in the commercial article). E. Indies, but escaped in trop. regions.—Widely cult. in trop. and warm-temp. regions for the grain, requiring water conditions for part of its development.

ORYZÓPSIS. Rice-Grass. *Gramineæ.* Slender per. grasses with flat or involute lvs. and terminal narrow or open panicles, native in W. Amer. One species, **O. hymenoìdes** (*O. cuspidata*), Indian R., is used for forage purposes. To 2 ft., densely tufted: lvs. narrow, to 6 in. long: spikelets with awn to ¼ in. long, the glumes nearly black when mature and densely white-pilose. Man. to B. C. south to Tex., N. Mex. and Calif.

OSAGE-ORANGE: *Maclura.*

OSCULÀRIA. *Aizoaceæ.* Separated from Mesembryanthemum: small shrubby perennials with spreading branches, 3-angled lvs. slightly united at base, and small short-stalked fls. in 3's: S. Afr.

caulèscens (*M. caulescens*). To 1½ ft.: lvs. to ¾ in. long and ½ in. broad, somewhat curved, glaucous, toothed on edges but not on keel: fls. rose, fragrant, to about ¾ in. across.

deltoìdes (*M. deltoides*). Erect or nearly so: lvs. incurved, to ½ in. long and more than half as broad, glaucous and toothed: fls. rose, ½ in. across. Var. **muricàta** (*M. muricatum*), smaller and blue-green, lvs. smaller with sharper teeth, pedicels shorter.

paardebergénsis: probably *Mesembryanthemum paardebergense.*

OSIER: *Salix.*

OSMÁNTHUS. *Oleaceæ.* Shrubs and trees with opposite entire or toothed persistent lvs. green and glabrous underneath, bisexual or unisexual fls. in clusters or racemes, and fr. a 1-seeded drupe; grown under glass or in the open in mild or warm regions. Propagated in late summer by cuttings of half-ripe wood under glass: seeds do not germinate until the second year, and are not often obtainable.

americànus. Devil-Wood. To 45 ft.: lvs. elliptic to lanceolate, to 7½ in. long, entire, shining above: fls. greenish, fragrant, corolla-tube about length of lobes. N. C. to Fla. and Miss.

Aquifòlium: *O. ilicifolius.*

armàtus. To 15 ft.: lvs. oblong-lanceolate or lanceolate, to 5½ in. long, spiny-toothed, reticulate: fls. fragrant. Sept.–Oct. China.

aurantìacus. Similar to *O. fragrans*, differing in the lanceolate lvs. 3–7 in. long, the fls. orange-colored and very fragrant. China and possibly Japan.

Delavàyi: *Siphonosmanthus Delavayi.*

Fórtunei. Hybrid between *O. fragrans* and *O. ilicifolius:* to 6 ft.: lvs. ovate, to 4 in. long, spiny-toothed: fls. fragrant.

fràgrans (*Olea fragrans*). To 30 ft.: lvs. oval to oblong-lanceolate, to 4 in. long, entire or fine-toothed: fls. white, fragrant, corolla divided nearly to base, early spring. Asia. —An old greenhouse plant.

ilicifòlius (*O. Aquifolium. Olea ilicifolia* and *Aquifolium*). To 20 ft.: lvs. oval to oblong, to 2½ in. long, with few large spiny teeth, shining: fls. white, fragrant, corolla divided nearly to base. June–July. Japan. Var. **argénteo-marginàtus,** lvs. marked with white. Var. **aùreo-marginàtus** (var. *aureus*), lvs. variegated with yellow. Var. **myrtifòlius,** lvs. smaller, entire. Var. **purpuráscens** (var. *purpureus*), lvs. dark purple when young. Var. **rotundifòlius,** dwarf, lvs. 1 in. long, entire or with short teeth. Var. **variegàtus,** lvs. variegated with white.

purpùreus: *O. ilicifolius* var. *purpurascens.*

serrulàtus. Differs from *O. fragrans* in its usually entire more leathery lvs. with midrib deeply impressed above, and in its smaller fls. W. China.

OSMÀREA. *Oleaceæ.* A generic group comprising crosses between Osmanthus and Phillyrea, **O. Búrkwoodii** having as parents *Siphonosmanthus Delavayi* and *P. decora.* Evergreen shrub: lvs. 1½ in. long, dark green and shining: fls. ivory-white, fragrant, in Apr.

OSMARÒNIA (*Nuttallia*). *Rosaceæ.* Deciduous shrub native from B. C. to Calif. and planted for ornament, hardy in north central states. **O. cerasifórmis.** Osoberry. To 15 ft.: lvs. oblong-lanceolate, to 4 in. long, entire: fls. diœcious, greenish-white, fragrant, ⅓ in. across, in drooping racemes in Apr.-May: fr. a bluish-black drupe to ½ in. long.—It does best in shady places in moist soil. Propagated by seeds sown when ripe or stratified, and by suckers.

OSMIA: *Eupatorium odoratum.*

OSMORHÌZA (*Washingtonia*). *Umbelliferæ.* Per. herbs with fleshy roots, ternately compound lvs., very small white fls. in few-rayed umbels, and linear frs.; native in N. and S. Amer. and E. Asia; interesting in the wild garden.

brevístylis: *O. Claytonii.*

Clàytonii (*O. brevistylis*). To 3 ft., hairy: lvs. to 1 ft. across, the segms. ovate, deeply toothed. N. S. to N. C. and Ala.

longístylis. Differs from *O. Claytonii* in its less coarsely and irregularly toothed lvs. and style to ⅛ in. long; glabrous and pubescent forms occur. Que. to Sask. south to Ala. and Colo.

OSMÚNDA. *Osmundaceæ.* Rather coarse but attractive deep-rooted ferns with 2-pinnate or -pinnatifid fronds in large crowns, the fertile segms. much contracted and forming separate panicles, or in *O. Claytoniana* some of the pinnæ only transformed and spore-bearing; native in Asia, N. and S. Amer. See *Ferns.*

cinnamòmea. Cinnamon-Fern. Hardy: sterile fronds to 5 ft. long, on stipes 1 ft. long, rusty-tomentose when young, 2-pinnatifid, margins usually entire; fertile fronds in the center, 2-pinnate, becoming cinnamon-brown as spores mature. N. Amer., W. Indies, S. Amer., E. Asia.

Claytonìàna. Interrupted-Fern. Fronds to 4 ft. long on stipes to 2 ft. long, 2-pinnatifid, margins usually entire, the spores confined to a few of the central pinnæ. N. Amer., Asia.

grácilis: probably a S. American form of *O. regalis.*

regàlis. Royal-Fern. Fronds to 6 ft. long, 2-pinnate, margins finely toothed, the fertile pinnæ forming terminal panicles. N. Amer., trop. Amer., Eu., Afr.

OSMUNDÀCEÆ. Osmunda Family. Three genera in both Old and New Worlds, of large ferns with 1–3-pinnate or -pinnatifid fronds and naked sporangia borne on modified pinnæ or in clusters on lower surface of fronds. Leptopteris and Osmunda are grown in the open.

OSOBERRY: *Osmaronia cerasiformis.*

OSTEOMÈLES. *Rosaceæ.* Shrubs with alternate pinnate lvs., white fls. in terminal corymbs, and fr. a small pome; native in Asia and Polynesia.

Grown for ornament mostly in mild regions (as southern states) where they prefer well-drained soil and a sunny position. Propagated by seeds which germinate slowly, by cuttings under glass, or grafting on cotoneaster.

anthyllidifòlia. To 6 ft., evergreen: lfts. 13–19, to ½ in. long, silky-pubescent beneath: fls. ½ in. across: fr. pubescent. Hawaii south.—Stands in parts of N. Y.

Schwerìniæ. To 10 ft., deciduous or semi-evergreen: lfts. 15–31, to ⅓ in. long, gray-pubescent beneath: fls. ½ in. across: fr. glabrous. China.

OSTERDAMIA: *Zoysia.*

OSTRÒWSKIA. *Campanulaceæ.* One striking per. herb from Cent. Asia, hardy in the N. with winter protection but not very durable. It should have a sunny exposure on well-drained ground. Propagated by cuttings of young growth or roots: also by seeds but these may require years to germinate and fls. may not be obtained in less than three or four years. **O. magnífica.** Giant Bellflower. To 5 ft. or more: lvs. whorled, ovate, to 6 in. long, toothed: fls. pale lilac, to 4 in. across.

ÓSTRYA. Hop-Hornbeam. *Betulaceæ.* Deciduous monœcious small trees with alternate toothed lvs., staminate fls. in slender drooping catkins, pistillate in erect catkins, and fr. a nutlet inclosed by a bladder-like light green involucre; native in the northern hemisphere where it may be cult. for ornament. Propagated by seeds sown in fall or stratified.

virginiàna. American H. Ironwood. To 60 ft.: lvs. to 5 in. long: fruiting catkins to 2½ in. long, drooping. Ont. to Fla. and Tex.

OTHAKE: *Polypteris Hookeriana.*

OTHÓNNA. *Compositæ.* Shrubs or herbs in S. Afr., often with tuberous roots: lvs. basal or st.-lvs. alternate or clustered at ends of branches: heads yellow, solitary or clustered, of ray- and disk-fls.; pappus of bristles.

Othonnas are grown in conservatories or hanging-baskets.

They thrive in any soil with good drainage. Propagated by pieces of the stem treated as cuttings, or by portions of the stem that have rooted where they rested on the soil.

capénsis: *O. crassifolia.*

carnòsa. Subshrub, 9 in. high: lvs. linear-terete, fleshy, to 2 in. long: heads few, in corymbose panicles.

crassifòlia (*O. capensis*). Per. with slender or trailing sts., becoming shrubby at base: lvs. scattered or in clusters, fleshy, cylindric-obovoid, to 1 in. long: heads ½ in. across, solitary on sts. to 4 in. long, opening in sun.—Frequent under glass.

OURÍSIA. *Scrophulariaceæ.* Erect, decumbent or prostrate per. herbs of the Andean region of S. Amer., New Zeal. and Tasmania: lvs. mostly radical, opposite, entire or crenate: fls. mostly white but running into purplish shades and yellow centers, sometimes scarlet, clustered on a scape-like st. or sometimes axillary and solitary; stamens 4. Sometimes grown in rockeries and shady places.

coccínea. To 1 ft.: lvs. oval or oblong, dentate-lobed: fls. scarlet, drooping above the foliage, stamens exserted. Chile; more or less hardy N.

macrocárpa. Sts. stout, to 2 ft., but usually lower: lvs. persistent, oblong or orbicular, to 8 in. long, ciliate: fls. whorled, white with more or less yellow center, to 1 in. diam. New Zeal.; hardy N. in cool woods or rock-garden.

macrophýlla. Differs from *O. macrocarpa* in more slender habit, pubescent rather than glabrous, and less leathery lvs. New Zeal.

OUVIRANDRA: *Aponogeton fenestralis.*

OVARY: ovule-bearing part of a pistil, becoming (sometimes with attachments) the fruit.

OVATE: with an outline like that of a hen's egg cut in two lengthwise, the broader end downward.

OVOID: a solid that is oval (less correctly ovate) in flat outline.

OVULE: the body which, after fertilization, becomes the seed; it is contained, perhaps with others, in the ovary.

OXALIDÀCEÆ. Oxalis or Wood-Sorrel Family. About 10 widely distributed genera of herbs, shrubs and trees, with usually compound lvs., regular fls. with 5 sepals and petals, 10 stamens and superior 5-celled ovary, and fr. a dehiscent caps. or fleshy berry. It is allied to Geraniaceæ. Only the genera Averrhoa, grown for its edible fr. as well as for the ornamental tree, and Oxalis, planted for ornament, are known in cult.

ÓXALIS. Wood-Sorrel. *Oxalidaceæ.* Small herbs, often producing tubers or bulbs, with clover-like digitate lvs. which close at night, white, pink, red or yellow axillary often long-stalked fls. and capsular quickly dehiscent fr.; about 300 widely distributed species, grown for ornament or a few for the edible roots. Some of the species have somewhat branching lf.-bearing sts., sometimes more or less woody, and others are scapose with the peduncles arising directly from the crown of the plant or the bulb.

Propagated by bulbs or division of the roots and by seeds. For bloom in late winter or early spring in window-garden and conservatory, bulbs should be divided in September. After blooming the bulbous kinds should be placed in a cool cellar for a resting period. The flowers are showy in sunshine.

Acetosélla. European W. Low early-blooming scapose per.: lfts. 3, obcordate: fls. white with purple or rose-purple veins, the petals oval, obtuse, not emarginate. Eu.—See *O. montana.*

adenophýlla. Scapose per., roots tuberous: lfts. 12–22, obcordate, ½ in. long, glaucous: fls. pink with deeper veins, solitary or in few-fld. umbels. Chile.

americàna: *O. montana.*

Bowieàna (*O. Bowiei. O. purpurea. Caudoxalis Bowieana*). Scapose per. with thickened roots and scaly bulbs: lfts. 3, large, obcordate: fls. rose-purple, to 2 in. across, in summer. S. Afr.

brasiliénsis. Scapose per. to 6 in.: lvs. retuse, lfts. 3: fls. magenta with darker throat and veins, to 1 in. across. Brazil.

bupleurifòlia. Somewhat shrubby: petioles flattened and leaf-like, bearing 3 small deciduous lfts. at tips: fls. yellow, among the lvs. Brazil.

califórnica (*Xanthoxalis californica*). Tufted per. with prostrate sts. to 8 in. or more long: lfts. 3, oval, to ⅜ in. long: fls. yellow, ⅛ in. across, 1–3 together. S. Calif.

carnòsa. Scapose per. with spindle-shaped roots: lfts. somewhat fleshy, obcordate: fls. yellow, in autumn, 2, 3 or several to a scape, the petals emarginate or denticulate. Chile.

cérnua (*Bolboxalis cernua*). Buttercup O. Bermuda Buttercup. Scapose per. with thickened roots and deep scaly bulbs: lfts. 3, deeply obcordate: fls. bright yellow, to 1½ in. across, nodding, in spring. S. Afr.; nat. in Bermuda and Fla.

corniculàta (*O. lutea. Xanthoxalis corniculata*). Creeping per. but blooming first year: lfts. 3, small, obcordate: fls. light yellow. Eu.; escaped in N. and trop. Amer.—Frequent on the floor of greenhouses. Var. **atropurpùrea** (*O. tropæoloides*) has purple lvs. and is used for bedding.

crenàta. Oka. Per. but grown as ann. from underground tubers, which are eaten in S. Amer.: lfts. 3, obovate: fls. yellow striped with purple, axillary. Peru.

decaphýlla. Scapose, from solitary bulb: lvs. digitate, circular in outline, of 8–10 narrow bifid lfts.: fls. violet, small, many in an umbel. Mex.

Déppei (*Ionoxalis Deppei*). Scapose per. with simple scaly bulbs: lfts. mostly 4, truncate, not notched: fls. red, in umbels. Mex. Var. **álba** has white fls.

Drúmmondii (*Ionoxalis Drummondii*). Scapose per. to 1 ft., bulbous: lfts. 3, 2-lobed, ovate or oblong: fls. violet, to ¾ in. long, in 4–7-fld. umbels on scapes longer than lvs. Tex., New Mex.

enneaphýlla. Scapose per. with tuberous roots: lfts. 9–20, obcordate, glaucous: fls. white with lavender veins, solitary. Falkland Isls. Var. **ròsea** has rose-pink fls.

floribúnda. Fls. rose with darker veins, or white. Botanical position uncertain but probably a form of *O. rosea* or *O. lasiandra.*

grándis. Per. to 3½ ft.: lfts. to 1½ in. across, brown-margined: fls. yellow, petals to ¾ in. long, in dichotomous cymes. N. B. to Ga., Ind. and Ala.

heterophýlla. Bulbous per. with weak leafy sts. 1 ft. or more long: lfts. 3, 2-lobed: fls. with yellowish tube and purple limb, to ¾ in. long, solitary. S. Afr.

hírta. Erect or decumbent, st. branched and leafy, pubescent: lfts. 3, mostly spatulate or narrow-cuneate: fls. violet or purple, single on long axillary peduncles. S. Afr.

lasiándra. Scapose per. with simple scaly bulbs: lfts. 5–10, 3 in. long, entire: fls. crimson, in crowded umbels. Mex.

latifòlia. Stemless bulbous per. to 8 in.: lfts. 3, very broadly wedge-shaped, to 1¼ in. wide at truncate-emarginate apex and ¾ in. long, glaucous, ciliate, petiole to 6 in. long: fls. dull lilac-purple, to ¼ in. across, 5–8 in umbels, pedicels to ¾ in. long and peduncle to 7 in. Mex.

lobàta. Stemless per. to 4 in., tuberous: lfts. obovate, deeply emarginate to retuse, occasionally almost bilobed: fls. yellow, lined and dotted red. Chile.

lùtea: *O. corniculata.*

magellánica. Per. to 2½ in., stoloniferous: lfts. 3, obcordate, very small: fls. white, ⅛ in. long, solitary. S. S. Amer., S. Australia, New Zeal.

Martiàna. Scapose per. with rather shallow loosely scaly compound bulb: lfts. 3, obcordate: fls. to ¾ in. long, rosy, in loose mostly compound umbels. Trop. Amer.

montàna (*O. americana*). American W. The American representative of *O. Acetosella:* scapose, summer-blooming in cool northern woods: lfts. 3, obcordate: petals oblong, emarginate, pale pink or white and purple-veined.

oregàna. Lvs. and scapes from creeping rootstock: lfts. 3, obcordate, to 2 in. wide: fls. white or rose veined with purple. Wash. to Calif.

Ortgièsii. Per. to 1½ ft., leafy-stemmed: lfts. 3, fish-tailed at end, very broad: fls. yellow with darker veins, in cymes on long axillary peduncles. Andes of Peru.—Seen in greenhouses.

purpùrea: *O. Bowieana.*

ròsea. Erect tall per.: lfts. 3, obcordate, petioles 1 in. or less long: fls. rosy with darker veins, in spring, long-stalked in open cymes. Chile. Var. **delicàta** is listed.—Probably much of the cult. material under this name is *O. rubra.*

rùbra. Scapose per. with thick stock: lfts. 3, obcordate: fls. pink or rose with darker veins, varying to lilac or white, in compound umbels above the foliage. Brazil.—Frequent window-garden plant, and in the open in mild regions.

strícta (*Xanthoxalis stricta*). Per., erect: lfts. 3, obcordate: fls. small, yellow, pedicels reflexed in fr. Old World; scarcely cult.; common weedy plant in N. Amer., Bermuda and elsewhere.

tetraphýlla (*Ionoxalis tetraphylla*). Scapose per. with simple scaly bulbs: lfts. usually 4, obcordate: fls. lilac or rosy, in simple umbels. Mex.

tropæoloìdes: *O. corniculata* var. *atropurpurea*.

valdiviénsis. St. short, per. but grown as ann.: lfts. 3, obcordate: fls. bright yellow striped with brown inside, in umbels on long peduncles. Chile.

variábilis. Scapose bulbous per.: lfts. 3, ciliate, not notched: fls. showy, white, rose or violet, to 2 in. across, yellow at base. Cape of Good Hope; persists in S. Calif.

violàcea (*Ionoxalis violacea*). Scapose per. with scaly brown bulbs: lfts. 3, broadly notched: fls. violet or rose-purple (seldom white), several on peduncles usually exceeding lvs. Mass. to Fla. west to Rocky Mts.—Rarely cult. but useful in borders and rock-gardens.

OXALIS, BLUE: *Parochetus communis*.

OXÈRA. *Verbenaceæ*. Shrubs, often climbing, with opposite entire lvs. and white or yellowish fls. in clusters; one sometimes grown in greenhouses or out-of-doors in S. Calif. Requires a winter temperature of 55–60°. Propagated by cuttings and seeds.

pulchélla. Climbing: lvs. oblong-lanceolate, to 5 in. long: fls. trumpet-shaped, white, 2 in. and more long, with conspicuous calyx and long-exserted stamens. New Caledonia.

OX-EYE: *Buphthalmum*.

OXLIP: *Primula elatior*.

OXYANTHUS ISTHMIA: *Posoqueria latifolia*.

OXYBAPHUS: *Allionia*.

OXYCOCCUS: *Vaccinium*.

OXYDÉNDRUM (sometimes but not originally spelled *Oxydendron*). *Ericaceæ*. Deciduous tree to 60 ft., planted for ornament and hardy N. but of slow growth. Propagated by seeds. **O. arbòreum** (*Andromeda arborea*). Sour-Wood. Sorrel-Tree. Lvs. oblong-lanceolate, to 8 in. long, turning scarlet in autumn: fls. white, ⅓ in. long, in terminal drooping panicles to 10 in. long, July–Aug.: fr. a small gray-pubescent caps. Pa. to Fla. and La.

OXYLÒBIUM. *Leguminosæ*. Shrubs from Australia with simple entire usually whorled or opposite lvs., yellow or purple papilionaceous fls. in racemes, and swollen pods; one species sometimes planted in Calif.

Callístachys (*Callistachys ovata*). Tall shrub: lvs. ovate-oblong to lanceolate, to 5 in. long, leathery: fls. yellow, in dense terminal racemes to 6 in. long: pods leathery, ½ in. or more long.

lanceolàtum: probably a synonym of *O. Callistachys*.

OXYPÉTALUM (*Tweedia*). *Asclepiadaceæ*. S. American herbs or subshrubs with opposite lvs. and fls. in umbels or heads, corolla deeply 5-parted, the corona of 5 scales; one species intro. into S. U. S.

cærùleum. Twining, herbaceous: lvs. oblong, cordate at base: fls. blue with darker blue fleshy corona, about 1 in. across, in axillary 3–4-fld. clusters. Argentina.

OXÝRIA. *Polygonaceæ*. Low erect perennials of nearly circumboreal distribution in northern hemisphere, with basal palmately veined lvs. and small greenish perfect fls. in terminal panicled racemes: fr. a broadly winged achene. Adapted to the rockery and propagated by division or seeds. Two species known, of which one, **O. dígyna,** is cult. To 1 ft.: lvs. reniform to somewhat orbicular, to 1½ in. across, long-petioled: fls. many, slender-pedicelled.

OXÝTROPIS (*Aragallus*). *Leguminosæ*. Low per. herbs or subshrubs somewhat like Astragalus, with pinnate lvs., papilionaceous fls. in racemes or spikes, and cylindrical pods; sometimes grown in rock-gardens. Propagated by seeds or division.

argentàta (*O. sulphurea*). Nearly stemless, silky-pubescent: fls. yellow or whitish, in dense spikes on scapes longer than lvs. Siberia.

campéstris. To 1 ft.: fls. pale yellow tinged with purple, in short spikes. N. Eu., Asia and Amer.

Hálleri: *O. uralensis*.

Lámbertii. To 1½ ft., silky-pubescent: fls. bluish-purple, in racemes to 4 in. long. Minn. to Mont.

montàna. To 6 in.: fls. purple, in short racemes. Eu.

ochroleùca. Sts. short, glaucous: fls. yellowish-white, drooping, in short racemes. Asia.

serícea. To 6 in., silky-pubescent: fls. light purple, in racemes to 4 in. long on scapes longer than lvs. Neb., Colo., Wyo.

spléndens. To 1½ ft., densely silky-pubescent: fls. deep purple, in dense spikes to 4 in. long. Minn. to Sask. and New Mex.

sulphùrea: *O. argentata*.

tenélla. To 1½ ft., sts. procumbent, hairy: lfts. elliptic to oblong-linear, acutish, ¾ in. long or more, appressed-silky: fls. bluish-purple to reddish, small: pod terete, 1-celled. Turkestan.—A forage plant offered as *Astragalus Rubyi* probably belongs here.

uralénsis (*O. Halleri*). To 6 in., covered with silky hairs: fls. bright purple, in short spikes. N. Eu. and Asia.

villòsus. To 6 in., silky-pubescent: fls. creamy, in dense spikes 2 in. long. Mont., S. D.

OXYURA: *Layia chrysanthemoides*.

OYSTER-PLANT: *Tragopogon porrifolius*. **Spanish:** *Scolymus hispanicus*.

OYSTER, VEGETABLE: *Tragopogon porrifolius*.

OZOMELIS: *Mitella stauropetala*.

OZOTHAMNUS: *Helichrysum*.

P

PACHÌRA. *Bombacaceæ.* Trop. trees with digitately compound lvs., large pink, white or brownish fls. with abundant long showy stamens, and capsular frs., the seeds sometimes eaten; ornamental subjects in the far S. Propagated by seeds or cuttings.

aquática (*Carolinea princeps*). Guinea-Chestnut. Large tree: lfts. 5–7, oblong-lanceolate, to 1 ft. long: fls. solitary, pinkish or purplish, to 14 in. long, with numerous slender stamens: fr. 1 ft. or more long and to 5 in. diam. S. Amer.

fastuòsa: *P. macrocarpa.*

macrocárpa (*P. fastuosa*). Small tree: lfts. 5–7, oblong to obovate, to 8 in. long: fls. pale pink to straw-colored within, to 9 in. long: caps. to 9 in. long and 8 in. diam. Mex. to Costa Rica.—Differs from *P. aquatica* in its ovate rotund caps.

PACHÍSTIMA. *Celastraceæ.* Evergreen small shrubs of N. Amer. bearing opposite simple leathery lvs., small reddish bisexual fls., and capsular frs.

Pachistimas may be transferred into the border, wild-garden or rock-garden where they thrive in any well-drained soil. Propagated by seeds, layers, cuttings under glass, and *P. Canbyi* also by division. They are hardy in southern New England.

Cánbyi. To 1 ft., trailing: lvs. narrowly oblong, to 1 in. long and less than ¼ in. broad, sides nearly parallel, the margins revolute, minutely serrulate toward apex. Mts. of Va. and W. Va.

Myrsinìtes. To 3 ft.: lvs. ovate, oval to lance-elliptic, to 1¼ in. long, broad, toothed, often acute. B. C. to Calif. Var. **variegàta** is listed.

PACHYCÁRPUS. *Asclepiadaceæ.* Erect per. S. African herbs having tuberous or fleshy roots, allied to Asclepias and differing in technical characters of the fls. One species is doubtfully cult., **P. grandiflòrus** (*Asclepias grandiflora*). To 20 in., pubescent: lvs. oblong to lanceolate, to 4½ in. long, petioled, margins usually undulate: fls. yellowish-green spotted purple-brown, on pedicels to 1 in. long in 2–4-fld. umbels.

PACHYCÈREUS. *Cactaceæ.* Columnar and ribbed tree-like Mexican spiny cacti of 10 species differing from Cereus in bearing scales on ovary and fl.-tube with felt and bristles in their axils and fr. bur-like and dry: fls. diurnal, stamens included: plants usually bearing dense wool or felt. See *Cacti.*

chrysomállus (*Cereus* and *Cephalocereus chrysomallus*). Much branched with age, the erect branches making a compact top to 15 ft. through and to more than 50 ft. high, glaucous; ribs 11–14; radial spines about 12; centrals 3: fls. cream-color, about 2½ in. long, concealed in long brownish wool.

Colúmna-Trajàni (*Cereus* and *Cephalocereus Columna-Trajani*). Trajans Column. St. often simple (at least below), to 20 in. diam. and 40–50 ft. high; ribs many and green, areoles with brown felt; radials 8–10; centrals longer: fls. purple.

marginàtus: *Lemaireocereus marginatus.*

Pálmeri: perhaps *Cephalocereus Palmeri.*

pécten-aboríginum (*Cereus pecten-aboriginum*). Hair-brush Cactus. To 30 ft., trunk to 6 ft. and 1 ft. diam., with many erect branches; ribs 10 or 11 and tomentose; spines 8–12, 1–3 central: fls. white inside and purple outside, 2 in. or more long.—The large frs. are sometimes used by Indians as hair-brushes, whence the Latin name.

polýlophus: *Cephalocereus polylophus.*

Prínglei (*Cereus Pringlei*). To 30 ft. and more, trunk 3–6 ft. and 2 ft. or more diam., sometimes nearly simple but often with many upright branches; ribs 11–17, areoles brown-felted; spines 20 or more on young parts but often absent in old plants: fls. white, to 3 in. long.

ruficéps. St. columnar, to 50 ft. tall and 18 in. diam., somewhat branched above; ribs about 26; spines reddish when young, radials 8–10, to ½ in. long, becoming gray, centrals 1–3, to 2 in. long.

Tetétzo (*Cereus* and *Pilocereus Tetetzo*). To 45 ft., branching: fls. greenish-white, 2½ in. long, in clusters of 10–20.

PACHYLOPHUS: *Œnothera.*

PACHÝPHYTUM. *Crassulaceæ.* Succulent herbs of Mex. with very thick lvs. and fls. solitary or in one-sided racemes, differing from Cotyledon in having the petals appendaged at the insertion of the stamens; sometimes grown in greenhouses and perhaps in the open in warm regions.

adúncum: *P. Hookeri.*

amethýstinum: *Graptopetalum amethystinum.*

bracteòsum (*Cotyledon Pachyphytum*). About 1 ft. tall, glaucous-blue: lvs. mostly in rosettes on st., obovate: fls. red, in racemes to 6 in. long.

brevifòlium. Sts. short, to 2 in.: lvs. to ¾ in. long, very fleshy, blunt: fls. few, in a raceme; lobes of calyx broad and blunt, nearly hiding the petals.

compáctum. Sts. to 4 in.: lvs. very fleshy, but somewhat flattened, to 1 in. long, closely set at right angles to st.: fl.-st. to 16 in. high, with 7 to 10 reddish fls. in a racemose cluster.

glutinòsum: listed name.

Hoòkeri (*P. aduncum*). Sts. to 2 ft.: lvs. oblong, very thick and turgid, to 2 in. long: fls. yellowish, tinged with red, 6 to 18 in a racemose cluster.

hùmile: listed name.

ovíferum. Lvs. ovate, terete, hoary, to 1½ in. long and 1 in. wide: fls. red; sepals unequal, to ¾ in. long.

uniflòrum. Sts. to 2 ft., simple or branched at base: lvs. turgid, to 2 in. long, pale green, not glaucous: fls. solitary, reddish.

PACHYRHÌZUS. Yam Bean. *Leguminosæ.* Twining herbaceous vines having large tuberous roots, trifoliolate lvs., papilionaceous fls. in clusters on long axillary racemes, and flattened pods.

Yam beans are grown in warm countries for the edible roots and pods. Propagated by seeds. Vines should be supported by sticks or otherwise.

eròsus. At least the terminal lft. lobed: fls. violet: pods 4–6 in. long. Tropics.

palmatílobus. Strong high climber: lvs. of 3 large odd irregular lfts. cuneate at base and with pointed notches on the broad top: fls. purple, in long racemes. Trop. Amer.—Planted in S. Fla.

tuberòsus. Lfts. entire: fls. white: pods 8–12 in. long. Tropics.

PACHYSÁNDRA. *Buxaceæ.* Deciduous or evergreen procumbent per. hardy herbs or subshrubs, with simple lvs., monœcious apetalous fls. in spikes, and capsular frs.; planted as ground-cover in shady locations. Propagated by cuttings in summer.

procúmbens. Alleghany P. or Spurge. To 1 ft.: lvs. mostly deciduous, entire or toothed above middle: fls. greenish or purplish, in spikes from the base of the sts. Apr.–May. W. Va. to Fla. and La.

terminàlis. Japanese P. or Spurge. To 12 in.: lvs. persistent, toothed above middle: fls. white, in terminal spikes, in May. Japan. Var. **variegàta** has lvs. bordered and variegated with white.—This species is now much employed for ground-cover.

PACHÝSTACHYS. *Acanthaceæ.* Shrubs of trop. Amer. distinguished from Jacobinia by technical differences in the pollen and stamens, and of the same cultural requirements.

coccínea (*Jacobinia* and *Justicia coccinea*). To 7 ft.: lvs. ovate or oval, to 8 in. long, entire: fls. scarlet, 2 in. long, deeply 2-lipped, in dense terminal heads. Trinidad, S. Amer.

PACHYSTÈGIA. *Compositæ.* New Zealand shrub distinguished from Olearia by technical characters of involucre and pappus. **P. insígnis.** To 6 ft.: lvs. crowded at ends of branches, to 7 in. long and 4 in. across, entire, very thick and leathery, shining above, densely tomentose beneath: heads to 3 in. across, of white ray-fls. and yellow disk-fls. Planted in Calif.

PACHYVÈRIA. *Crassulaceæ.* A name proposed to include hybrids between the genera Pachyphytum and Echeveria.

clavàta. Hybrid between *P. bracteosum* and a species of Echeveria: lvs. gray, broadest near middle: raceme mostly bifid with the fls. crowded.

Clèvelandii. Hybrid between *P. bracteosum* and *E. secunda:* lvs. narrow, tinged purple: petals without appendages; sepals narrow, somewhat spreading or ascending.

glaùca. Hybrid between *P. Hookeri* and a species of Echeveria: lvs. closely crowded, to 2 in. long, subterete, slightly flattened above, gray: sepals shorter than corolla; petal-tips recurved.

Órpetii. Listed name applied to hybrid between *P. bracteosum* and a species of Echeveria: st. short: rosette lvs. oblanceolate, acute, to 7 in. long, glaucous, tinged with purple: flowering-shoot to 1 ft. tall; fls. pink, in a paniculate infl.

Scheìdeckeri. Hybrid between *P. bracteosum* and *E. secunda:* cespitose, st. short: lvs. many, glaucous: sepals shorter than and appressed to corolla.

sobrìna. Hybrid between *P. Hookeri* and a species of Echeveria: lvs. narrow, to 5 times as long as broad, glaucous: corolla and sepals both to about ½ in. long.

PADUS RACEMOSA: *Prunus Padus.*

PÆÒNIA. PEONY. *Ranunculaceæ.* Strong per. herbs or low shrubs with tuberous or thickened rootstocks, large alternate compound lvs., usually large solitary red, purple, white or yellow fls., and dehiscent follicular frs.; mostly native in Eu. and Asia.—The commonly cult. peonies are mostly the issue of *P. albiflora* and *P. suffruticosa.*

Peonies are amongst the most popular flower-garden subjects and are very hardy, blooming in spring and early summer. They thrive in any soil, but fertile loam is best and as they are gross feeders they should be given a top dressing in late fall which is worked into the soil in spring. Propagated by division of clumps in late summer or autumn, layers and cuttings; also by seeds which will not produce bloom for about three years and are not expected to reproduce the parent exactly. Varieties may be propagated by grafting on a piece of tuber with eyes removed in late summer or early autumn, stored over winter, and planted out in spring. Peonies may also be forced in the greenhouse.

Many of the horticultural forms have been given Latinized names and are not recognized botanically. Some of these are: *alba, amabilis, atrosanguinea, bicolor, Buckii, candidissima, chrysanthemifolia, delicatissima, formosa, fragrantissima, gigantea, grandiflora, ligulata, magnifica, mutabilis, nigricans, nivea, nobilissima, odorata, prolifera, pulcherrima, purpurea, sulphurea, superbissima, tricolor, umbellata, violacea.*

albiflòra (*P. edulis. P. fragrans. P. Reevesiana*). To 3½ ft., with spindle-shaped tuberous roots: lvs. biternate, the lfts. oblong to lanceolate, entire, long-acuminate, usually veined with red: fls. originally white or pink but now in many colors as most of the named garden forms belong here, to 6 in. across: fr. of 3–5 commonly glabrous follicles. Siberia, China, Japan. Var. **festìva** has double white fls. marked in center with carmine. Var. **sinénsis** (*P. chinensis*) has large double crimson fls.

anemonæflòra: garden name for form of *P. officinalis.*

anómala. To 3 ft., with tuberous roots: lvs. biternate, the lfts. lanceolate or linear-lanceolate, acuminate, often lobed: fls. bright crimson, about 4 in. across: fr. of 3–5 glabrous or tomentose follicles. N. Eu., Asia. Var. **insígnis** has magenta fls. with crimson stigmas.

arbòrea: *P. suffruticosa.*

arietìna: *P. peregrina.*

Bánksii: a var. of *P. suffruticosa* with much doubled larger rose fls.

Brownii. To 16 in.: lvs. ternate or biternate, the lobes obovate, glaucous: fls. brownish-red, to 1½ in. across: fr. of 3–5 glabrous follicles. B. C. to Calif. and Utah.

cárnea: probably a hort. form of *P. albiflora.*

chinénsis: *P. albiflora* var. *sinensis.*

corállina (*P. corsica. P. flavescens*). To 4 ft., with tuberous roots: lvs. mostly biternate, lfts. elliptic-lanceolate, entire, acute: fls. purple to whitish, about 4 in. across: fr. of usually 5 tomentose follicles becoming glabrous. S. Eu.

córsica: *P. corallina.*

decòra. To 3 ft., with oblong tuberous roots: lvs. pale green, lfts. oblong, entire, obtuse: fls. deep purple, about 4 in. across: fr. of 2–3 tomentose follicles. S. Eu. Var. **Pállasii** has narrower lfts. and crimson fls.

Deláchei: a violet-crimson late-blooming plant.

Delavàyi. Stoloniferous subshrub to 3 ft.: lvs. bipinnate, the lfts. ovate-lanceolate to lanceolate, entire or toothed: fls. dark crimson, 2 in. across: fr. of 5 glabrous follicles. W. China.

edùlis: *P. albiflora.*

élegans: *P. officinalis.*

emòdi. To 2 ft.: lvs. usually biternate, lfts. oblong or lanceolate, entire or cut: fls. white or red: fr. mostly of 1 rough or glabrous follicle. Himalayas.

festìva: plants so named are probably *P. albiflora* or *P. officinalis.*

flavéscens: *P. corallina.*

fràgrans: *P. albiflora.*

fúlgida: *P. officinalis.*

Hùmei: *P. suffruticosa* var.

hùmilis: probably referable to *P. peregrina* or *P. paradoxa.*

laciniàta: probably *P. anomala* although sometimes applied to *P. tenuifolia.*

lobàta: *P. officinalis* var.

lùtea. Subshrub to 3 ft.: lvs. pinnate into obovate-oblong cut or lobed lfts.: fls. golden-yellow, to 4 in. across: fr. of 3 glabrous follicles. China.

macrophýlla of cult.: probably *P. tomentosa.*

microcárpa. To 1½ ft.: lvs. bipinnate into oblong acute lfts. very pubescent beneath: fls. bright crimson, to 5 in. across: fr. of 2 glabrous follicles. Mts. of Spain.

Mlokosewítschii. To 2½ ft.: lvs. biternate, lfts. oblong or elliptic, bluish-green above, glaucous beneath, nerves and margins red: fls. yellow, to 5 in. across: fr. of 3 white-tomentose follicles. Caucasus.

Moùtan: *P. suffruticosa.*

officinàlis (*P. elegans. P. fulgida. P. pubens*). To 3 ft.: lvs. mostly biternate, lfts. oblong-lanceolate, lobed, obtuse or short-acute: fls. dark crimson varying to white or yellowish, about 4 in. across: fr. of 2–3 white-tomentose follicles. S. Eu., W. Asia. Double forms are vars. **álbo-plèna, ròseo-plèna, rùbro-plèna.** Var. **festìva** has white fls. with red centers. Other Latin-named forms are **àtro-rùbra, lobàta, sanguínea, supérba.**

paradóxa. Probably only a form of *P. peregrina*, differing in the smaller lvs. glaucous and whitish beneath. S. Eu.

peregrìna (*P. arietina*). To 2 ft.: lfts. oblong, acute, pilose beneath: fls. bright crimson, to 4 in. across: fr. of 2–3 tomentose follicles. Eu.

Póttsii: listed as an early form with fragrant dark crimson fls.

pùbens: *P. officinalis.*

Reevesiàna: *P. albiflora.*

Rússii: a form of *P. corallina* with lvs. densely pubescent beneath.

sinénsis: *P. albiflora* var.

Smoùthii: a form of *P. anomala.*

suffruticòsa (*P. arborea. P. Moutan*). TREE P. Much branched shrub to 6 ft.: lvs. biternate, the lfts. ovate, 3–5-lobed, glaucous beneath: fls. red, rose or white, to 1 ft. across: fr. of numerous densely pubescent follicles. China. Var. **Hùmei,** fls. whitish with dark center, partially double. Var. **papaveràcea,** fls. white with purple blotch at base of petals, nearly single. Var. **ròsea,** fls. bright rose.

tenuifòlia. To 1½ ft., with creeping rootstocks: lvs. ternate, the lfts. narrow-linear: fls. dark crimson or purple, 3–4 in. across: fr. of 3–4 pubescent follicles. S. E. Eu., W. Asia. Var. **laciniàta** has more finely dissected lvs. and var. **latifòlia** is said to have less finely cut lvs.

tomentòsa. Much like *P. Wittmanniana* but with densely tomentose carpels and darker more strongly veined foliage. Orient.

Veìtchii. To 2½ ft.: lvs. narrowly divided into 12–15 segms., light green, glossy above and below, veins markedly depressed: fls. purplish-crimson, to 4 in. across, several on each peduncle. China.

Whítleyi: a form of *P. albiflora* with large white single fls.

Wittmanniàna. To 3 ft.: lvs. biternate, the lfts. ovate, pubescent beneath: fls. yellow to whitish, 4 in. across: fr. of 2–3 glabrous follicles. Caucasus.

Woodwardiàna: listed name.

PAGODA-TREE, JAPANESE: *Sophora japonica.*

PAINT-BRUSH, DEVILS: *Hieracium aurantiacum.* Indian: *Castilleja californica.*

PAINTED-CUP: *Castilleja.* **-Tongue:** *Salpiglossis sinuata.*

PAK-CHOI: *Brassica chinensis* and *parachinensis.*

PALAFOXIA: *Polypteris Hookeriana.*

PALÀQUIUM. *Sapotaceæ.* Large trees with milky juice from which gutta-percha is obtained, alternate leathery lvs., small 6-lobed fls. in clusters, and fr. a fleshy berry; native in E. Indies and Malaya.

Gútta (*Isonandra Gutta*). To 40 ft.: lvs. oval, 4 in. long, rusty-tomentose beneath. Malaya.—Sometimes planted in warm countries for ornament and interest.

PALICOÙREA. *Rubiaceæ.* Shrubs or trees of trop. Amer., with opposite lvs., small tubular fls. in terminal panicles, and fr. a small drupe. Sometimes planted for ornament far S.

barbinérvia. Shrub or tree to 25 ft.: lvs. elliptic, to 10 in. long, shining above: fls. white, corolla tomentose. W. Indies.

cròcea. Shrub to 10 ft.: lvs. ovate or elliptic, to 8 in. long: fls. red, corolla glabrous: fr. dark brown or black. W. Indies, S. Amer.

PALI-MARA: *Alstonia scholaris.*

PALISÒTA. *Commelinaceæ.* Trop. African per. herbs having parallel-veined lvs. edged with reddish hairs, white, rose or bluish fls. in panicles that are sometimes nearly hidden at base of foliage, and fr. a purple or red berry; rarely grown in greenhouse collections. Propagated by cuttings over heat, or by seeds.

Bárteri. Lvs. to 2 ft. long and 4½ in. wide, mostly basal: fls. dark purplish.

Pynaértii. Sts. short: lvs. to 1½ ft. long and 6 in. wide, gray-pubescent: fls. white, in dense infl. to 3 in. long.

PALIÙRUS. *Rhamnaceæ.* Trees or shrubs with spines and alternate simple lvs., small fls. in cymes, and spherical small fr. with a broad wing or rim surrounding it, making a dry disk-like object with raised center; grown for ornament but not hardy north of Washington.

The one species commonly grown (*P. Spina-Christi*) needs a sunny position and well-drained soil. Propagated by seeds sown in autumn or stratified, by layers and root-cuttings.

aculeàtus: *P. Spina-Christi.*

Hemsleyànus (*P. orientalis*). Tree to 40 ft. or more, often spineless, with lvs. much larger than the following species and fr. broader. China.

orientàlis: *P. Hemsleyanus.*

Spìna-Chrísti (*P. aculeatus*). Christ-Thorn. Jerusalem-Thorn. To 20 ft., with straight and hooked spines: lvs. ovate, to 1½ in. long, mostly finely toothed, 3-ribbed: fls. greenish-yellow: fr. brownish-yellow, to 1 in. across. S. Eu. to N. China.

PALM, PALMACEÆ. Highly ornamental and decorative evergreen and mostly evergrowing woody plants, much prized in the juvenile state under glass and extensively planted for full stature in tropical and warm-temperate regions around the globe, many of them yielding economic products of great importance, probably 200 genera and perhaps 4,000 species. In general, the palms are not well understood botanically as to species and varieties.

Palms are mostly tree-like, but some of them are extensive climbers and others are bushes. The trunk or caudex is various in character, although of endogenous internal structure. In some kinds the caudex is wholly subterranean. In most cases the trunk is unbranched, but in Hyphæne and a few others it may be naturally forked, sometimes extensively. Multiple heads now and then occur in various palms following injury. The flowers of palms are small but commonly numerous, bisexual or unisexual, borne on a simple or usually branching spadix or inflorescence that is mostly contained in or subtended by a simple or multiple spathe, the plant often monœcious or sometimes diœcious; the spadix is borne among the leaves in some genera, below them in others, and sometimes above the crown; the fruit is exceedingly various, from nuts small or large, drupes berry-like, and dry seed-like bodies.

To the general observer and the horticulturist the palms fall into two groups, (1) the fan-leaved or palmate kinds, (2) the feather-leaved or plumose in which the veining or the division is pinnate on either side a continuing rachis; these distinctions, however, do not hold strictly, for there are intermediate types and a botanical classification might not give them primary importance. For careful discrimination the flowers and flowering habit, and the fruits, must be known. Under glass, the palms are seen mostly in the juvenile or virgin state and their exact identification may be difficult or impossible.

The number of palms planted in the continental United States is far greater than is commonly supposed. Genera here entered are: Acanthophœnix, Acrocomia, Actinophlœus, Adonidia, Aiphanes, Archontophœnix, Areca, Arecastrum, Arenga, Arikuryroba, Astrocaryum, Attalea, Bactris, Balaka, Bismarckia, Borassus, Brahea, Butia, Calamus, Caryota, Ceroxylon, Chamædorea, Chamærops, Chambeyronia, Chrysalidocarpus, Coccothrinax, Cocos, Collinia, Colopthrinax, Copernicia, Corozo, Corypha, Cryosophila, Cyrtostachys, Dæmonorops, Deckenia, Desmoncus, Dictyosperma, Elæis, Erythea, Eupritchardia, Euterpe, Gaussia, Geonoma, Guilielma, Hedyscepe, Heterospathe, Howea, Hydriastele, Hyophorbe, Hyphæne, Juania, Jubæa, Kentia, Kentiopsis, Korthalsia, Latania, Licuala, Linospadix, Livistona, Lodoicea, Nannorrhops, Nipa, Normanbya, Paurotis, Phœnix, Phytelephas, Pinanga, Polyandrococos, Pseudophœnix, Ptychoraphis, Ptychosperma, Raphia, Rhapidophyllum, Rhapis, Rhopalostylis, Rhyticocos, Roscheria, Roystonea, Sabal, Scheelea, Serenoa, Stevensonia, Syagrus, Synechanthus, Thrinax, Trachycarpus, Trithrinax, Veitchia, Verschaffeltia, Wallichia, Washingtonia, Zombia. Studies in recent years have made important changes in palm nomenclature, and further elucidation is to be expected.

Other groups than these are undoubtedly in test grounds within the confines of the continental United States, but probably the present genera comprise the kinds that have attained currency or have been represented in trade-lists or American horticultural literature. Some of these palms are known only as under-cover subjects, although most of them (if not all) are now planted somewhere within our limits in the open or under lath (the lath providing protection from sun and wind as well as from cold). In some cases they are yet known only as small seedlings, with their adaptabilities still to be determined. The number in cultivation will increase as the capabilities are better known in southern Florida, southern California, and on the Gulf coasts between, and as the interest in palms expands.

The above genera represent most palm regions of the world. In the United States, 10 genera are native, with nearly or quite 20 species, most of them Floridian. California has one species of Washingtonia, Texas two or three species of Sabal. No palms are known to be native in Arizona and New Mexico except one station for Washingtonia in the former. In the middle Gulf coast country, Sabal and Serenoa are represented; and the palmetto extends as far, on the Atlantic coast, as North Carolina.

Formerly many kinds of palms were grown in greenhouses and for decoration in residences but the number is now reduced mostly to those that can be grown in large quantity and striking uniformity, as the Howeas, *Chrysalidocarpus lutescens, Syagrus Weddelliana, Phœnix Roebelenii* and *P. canariensis,* all feather-palms; but in very mild climates for patio and lath-house use a larger range of pot and tub subjects is available; and many of the species are adaptable for house use in the hands of the amateur.

In general, palms are easy to manage as pot subjects, and when they become too large or begin to fail they may be discarded for younger plants, these plants being purchased from dealers. They thrive mostly in partial shade. Transplanting to other pots should be undertaken preferably only when the roots are active, as in spring and summer. A common fault is to shift too frequently into too large pots, as this may check growth and orderly development and may result in over-watering. Although the growing young palm requires constant moisture, it suffers quickly from an excess and from poor drainage. Well-rotted sod is a good basis for palm soil with which may be mixed a little old manure or leaf-mold and sufficient sand or peat to keep it rather light, sweet and open. Most palms grow readily from good seed, in a mild heat under glass. The young seedlings of most kinds thrive in a night temperature of about 60° F. or a little under, and 10 to 20° higher in the day. In summer, potted palms may be plunged in the open in partial shade well protected from wind. Only very few of the house palms can be propagated from suckers, although this is the only way of procuring named varieties of dates in orchard planting for fruit; but for house decoration, young date palms may be readily raised from seeds of the commercial fruits.

The palms have large uses in landscape planting in climates adapted to them, but they are commonly very poorly placed for the best effect; the subject needs careful study by competent artists. A palm, as any other plant, is not pleasing unless thrifty and exhibiting the characteristics of its kind. Often the plants are neglected or carelessly grown; and if placed where they must be constantly trimmed of their leaves they soon lose character and become valueless. For permanent planting, palms should be moved only when roots are active and may reëstablish themselves; yet persons think that because they are evergreen they may be moved with impunity at any time. Palms require good soil and, at least in the growing season, plenty of water, to produce their full verdure. When the ground is naturally thin and poor, abundant stable-manure or other fertilizer may be thoroughly mixed with the soil, and an annual top-dressing added. In other words, palms require as good treatment as other plants if they are to come to their best; and the intending grower should understand something of the countries from which they come as an index to their requirements in temperature and moisture.

PALM, ALEXANDRA: *Archontophœnix Alexandræ.* **Arikury:** *Arikuyroba.* **Barrel:** *Colpothrinax Wrightii.* **Barrigona:** *Colpothrinax Wrightii.* **Betel:** *Areca Cathecu.* **Black:** *Normanbya Normanbyi.* **Blue, Mexican:** *Erythea armata.* **Bottle:** *Colpothrinax Wrightii, Hyophorbe amaricaulis.* **Cane:** *Calamus.* **Carnauba:** *Copernicia cerifera.* **Cherry:** *Pseudophœnix.* **Cluster:** *Actinophlœus.* **Doum, Egyptian:** *Hyphæne thebaica.* **Everglade:** *Paurotis Wrightii.* **Fan, Chinese:** *Livistona chinensis.* **Fish-tail:** *Caryota.* **Fountain:** *Livistona chinensis.* **Gingerbread:** *Hyphæne thebaica.* **Guadalupe:** *Erythea edulis.* **Ivory-Nut:** *Phytelephas macrocarpa.* **King:** *Archontophœnix.* **Lady:** *Rhapis.* **Manila:** *Adonidia.* **Mazari:** *Nannorhops Ritchieana.* **Needle:** *Rhapidophyllum.* **Nikau:** *Rhopalostylis sapida.* **Nut, Australian:** *Cycas media.* **Oil, African:** *Elæis guineensis.* **Oil, American:** *Corozo oleifera.* **Overtop:** *Rhyticocos.* **Palmyra:** *Borassus flabellifer.* **Peaberry:** *Thrinax.* **Peach:** *Guilielma Gaspiaës.* **Piccabeen:** *Archontophœnix Cunninghamiana.* **Pignut:** *Hyophorbe.* **Princess:** *Dictyosperma.* **Queen:** *Arecastrum Romanozoffianum.* **Rattan:** *Calamus.* **Rock:** *Brahea.* **Royal:** *Roystonea.* **Sago-:** *Cycas revoluta.* **Saw-Cabbage:** *Paurotis Wrightii.* **Seamberry:** *Coccothrinax.* **Silver-Saw:** *Paurotis.* **Spindle:** *Hyophorbe Verschaffeltii.* **Step:** *Archontophœnix Alexandræ* var. *Beatriciæ.* **Sugar:** *Arenga pinnata.* **Syrup:** *Jubæa spectabilis.* **Talipot:** *Corypha umbraculifera.* **Wax:** *Ceroxylon andicola.* **Windmill:** *Trachycarpus Fortunei.* **Wine:** *Caryota urens.* **Yatay:** *Butia.* **Zombi:** *Zombia.*

PALMA CHRISTI: *Ricinus communis.* **de vino:** *Acrocomia vinifera.*

PALMATE: lobed or divided or ribbed in a palm-like or hand-like fashion; digitate, although this word is usually restricted to leaves compound rather than merely ribbed or lobed.

PALMATIFID: cut about half way down in a palmate form.

PALMERÉLLA. *Lobeliaceæ.* Per. lobelia-like herbs native in Mex. and Calif., with alternate simple lvs., fls. in terminal racemes, the corolla with long straight tube and spreading 2-lipped limb, and fr. a caps.

débilis. To 2 ft., glabrous: lvs. linear-lanceolate, to 3 in. long, entire: fls. whitish with light blue limb, ¾ in. long. Var. **serràta** has sharp-toothed lvs.

PALMETTO: *Sabal.* **Saw-:** *Serenoa.* **Scrub-:** *Serenoa.*

PALO VERDE: *Cercidium Torreyanum.*

PÀNAX. GINSENG. *Araliaceæ.* Low per. herbs native in N. Amer. and E. Asia, having digitately compound lvs. borne in whorls, small greenish polygamous fls. in terminal umbels, and berry-like frs.; grown for the roots which are employed in medicine. The species of Polyscias are sometimes known as Panax.

Ginseng seed should be sown in drills or broadcast in beds in light well-drained loam. Seedlings should be transplanted the first or second year. Seeds should be stratified until ready for use.

anómalum: *Nothopanax anomalum.*

aùreum: a form of *Polyscias Guilfoylei.*

caryotaefòlium: listed name of unknown botanical standing; apparently an error.

crassifòlium: *Pseudopanax crassifolium.*

excélsum: referable to *Polyscias fruticosa* var. *plumata.*

fèrox: *Pseudopanax ferox.*

fruticòsum: *Polyscias fruticosa.*

Gínseng: *P. Schinseng.*

Léssonii: *Pseudopanax Lessonii.*

quinquefòlium (*Aralia quinquefolia*). AMERICAN G. To 1½ ft.: lvs. of 5 somewhat obovate abruptly acuminate coarsely toothed lfts. to 5 in. long. Que. to Mo.—The common species in cult. in N. Amer.

Schínseng (*P. Ginseng*). ASIATIC G. Lvs. of 5 oblong-ovate gradually acuminate finely double-serrate lfts. to 4 in. long, having conspicuous white bristles on veins above. Manchuria, Korea.

trifòlium (*Aralia trifolia*). DWARF G. GROUNDNUT. To 8 in.: lvs. of 3–5 toothed lfts. to 1½ in. long. N. S. to Ga. and Wis.

PANCRÀTIUM. *Amaryllidaceæ.* Mostly summer-flowering bulbs of the Old World with basal lvs. and white fls. in umbels terminating the solid scapes, the perianth with long tube and narrow segms., the stamens united at base into a cup or crown. Plants grown under this name are likely to be Hymenocallis, which differs in technical botanical characters.

Pancratiums should be kept in a night temperature of 60–70° and well watered. Bulbs should be rested and kept dry through the winter. In late winter they may be repotted or given a top dressing. Propagated by offsets or seeds.

calathìnum: *Hymenocallis calathina.*

canariénse. To 2 ft.: lvs. sword-shaped, glaucous, to 2 ft. long: fls. white, to 2½ in. long, in umbels of 6–10, tube about 1½ in. long, on very long pedicels. Canary Isls.

illýricum. Lvs. strap-shaped, to 2 in. wide: fls. on scapes 1 ft. or more long, with green tube 1 in. long and segms. 1½ in. long, crown toothed, ¼ in. long, filaments of stamens to ¾ in. long, pedicels short. Medit. region.

marítimum. Lvs. to 2½ ft. long, linear, evergreen: fls. very fragrant, with tube to 3 in. long and linear segms. 1½ in. long, crown with short teeth, 1 in. long, the filaments of stamens and pedicels short. Medit. region.

PANDANÀCEÆ. Screw-Pine Family. Rather woody plants, related to palms, usually shrub-like or trees, with simple mostly stiff sword-like lvs. borne at tips of branches, and sometimes producing aërial roots; stamens and pistils separate and not in definite fls., and fr. a cone- or ball-like body; 4 genera in Old World tropics and warm regions, of which Freycinetia and Pandanus are known to hort. in N. Amer.

PANDÀNUS. Screw-Pine. *Pandanaceæ.* Trop. shrubs and trees with stiff usually prickly-margined lvs., fls. in spikes, naked, and fr. a mass of woody drupes or nuts: the lvs. are arranged in a spiral way, whence the name screw-pine. Lvs. used for bags and the like in some cases.

Screw-pines may be planted out-of-doors in tropical or semi-tropical regions, and are grown in greenhouses and window-gardens in the juvenile state, in pots and tubs, for house and table decoration. They require abundant moisture and heat, and will thrive in conditions suitable for palms. Propagation is by suckers that arise about the base, placed in pots over bottom heat, or by seeds when procurable; the latter should be soaked for twenty-four hours, planted in pots and given water and shade.

Baptístii. St. short: lvs. 1 in. wide, unarmed, striped with white or yellow. New Britain Isls. Var. **aùreus** is listed with lvs. yellow striped.

boninénsis. Tree about 24 ft. high, st. with many aërial supporting roots: lvs. about 2 in. wide, long-pointed. Pacific Isls.—Distinguished from *P. tectorius* by drupes trilocular, not multilocular.

caricòsus. Low, tufted: lvs. to 2 in. wide, glaucous beneath, margins finely spiny-toothed. Java.

furcàtus. Tree to 40 ft. with large aërial roots forming about base, sparingly forked: lvs. to 20 ft. long and 4 in. wide, glaucous beneath, marginal spines flattened and curved, to ⅙ in. long: spathes golden-yellow, to 2 ft. long: fr. reddish-brown, to 9 in. long, fleshy. S. Asia.—Sometimes confused with *P. ceylanicus*, a plant not known to be in cult. here, but which is more slender, and lvs. narrower with more strongly recurved spines.

grácilis. Shrub: lvs. imbricated, keeled, margins and midrib above with incurved prickles. Philippines.

graminifòlius. Lvs. about ⅕ in. wide, glaucous beneath. Burma.—The plant commonly cult. under this name is *P. pygmæus.*

javánicus: a name of no botanical standing; possibly *P. variegatus.*

pacíficus. Lvs. broad, glossy dark green, with tail-like tip. Pacific Isls.

pygmæ̀us. St. to 2 ft.: lvs. about ⅓ in. wide, glaucous beneath, long-pointed. Madagascar.

Sánderi. St. short: lvs. 2 in. or more wide, banded lengthwise with golden-yellow. Timor. Var. **Roehrsiànus** has lvs. striped yellow.

stenophýllus. Lvs. linear, to 2½ ft. long, acute, spines short, ascending and more remote and smaller along middle than at base or tip: drupes several on peduncle, to ½ in. long. Java, Sumatra.

tectòrius. Tree to 20 ft., with brace-roots: lvs. to 2 in. wide, glaucous-green, long-pointed. Asia, Australia, Pacific Isls.

ùtilis. Branching tree to 60 ft., with brace-roots: lvs. 3 in. wide, glaucous-green with reddish spines. Madagascar, where it is used for making baskets and other articles.—The species is usually planted in frostless countries.

variegàtus. St. with brace-roots: lvs. striped or variegated with white or young lvs. entirely white. Polynesia.

Veìtchii. Lvs. to 3 in. wide, banded lengthwise near the margins with silvery-white. Polynesia.—The most popular house and florists' pandanus.

PANDÒREA. *Bignoniaceæ.* Evergreen shrubs climbing or clambering by tendrils and petioles, or otherwise, native in Old World tropics, with pinnate lvs., funnelform white or pink fls. in panicles, and fr. an oblong pod.

Pandoreas are grown out-of-doors in southern United States, but may withstand a little frost. They require rich soil and sunny exposure. Propagated by seeds, and by cuttings of green wood under glass.

austràlis: *P. pandorana.*

Brýcei: *Podranea Brycei.*

jasminoìdes (*Bignonia* and *Tecoma jasminoides*). Bower-Plant. Lvs. of 5–9 ovate to lanceolate entire lfts. to 2 in. long: fls. white with pink throat, to 2 in. long, in few-fld. panicles. Australia. Var. **álba,** has pure white fls. and **ròsea** pink.

pandoràna (*P., Bignonia,* and *Tecoma australis*). Wonga-Wonga Vine. Lvs. of 3–9 ovate to ovate-lanceolate nearly entire lfts. to 2½ in. long: fls. yellowish-white spotted with purple, ¾ in. long, in many-fld. panicles. Malaysia, Australia. Var. **ròsea** has pale rose fls.

Ricasoliàna: *Podranea Ricasoliana.*

PANICLE: flower-cluster in which the branches are racemose, the flowers being pedicellate: a branching raceme.

PANICULARIA: *Glyceria.*

PÁNICUM. *Gramineæ.* Large widely distributed group of ann. and per. grasses, the spikelets borne in panicles or rarely racemes; a few species are grown for grain and forage and others for ornament. See *Grasses.*

altíssimum: confused name.

americànum: *Pennisetum glaucum.*

barbinòde: *P. purpurascens.*

capillàre. Witch-Grass. Ann. to 2 ft.: lvs. to 1 ft. long and ½ in. wide: panicles to 14 in. long, the branches exceedingly slender and spreading. N. S. to Fla. and Tex., Bermuda.—Sometimes prized for its large capillary infl. and in dry bouquets.

Crus-córvi: *Echinochloa Crus-galli.*

Crús-gálli: *Echinochloa Crus-galli.*

excúrrens: *Setaria plicata.*

frumentàceum: *Echinochloa Crus-galli* var.

germánicum: *Setaria italica.*

hungariénsis: this name presumably applies to the Hungarian-grass, *Setaria italica* var. *nigrofructa.*

máximum. Guinea-Grass. Tufted per. to 10 ft.: lvs. to 2 ft. long and ½ in. wide, midrib whitish: panicles to 2 ft. long, branches spreading. Afr.—Grown for forage in the S.

miliàceum. Millet. Broom-Corn Millet. Ann. to 4 ft.: lvs. to 1 ft. long and 1 in. wide: panicles to 1 ft. long, drooping, the branches slender and crowded: grain smooth and shining, white or straw-colored. E. Indies.—Grown for grain and forage.

palmifòlium: *Setaria palmifolia.*

plicàtum: *Setaria plicata.*

purpuráscens (*P. barbinode*). Para-Grass. Per. to 10 ft., stoloniferous and rooting at nodes: lvs. to 1½ ft. long and ½ in. wide, rough on edges: panicles to 1 ft. long, the branches ascending. Brazil, but escaped in trop. Amer.—Grown for forage.

sulcàtum: *Setaria sulcata.*

texànum. Colorado-Grass. Texas Millet. Ann. to 3 ft., soft-pubescent: lvs. to 8 in. long and ¾ in. wide: panicles of one-sided racemes. Tex.

tónsum: *Tricholæna rosea.*

variegàtum: the plant intended is probably *Oplismenus hirtellus.*

virgàtum. Switch-Grass. Per. to 6 ft.: lvs. to 1 ft. or more long and ½ in. wide, rough on edges: panicles to 1½ ft. long, the branches spreading or ascending. Me. to Fla. and Ariz., W. Indies, Cent. Amer.—Sometimes raised for ornament.

PANSY: see *Viola.*

PAPÀVER. Poppy. *Papaveraceæ.* Herbs or rarely subshrubs with milky colored juice, lobed or dissected lvs., showy red, violet, yellow or white fls. and nodding buds solitary on long stalks, and fr. a caps.

Poppies are popular flower-garden subjects grown as annuals, and others perennial in borders and rock-gardens. Seeds should be sown where plants are to grow, as poppies do not transplant well.

aculeàtum. Ann. to 4 ft., st. branched or nearly simple, covered with stiff spreading bristles: lvs. green, pinnatifid, pinnæ spine-tipped: fls. clear scarlet-orange, to 2 in. across: caps. glabrous. S. Afr., Australia.

alpìnum (*P. Burseri*). Alpine P. Nearly stemless per. to 10 in. high: lvs. 2–3-pinnate, glaucous: fls. white or yellow, fragrant: caps. oblong. Alps. Hort. color forms listed are: **álbum, aùreum** and **ròseum.** Var. **laciniàtum** is listed with pinnæ more narrowly linear. Var. **pyrenàicum** is *P. pyrenaicum.*

altàicum: an unidentified trade name of which some of the material so listed is *P. atlanticum.*

amurénse: *P. nudicaule* var.

apùlum. Ann.: lvs. bipinnate: fls. spotted with purple: caps. ellipsoidal. Italy.

árcticum: catalogue name.

Argemòne. Ann. to 1 ft.: lvs. bipinnate: fls. pale scarlet with dark spot at base of petals: caps. oblong-cylindric. Eu., N. Afr.

armenìacum. Bien. to 1½ ft., spiny at base, glabrous above: lvs. ovate, rarely to 4 in. long, pinnatifid, pinnæ spine-tipped: fls. pink, to ¾ in. across: caps. glabrous. E. Medit. region.

atlánticum. Hairy per. to 2 ft.: lvs. toothed or pinnate: fls. orange-red or scarlet, to 3 in. across: caps. club-shaped, glabrous except on ridges of its top. Morocco.

atrosanguíneum: probably a hort. form of *P. orientale.*

bracteàtum. Hairy per. to 3 ft.: lvs. pinnate, the lobes coarsely toothed: fls. blood-red, to 4 in. across, with bracts near them: caps. obovate. Medit. region to Persia.

Búrseri: *P. alpinum.*

califórnicum. Western P. Ann. to 2 ft.: lvs. pinnate: fls. red spotted with green at base, to 2 in. across: caps. top-shaped. Calif.

caucásicum (*P. fugax*). Glaucous bien. to 2 ft.: lvs. bipinnate: fls. scarlet, yellowish at base: caps. oblong. Caucasus.

dùbium. Ann. to 2 ft.: lvs. pinnate: fls. rose or white with darker center: caps. oblong or club-shaped. Eu.; escaped in N. Amer. Var. **lævigàtum** is glabrous and has purple usually spotted fls. The plant under this varietal name may be *P. Rhœas.*

floribúndum. Bien. to 2 ft., sts. and lvs. yellowish-glaucous, hispid: lf.-segms. usually dentate: fls. brilliant vermilion, stamens yellowish: caps. glabrous. Caucasus.

fùgax: *P. caucasicum.*

gigantèum: a form of *P. somniferum.*

glaùcum. Tulip P. Ann. to 2 ft.: lvs. pinnately lobed or cut, glaucous: fls. scarlet spotted at base, to 4 in. across. Syria to Persia.

Heldreìchii. Hairy per. to 20 in. high, st. erect, not much branched, leafy: lvs. oblong, to 8 in. long, apex broadly cuneate, cauline lvs. sessile, uppermost ones bract-like, margins of all crenate-serrate: fls. many in long racemes. Medit. region.—The plant cult. under this name may be *P. Schinzianum.*

hyoscyamifòlium. Bien. to 2 ft., sparsely setose: lvs. broadly oblong-lanceolate, pinnatifid, to 3 in. long, segms. oblong, terminated by setæ to ¼ in. long: fls. pink, suffused with orange. N. Medit. region to Syria.—Sometimes confused with *P. caucasicum,* differing in its more rigid seta-tipped lf.-segms. and caps. hispid on ridges, not glabrous.

involucràtum: an unidentified trade name.

laterítium. Hairy branched per. to 2 ft.: lvs. lanceolate, pinnatifid at base, outer half irregularly serrate, pinnæ and serrations spine-tipped, to 10 in. long: fls. brick-red, petals broad. Armenia.

macróstomum. Ann. to 1½ ft.: basal lvs. pinnate, oblong-lanceolate, cauline lvs. linear-lanceolate, entire or somewhat acutely dentate: fls. purplish-red, to 2 in. across, base rarely without black spots, petals sometimes with white margins: caps. usually glaucous. E. Medit. region.

magníficum: a form of *P. somniferum.*

Màrei. Differs from *P. dubium* in anthers black before anthesis, pollen yellow. Morocco.

monánthum. Per. to 1½ ft.: lvs. basal, linear or oblong, cut-toothed or pinnatifid: fls. solitary, brick-red, 1½ in. long. Caucasus.

monstròsum: a form of *P. somniferum.*

Murséllii: a strain of *P. somniferum* with double fringed fls.

nudicaùle. Iceland P. Nearly stemless hairy per. to 1 ft. high: lvs. pinnately lobed or cut: fls. white with yellow at base, yellow with green at base, orange or reddish, to 3 in. across, fragrant, sometimes double. Arctic regions, in N. Amer. south to Colo. Color forms are grown under such names as **álbum, amurénse, aurantìacum, aùreum, coccíneum, cròceum, delicàtum, lùteum, ròseum** and **rùbro-aurantiàcum.**—The American variations have been treated by some botanists as *P. radicatum.*

olýmpicum: *P. pilosum.*

orientàle. Oriental P. Hairy per. to 4 ft.: lvs. pinnate, the lobes sharply toothed: fls. scarlet with black spot at base ranging to orange and pale pink, 6 in. and more across, sometimes double. Medit. region to Persia. Hort. forms include **álbum, atrosanguíneum, cárneum, delicàtum, luminòsum, magníficum, pygmæum.** Var. **bracteàtum** is *P. bracteatum.* Var. **Párkmannii** (*P. Parkmannii*) is a double-fld. form.—Many of these forms may be hort. hybrids of *P. orientale* and *P. bracteatum.* Oriental poppies are easily propagated by division or root-cuttings made after flowering. They are among the longest-lived members of the group and do best when left undisturbed.

pæoniflòrum: a peony-fld. strain of *P. somniferum.*

Párkmannii: *P. orientale* var.

paucifoliàtum. Short-stemmed per. to 1 ft.: lvs. oblong-lanceolate, pinnately lobed to irregularly crenate-serrate, to 8 in. long, usually only one or two cauline lvs.: fls. orange-red, to 1½ in. across. Armenia.

pavonìnum. Peacock P. Hairy ann. to 1 ft.: lvs. pinnate, the lobes sharply toothed: fls. scarlet spotted with dark color, 1 in. across. Turkestan, Afghanistan.

pilòsum (*P. olympicum*). Olympic P. Hairy per. to 3 ft.: lvs. irregularly toothed: fls. brick-red, 2 in. across. Mt. Olympus in Bithynia.

pinnatífidum. Ann. to 2 ft., much branched, sts. setose: lvs. pinnatifid to simple and toothed, somewhat pilose: fls. rose-pink to reddish, stamens yellow. S. Eu.

pygmæum: *P. orientale* var.

pyrenàicum (*P. rhæticum*). Tufted nearly stemless per. to 4 in. tall: lvs. pinnately parted: fls. yellow or orange, to 1 in. long: caps. oblong. Pyrenees.

radicàtum: see under *P. nudicaule.*

rhǽticum: *P. pyrenaicum.*

Rhœ̀as. Corn P. Ann. to 3 ft.: lvs. irregularly pinnate or rarely entire: fls. cinnabar-red, deep purple, scarlet, or sometimes white, 2 in. across. Eu., Asia; nat. in N. Amer.; this is the common field poppy of Eu. Var. **umbròsum** has dark red fls. with blackish spots. Shirley poppies are a strain of this species. Var. **coccíneum aùreum** is a color form.

rupífragum. Nearly stemless per. to 1½ ft.: lvs. pinnately cut: fls. pale red, to 3 in. across. Spain. Var. **atlánticum** is *P. atlanticum.*

Schinziànum. Gray-hairy per. to 1½ ft.: lvs. obovate-lanceolate, irregularly pinnately lobed: fls. brick-red, 1¼ in. long: caps. obovoid. Habitat unknown.

setígerum. Sometimes treated as a form of *P. somniferum,* but it is hairy, lvs. more deeply cut, and has violet fls. Medit. region.

somníferum. Opium P. Ann. to 4 ft.: lvs. coarsely toothed or lobed: fls. white, pink, red or purple, to 4 in. across, sometimes double or with fringed petals. Greece, Orient.—Opium is obtained from the milky juice of the fr.

spicàtum. Densely white-hairy per. to 2½ ft.: lvs. oblong, basal ones long-petioled, densely pilose, margins crenate-serrate: fls. arranged in spike-like racemes on short peduncles: caps. glabrous. Asia Minor.

thibéticum. Similar to *P. nudicaule* but with larger fls. in yellow and orange. Tibet.

triniæfòlium. Bien. similar to *P. caucasicum* but with more compound lvs. and smaller fls. Asia Minor.

umbròsum: *P. Rhœas* var.

PAPAVERÀCEÆ. Poppy Family. Herbs or rarely shrubs, of about 25 widely distributed genera, often showy in bloom, having colored juice, regular bisexual polypetalous fls. with 2–3 caducous sepals, 4–8 or 8–12 free deciduous petals, numerous stamens, superior 1-celled ovary, and fr. a caps. opening by valves or pores. Several genera are grown in the flower-garden, as Argemone, Bocconia, Chelidonium, Dendromecon, Dicranostigma, Eomecon, Eschscholzia, Glaucium, Hunnemannia, Macleaya, Meconella, Meconopsis, Papaver, Platystemon, Pteridophyllum, Roemeria, Romneya, Sanguinaria, Stylomecon, Stylophorum.

PAPAW: *Asimina triloba*; see *Pawpaw.*

PAPAYA: see *Carica.*

PAPER-BUSH: *Edgeworthia papyrifera.* **-Flower:** *Bougainvillea glabra* var. *Sanderiana.*

PAPHIOPÈDILUM (*Cordula*). LADY-SLIPPER. *Orchidaceæ.* Trop. Asiatic terrestrial or epiphytic orchids without pseudobulbs, leathery conduplicate lvs., and fls either solitary or in racemes, having the lateral sepals united, lip sac-like often with involute margins, and 1-celled ovary. The name Paphiopedilum has been conserved over the older genus Cordula under the International Rules; species names formerly listed under Paphiopedilum may be found in Phragmipedium; see also Selenipedium. Grown in the hothouse and some of them at intermediate temperatures; they require good moisture supply; see *Orchids* for cult.

Actæus: *P. Siemonii.*

Albertiànum: a form of *P. Leeanum.*

Alexándræ. Hybrid between *P. Godefroyæ* and *P. nitens.*

Allaniànum. Hybrid between *P. Curtisii* and *P. Spencerianum.*

amándum. Hybrid between *P. insigne* and *P. venustum.*

ángliæ. Hybrid between *P. callosum* and *P. Leeanum.*

Appletoniànum. Lvs. to 6 in. long and 1½ in. wide, green: fls. solitary or 2, on stalks to 20 in. high, about 3½ in. across; sepals yellow-green streaked with wine-purple; petals green at base and rose at tip; lip greenish-brown. Winter and spring. Siam.

Árgus. Lvs. to 8 in. long and 1½ in. wide, light green tesselated with dark green spots: fls. solitary (rarely 2), on stalks to 16 in. high; sepals white veined with green or green and purple; petals white veined with green and closely spotted with brownish-black, red at tip; lip brownish-purple marked with light green. Mar.–June, Aug. Philippines.

Arthuriànum. Hybrid between *P. insigne* and *P. Faireanum.*

Áshburtoniæ. Hybrid between *P. barbatum* and *P. insigne.*

augústum. Hybrid between *P. Haynaldianum* and *P. villosum.*

aùreum. Hybrid between *P. nitens* and *P. Spicerianum.* There are many named forms of this hybrid.

barbàtum. Lvs. to 6 in. long and about 1 in. wide: fls. 3–4 in. across, solitary (rarely 2), on stalks to 12 in. high; sepals white and pale green veined with brown-purple; petals greenish at base and purple at tip with black warts; lip brown-purple. Jan.–Aug. Malaya. Var. **Wárneri** has deep maroon lip and dorsal sepal white spotted with rose-magenta.

Bártetii. Hybrid between *P. barbatum* and *P. insigne.*

Bédfordiæ. Hybrid between *P. Actæus* var. *revolutum* and *P.* Shogun.

Beèckmannii. Hybrid between *P. bellatulum* and *P. villosum* var. *Boxallii.*

Behrensiànum. Hybrid between *P. villosum* var. *Boxallii* and *P.* Io var. *grande.*

bellátulum. Lvs. to 10 in. long, elliptic-oblong, obtuse, dark green above with pale green mottling, dull purple beneath: fls. solitary on short peduncle, 2–3 in. across, white or cream with brown-purple specks; sepals and petals very broad; lip with smaller spots. Apr.–May, Aug.–Sept. Burma.

bingleyénse. Hybrid between *P. Charlesworthii* and *P. Harrisianum.*

birkdalénse. Hybrid between *P. insigne* var. Harefield Hall and *P. Thalia* Mrs. Wellesley.

Bóxallii: *P. villosum* var.

Bragaiànum: *P. Godseffianum.*

Brándtiæ. A cross between two hybrids, *P.* Iva and *P. Youngianum.*

Brunniànum. Hybrid between *P. Leeanum* and *P. œnanthum.*

burbagénse. Hybrid between *P. insigne* and *P. selligerum.*

Búrtonii supérbum is listed.

cállo-Rothschildiànum: *P. Fowleri.*

callòsum. Lvs. to 9 in. long and 2 in. wide, green tesselated with blackish-green: fls. large, 3½–4 in. across. solitary (sometimes 2) on stalks to 15 in. high; sepals white lined with purple and green veins; petals greenish, purple at tip, with several black warts; lip brown-purple outside. Jan.–Apr., July–Dec. Siam, Cochin-China. Var. **gigantèum** has dorsal sepal white shaded with emerald-green and striped with dark green. Var. **Sánderæ** has white fls., dorsal sepal lined with green.

calophýllum. Hybrid between *P. barbatum* and *P. venustum.*

Calýpso. Hybrid between *P. villosum* var. *Boxallii* and *P. Spicerianum.*

Cánhamii. Hybrid between *P. superbiens* and *P. villosum.*

Chamberlainiànum. Lvs. to 8 in. long and nearly 2 in. wide: racemes to 2 ft. long, many-fld.; fls. 3–5 in. across; sepals greenish heavily marked with purplish-brown; petals greenish marked with small purple and brown spots in lines, twisted and wavy; lip green at base shading to deep rose and covered with purplish dots. Blooms all year. Sumatra.

Charlesiànum. Hybrid between *P. nitens* and *P. Leeanum.*

Chárlesworthii. Lvs. to 10 in. long and 1 in. wide: fls. 2½–3½ in. across, solitary on stalks about as long as lvs.; dorsal sepal rounded, rose veined with purple; petals and lip greenish veined with brown. Aug.–Dec., Apr. India.

ciliolàre. Lvs. to about 12 in. long and 2½ in. wide: fls. to 4 in. across, solitary on stalks to 32½ in. high; sepals white striped with green, purplish at base; petals drooping, green at base, purplish above densely marked with dark purple spots; lip greenish-purple. Feb.–June. Philippines.

Clárkii. Hybrid between *P. Charlesworthii* and *P. Swanianum.*

concínnum. Hybrid between *P. villosum* and *P. purpuratum.*

cóncolor. Lvs. to 6 in. long and 1½ in. wide; fl.-stalks very short; fls. 2-3 in. across, solitary or 2, pale yellow finely spotted with violet. Apr., Sept. Burma, Indo-China, China.

Crossiànum. Hybrid between *P. insigne* and *P. venustum.*

Cúrtisii. Lvs. to 8 in. long and 3 in. wide: fls. to more than 4 in. across, solitary on stalks to 12 in. or more high; dorsal sepal green edged with white and lined with purple; petals greenish-rose toward base, finely spotted with dark purple; lip greenish-brown. Apr.–Sept. Sumatra.

Cúrtmannii. A cross between two hybrids, *P. Schlesingerianum* and *P. Beeckmannii.*

Cymatòdes. Hybrid between *P. Curtisii* and *P. superbiens.*

Dauthièri: *P. Harrisianum.*

Dayànum. Lvs. to about 8 in. long and 2½ in. wide: fls. to 6½ in. across, solitary on stalks to 12 in. high; sepals white lined with green; petals greenish at base, purplish or reddish-white near apex; lip greenish-violet. May–Aug., Nov. Borneo.

Deedmanniànum. Hybrid between *P. Chamberlainianum* and *P. Spicerianum.*

Dicksoniànum. Cross between *P.* Hera (hybrid) and *P. villosum.*

Drùryi. Lvs. to 10 in. long and 2 in. wide: fls. about 3 in. across, solitary on stalks to 12 in. high; sepals and petals greenish-yellow with a blackish stripe through the middle; lip yellow. Jan.–May. India.

Édwardii. Hybrid between *P. Fairieanum* and *P. superbiens.*

Eismanniànum. Hybrid between *P. villosum* var. *Boxallii* and *P. Harrisianum.*

enfieldénse. Hybrid between *P. Lawrenceanum* and *P. Hookeræ.*

exúl. Lvs. to 12 in. long and 1 in. wide: fls. to 3 in. across, solitary on stalks to 8 in. high; dorsal sepal green edged with white and spotted with dark brown; petals yellow-green with dark spots at base; lip brownish-yellow. Feb.–July. Siam.

Fairieànum. Lvs. to 6 in. long and 1 in. broad: fls. 2–2½ in. across, solitary on stalks about 6 in. long; sepals white with violet stripes; petals green or yellowish-white streaked with violet; lip brownish-green with purple reticulations. Himalayas.

Foẁleri (*P. callo-Rothschildianum*). Hybrid between *P. callosum* and *P. Rothschildianum.*

fulshawénse: *P. Schlesingerianum.*

Gaudiànum. Hybrid between *P. Curtisii* and *P. Harrisianum.*

Germinyànum. Hybrid between *P. hirsutissimum* and *P. villosum.*

gìgas (*P. Prewettii*). Hybrid between *P. Lawrenceanum* and *P. Harrisianum.*

glandulíferum. Lvs. strap-shaped, to 24 in. long: scape 1–2-fld., to 22 in. long, dull purple; fls. large; dorsal sepal yellowish-white with reddish-brown veins; petals to 5 in. long, yellow-green with reddish veins; lip yellowish with reddish-brown veins. June–July. New Guinea.

glaucophýllum. Lvs. to about 10 in. long and 2 in. wide: fls. many, on stalks to 18 in. or more high; dorsal sepal yellowish-green with pale yellow margin; petals twisted, thickly spotted with brown-red; lip dull violet with green margin. Blooms all year. Java.

Gódefroyæ. Lvs. to 6 in. long and 1¼ in. wide, dark green mottled with greenish-white; scapes very short, 1–2-fld.; fls. white or pale yellow, closely spotted with red-purple, sparingly pubescent; lip similarly colored, minutely spotted. Indo-China.

Godseffiànum (*P. Bragaianum*). Hybrid between *P. villosum* var. *Boxallii* and *P. hirsutissimum.*

Goweriànum. Hybrid between *P. Curtisii* and *P. Lawrenceanum.*

Gratrixiànum. Hybrid between *P. bellatulum* and *P. enfieldense.*

Grovesiànum. Hybrid between *P. Lathamianum* and *P. Leeanum.*

Hánsenii. Hybrid between *P. Haynaldianum* and *P. villosum.*

Harrisiànum (*P. Dauthieri. P. hybridum*). Hybrid between *P. villosum* and *P. barbatum.*

Harveyànum. Hybrid between *P. Stonei* and *P. Leeanum.*

Haynaldiànum. Lvs. to 17 in. long and 2 in. wide: fls. to 7 in. across, in 2–6-fld. racemes to about 40 in. high; dorsal sepal green at base with large brown spots, whitish-cream or rosy above; petals elongate-spreading, lower half greenish with large brown spots, apical part pale purple; lip greenish tinted with brown. Philippines.

hirsutíssimum. Lvs. to 12 in. long and ¾ in. wide: fls. to about 5½ in. across, solitary on stalks to 12 in. high; dorsal sepal green heavily marked with blackish-violet; petals green at base spotted with dark purple, violet at tip; lip green stained with brown-violet. Mar.–May. Himalayas.

Hítchinsiæ. Hybrid between *P. Charlesworthii* and *P. insigne.*

Hoòkeræ. Lvs. to 6 in. long and 2 in. wide: fls. 3–4 in. across, solitary (rarely 2) on stalks to 1 ft. high; dorsal sepal green with yellowish-white border; petals green at base spotted with purple, purple at tip; lip brown-purple tinged with green. Jan.–Aug. Borneo.

Horniànum. Hybrid between *P. Spicerianum* and *P. superbiens.*

hýbridum: *P Harrisianum.*

íngens. Hybrid between *P. insigne* and *P. Rothschildianum.*

insígne. Lvs. to 12 in. long and 1¼ in. wide: fls. 4–4½ in. across, solitary on stalks to about 8 in. high; dorsal sepal yellow-green spotted with brownish-purple at base, white at tip; petals and lip yellow-green veined with brown. Oct.–Mar. Himalayas.—Runs into many named forms, a few of which are: **Amesiànum** with unspotted fls. and sepal with broad white margin; **aùreum** with clear yellow-brown petals and lip; **Bálliæ; Bahnhoffiànum; Berryànum; brugénse; Chantìnii** with deeper coloring and larger white area on dorsal sepal; **Cobbiànum; corrugàtum** with corrugated lip; **Coulsoniànum** with larger fls.; **Dominaiànum; Edeniànum; Érnestii** with yellow fls., the sepal brown-spotted; **Fóstermannii,** sepal with broad white border; **gigantèum; Gravesiànum,** sepal with broad white border and brown spots arranged in regular lines; **heatonénse; Hurrelliànum,** sepal greenish-yellow, reddish-brown at base and tipped with white; **immaculàtum nìgrum; Lágeræ,** sepal dark brown in center margined with white; **leopardìnum; Letwycheànum; Líndeniæ; Luciànii** with bright yellow fls. tinged with green and sepal with broad white border; **lùteo-álbum** has sepal two-thirds white, yellowish-green at base; **Macfárlanei,** with clear yellow fls. and sepal with broad white border; **máximum** with large deep green sepal; **McNabiànum; montànum,** dorsal sepal bright yellow on basal half, brownish above, petals yellow, striated with brown-red; **punctatíssimum** has the sepal covered with brown spots; **rutherfordénse; Sádleri; Sánderæ** with bright yellow fls. white at tips; **Sanderiànum** with yellowish-green fls. veined with dark green, sepal with broad white border; **sylheténse,** sepal with large dark spots; **Wátsonii; westgaténse; xánthinum; Youngiànum; zebrìnum.**

javánicum. Lvs. to about 12 in. long and 2¼ in. wide: fls. about 3–4 in. across, solitary (rarely 2) on stalks nearly twice as long as lvs., green, dorsal sepal veined with dark green. Feb.–Mar., July–Sept., Nov. Java, Borneo.

Josephiànum. Hybrid between *P. Druryi* and *P. Sementa.*

Kámilii. Hybrid between *P. villosum* var. *Boxallii* and *P. Chamberlainianum.*

lævigàtum: *P. philippinense.*

Lairéssei. Hybrid between *P. Curtisii* and *P. Rothschildianum.*

Lathamiànum (*P. Thompsonii*). Hybrid between *P. Spicerianum* and *P. villosum.*

Lawrenceànum. Lvs. to about 10 in. long and 2½ in. wide: fls. to 5½ in. across, solitary (sometimes 2) on stalks to 18 in. high; dorsal sepal white veined with deep violet; petals bright green tipped with purple-brown; lip brown-purple. Apr.–Aug., Nov. Borneo. Var. **Hyeànum** has white sepals and petals marked with green and olive-green lip Var. **ròseum** is listed.

Lebaudyànum. Hybrid of *P. Haynaldianum* and *P. philippinense.*

Leeànum. Hybrid between *P. insigne* and *P. Spicerianum.* There are many named forms of this hybrid.

Leòniæ. Hybrid between *P. insigne* and *P. callosum.*

leyburnénse magníficum. Hybrid.

longwoodénse. Hybrid between *P. Charlesworthii* and *P. Leeanum.*

Lòwii. Lvs. to 16 in. long and 2 in. wide: scape to 40 in. high, 2–6-fld.; dorsal sepal yellowish-green to pale yellow basally veined with brown-purple; petals with basal half yellow with brown spots and apical part violet-purple; lip greenish-brown. Feb.–July. Malaya.

lùridum. Hybrid between *P. Lawrenceanum* and *P. villosum* var. *superbum.*

Màbeliæ. Hybrid between *P. superbiens* and *P. Rothschildianum.*

macrópterum. Hybrid between *P. Lowii* and *P. superbiens.*

Máhleræ. Hybrid between *P. Rothschildianum* and *P. Lawrenceanum.*

Mángoldii. Hybrid.

marmorophýllum. Hybrid between *P. barbatum* and *P. Hookeræ.*

Mastersiànum. Lvs. to about 10 in. long and 2 in. wide: fls. about 3–4 in. across, solitary on stalks to 18 in. high; dorsal sepal green with yellowish-white border; petals brownish-red; lip copper-brown. Mar.–May, July–Sept. Malaya.

Mátthewsii. Hybrid between *P. Lawrenceanum* and *P. Mastersianum.*

Maùdiæ. Hybrid between *P. Lawrenceanum* var. *Hyeanum* and *P. callosum* var. *Sanderæ.*

mirábile magníficum. Hybrid.

Mórganiæ. Hybrid between *P. Stonei* and *P. superbiens.*

nìtens (*P. Sallieri*). Hybrid between *P. villosum* and *P. insigne* var. *Maulei.*

níveum. Lvs. to about 6 in. long and 1½ in. wide, green, tesselated above, purple beneath: fls. 2¼-3½ in. across, solitary or 2 on stalks to 8 in. high, white dotted with red-purple. June–Aug. Malaya.

œnánthum. Hybrid between *P. Harrisianum* and *P. insigne* var. *Maulei.*

oultonénse. Hybrid between *P. insigne* and *P.* Mme. Jules Hye.

Ósbornei: *P. Savageanum.*

Pàrishii. Lvs. to 15 in. long and 2½ in. wide: fls. 3–4 in. across, in 3–8-fld. racemes on scapes to 2 ft. high; dorsal sepal yellowish with green veins; petals green at base, blackish-purple above; lip green, often stained with purple. Mar.–Aug. Burma.

pavonìnum. Hybrid between *P. villosum* var. *Boxallii* and *P. venustum.*

philippinénse (*P. lævigatum*). Lvs. to about 15 in. long and 1¾ in. wide: fls. about 3 in. across vertically, in 3–5-fld. racemes about twice as long as lvs.; dorsal sepal yellowish-white veined with violet; petals elongate, pendent, twisted, mostly brown-violet, green at base; lip yellow veined with green. Mar.–July Philippines.

Pitcheriànum. Hybrid between *P. Harrisianum* and *P. Spicerianum.*

Pollettiànum. Hybrid between *P. calophyllum* and *P. œnanthum* var.

Preẁettii: *P. gigas.*

purpuràtum. Lvs. to about 5 in. long and 1½ in. wide: fls. solitary on stalks to 12 in. high; dorsal sepal white striped with brown-purple; petals crimson-purple veined with green or dark purple; lip brown-purple. Sept.–Jan. China.

regàle. Hybrid between *P. purpuratum* and *P. insigne* var. *Maulei.*

Rehderiànum. Hybrid between *P. Pitcherianum* and *P. purpuratum.*

Ridolfiànum. Hybrid between *P. conspicuum* and *P. insigne.*

Rólfei magníficum. Hybrid between *P. bellatulum* and *P. Rothschildianum.*

Rosséttii. Hybrid between *P. insigne* var. *Sanderi* and *P. Maudiæ.*

Rothschildiànum. Lvs. to 2 ft. long and 1½–3 in. wide: fls. 3½–5 in. across vertically, in 2–5-fld. racemes to 2⅓ ft. high; dorsal sepal yellowish lined with dark purple; petals narrow, elongate, pale green closely spotted with red-purple, wavy; lip dull purple tipped with yellow at the opening. Jan.–Apr., Aug. Sumatra, Borneo.

Sallièri: *P. nitens.*

Sánderi. A cross between two hybrids, *P. Calypso* and *P. nitens.*

Sanderiànum. Lvs. to about 1 ft. long and 1½ in. wide: fls. in 3–5-fld. racemes to 2 ft. high; dorsal sepal pale yellow with broad purple stripes; petals very narrow, to 25 in. long, pale yellow tipped and edged with brown-purple; lip brown-purple. Oct. Malaya.

Savageànum (*P. Osbornei*). Hybrid between *P. Harrisianum* and *P. Spicerianum.*

Schlesingeriànum (*P. fulshawense*). Hybrid between *P. villosum* var. *Boxallii* and *P. insigne* var. *Maulei.*

sellígerum. Hybrid between *P. barbatum* and *P. philippinense.*

Shilliànum. Hybrid between *P. Gowerianum* and *P. Rothschildianum.*

Siebertiànum. Hybrid between *P. Dayanum* and *P. insigne.*

Sìemonii (*P. Actæus*). Hybrid between *P. Leeanum* and *P. insigne* var. *Sanderæ.*

Spiceriànum. Lvs. to 12 in. long and 2 in. wide: fls. about 2½ in. across, solitary (rarely 2) on stalks to 12 in. high; dorsal sepal snow-white with a purple band in center; petals yellowish-green with a median crimson line, wavy-margined; lip red-brown. Nov.–Dec. India.

Stèvensii. Cross between the hybrids *P. Calypso* and *P. Lathamianum.*

Stònei. Lvs. to about 16 in. long and 2 in. wide: fls. about 4 in. across vertically, in 3–5-fld. racemes to 2 ft. high; dorsal sepal white with several longitudinal purple stripes; petals with lower two-thirds pale yellow spotted with brown and the apical third brownish-crimson; lip dull rose with darker veins. May–Aug. Borneo.

supérbiens. Lvs. to 7 in. long and 2¼ in. wide: fls. about 4 in. across vertically, solitary on stalks to 12 in. high; dorsal sepal white regularly lined with green; petals whitish lined with green and spotted with purple-brown; lip brown-purple. Jan.–July. Malaya.

superciliàre. Hybrid between *P. barbatum* and *P. superbiens.*

Swaniànum. Hybrid between *P. barbatum* and *P. Dayanum.*

Swínburnei magníficum. Hybrid between *P. insigne* var. *Maulei* and *P. Argus.*

ténue. Hybrid.

Thómpsonii: *P. Lathamianum.*

tixallénse. Hybrid between *P. Lawrenceanum* and *P. Rothschildianum.*

tónsum. Lvs. to about 7 in. long and 2 in. wide: fls. to about 5 in. across, solitary on stalks to 16 in. high; sepal white or greenish striped with green (and sometimes purple also); petals bright green veined with darker green, with several black spots; lip greenish shaded with brown and crimson. Aug.–Nov., Jan. Sumatra.—The named forms **Arthuriànum** and **Chárlesworthii** are in the trade.

Tracyànum supérbum. Hybrid between *P. aureum* and *P. Leeanum* var. *giganteum.*

triúmphans. Hybrid between *P. nitens* and *P. œnanthum.*

Trowamskiànum. Hybrid.

Truffaùtiæ. Hybrid between *P. ciliolare* and *P. Stonei.*

venústum. Lvs. to 6 in. long and 1½ in. wide, green-mottled above, purple-mottled beneath: fls. 3–3½ in. across, solitary (rarely 2) on stalks to 9 in. high; dorsal sepal whitish striped with green; petals green with blackish warts at base, brownish-purple above; lip yellow-green tinged with rose and veined with green. Nov.–Mar., Aug. Himalayas.

vexillàrium. Hybrid between *P. barbatum* and *P. Fairieanum.*

Victòriæ-Marìæ. Lvs. to 12 in. long and 2 in. wide: scape 18 in. high, many-fld.; fls. to 3 in. across vertically; dorsal sepal green lined with red-brown and with a whitish border; petals green with red-purple margins; lip purple-brown with green around mouth. Mar.–July. Sumatra.

villòsum. Lvs. to 18 in. long and 1½ in. wide: fls. large, nearly 6 in. across, solitary on stalks nearly as long as lvs.; dorsal sepal purplish-brown at base and center, green above with narrow white border; petals yellowish-brown with brown-purple mid-vein, wavy-margined; lip brownish-yellow. Oct.–Mar. Burma. Var. **aùreum** has lemon-yellow dorsal sepal, the basal and central area brownish. Var. **Bóxallii** has dorsal sepal spotted with blackish-brown, with broader white border.

Vìpanii. Hybrid between *P. niveum* and *P. philippinense.*

viridíssimum blenheiménse. Hybrid.

warnhaménse. Hybrid between *P. Curtisii* and *P. philippinense.*

Wiertziànum. Hybrid between *P. Lawrenceanum* and *P. Rothschildianum.*

Wìlliamsii. Hybrid.

PAPILIONACEOUS corolla: butterfly-like; pea-like flower, with a standard, wings, and keel.

PAPPUS: peculiar calyx-limb of composites, being plumose, bristle-like, scales, or otherwise.

PAPYRIUS: *Broussonetia papyrifera.*

PAPYRUS: *Cyperus Papyrus.*

PARACARYUM: *Adelocaryum cœlestinum.*

PARADÌSEA. *Liliaceæ.* One per. herb with fleshy rhizomes and linear basal lvs. **P. Liliástrum** (*Anthericum Liliastrum*). St.-Bruno-Lily. To 2 ft.: fls. white, funnel-shaped, to 2 in. long, in loose racemes on slender bracted scapes. Eu. Var. **màjor** is taller and has larger fls.: a form, **gigantèa** is listed and may be this var.—Of easy cult. in the hardy border. Propagated by division and seeds.

PARADISE NUT: see *Lecythidaceæ.*

PARAMÍGNYA. *Rutaceæ.* Evergreen spiny climbing Indian shrubs: lvs. of 1 lft.: fls. solitary or in axillary clusters, large and white; stamens 8–10, not united: fr. elliptic or globose, gummy inside. **P. monophýlla** has alternate lvs. and recurved spines that aid in climbing, and more or less hairy young parts: fr. berry-like, about 1 in. diam., yellow.—Grown experimentally as a Citrus relative.

PARA-NUT: *Bertholletia.*

PARASOL-TREE, CHINESE: *Firmiana simplex.*

PARDANTHUS: *Belamcanda.*

PARIETÀRIA. Pellitory. *Urticaceæ.* Widely distributed herbs, with alternate entire lvs. and polygamous fls. in axillary clusters; one species formerly grown for medicinal purposes. Propagated by seeds and cuttings.

arbòrea: *Gesnouinia arborea.*

officinàlis. Erect per. blooming first year, to 1 ft. or sts. prostrate: lvs. ovate to oblong, to 4 in. long: fls. very small, in sessile clusters. Eu., Asia.

PÀRIS. *Liliaceæ.* Rhizomatous herbs native in mts. of north temp. zone, differing from Trillium in the parts of the fl. in 4's; sometimes planted in hardy border.

polyphýlla. To 3 ft.: lvs. in a whorl of 4–9, petiole to ½ in. long: fls. with yellow filiform petals and green ovate-lanceolate sepals, to 4 in. or more across: berry green, to 2½ in. diam. W. China.—Very variable as to size of parts.

quadrifòlia. Herb-Paris. To 1 ft.: lvs. in a whorl of 4 about 2 in. below the solitary yellowish-green fl. about 1½ in. diam.: berry bluish-black. Eu.

PARITI, PARITIUM: *Hibiscus.*

PARKINSÒNIA. *Leguminosæ.* Trop. and warm-temp. trees or shrubs with bipinnate lvs., yellow or whitish fls. in racemes, and flattened leathery pods.

aculeàta. Jerusalem-Thorn. Ratama. Tree to 30 ft. with spines about 1 in. long: lfts. having flattened twig-like stalks, the numerous small segms. deciduous: fls. yellow, fragrant, in loose axillary racemes: pods to 5 in. long, constricted between the seeds. Probably trop. Amer.—A good hedge plant.

Torreyàna. Tree to 25 ft.: lfts. 2–3 pairs, ¼ in. long, glaucous: fls. bright yellow, in terminal racemes: pods to 3 in. long, constricted between seeds. Ariz., Tex.

PARMENTIÈRA. *Bignoniaceæ.* Trees, often bearing spines at the nodes, lvs. of 3 lfts., large funnelform fls. solitary or clustered, the calyx split and spathe-like, and long cylindrical frs.; planted in S. Fla.

alàta. Tree, without spines: lfts. oblanceolate to spatulate, entire, the terminal one often 3 in. long, petiole very broadly winged and long. Mex.

cereífera. Candle-Tree. Lfts. obovate, to 2 in. long, entire or toothed: fls. white, to 3 in. long, with large brownish calyx: frs. hanging, to 4 ft. long, yellowish and resembling candles. Panama.

edùlis. Guajilote. Tree to 30 ft., with broad head: lfts. ovate, entire, petiole very narrowly winged, spines subtending lvs.: fls. greenish-yellow, about 2½ in. long: fr. 4–6 in. long and about 1 in. diam., yellowish-green, edible. Mex., Guatamala.

PARNÁSSIA. Grass-of-Parnassus. *Saxifragaceæ* (or *Parnassiaceæ*). Small per. herbs native in north temp. zone in low or moist places, with entire basal lvs. and 1 sessile lf. on the scape, and white fls. solitary at top of scape with greenish or yellowish veins. Useful for planting in damp situations, blooming in summer. Propagated by seeds or division.

asarifòlia. To 20 in.: lvs. kidney-shaped, to 3 in. across, the st.-lf. orbicular and clasping, about middle of scape: fls. 1 in. across, the petals clawed. Va. to S. C.

califórnica (*P. palustris* var. *californica*). To 16 in.: lf. not clasping, tapering to base, to 1¾ in. long. Mts., Calif.

caroliniàna. To 2 ft.: lvs. ovate to orbicular, to 2 in. long, often cordate at base, the st.-lf. ovate and clasping, below middle of scape: fls. 1½ in. across; staminodes stout and shorter than stamens. N. B. to Va. and Ia. Var. **montàna,** a dwarf mountain form.

fimbriàta. To 1 ft.: lf. reniform or broad-cordate, to 1½ in. long: petals fringed on sides. Colo. and Calif. to Alaska.

foliòsa. St. acutely 4-angled, winged: st.-lvs. rotund-cordate, sessile, lobed, about 1 in. across, 5–7-nerved: fls. white, to 1 in. across, petals much incised. India.

grandifòlia. To 2 ft.: lvs. ovate to orbicular, st.-lf. ovate and clasping at or below middle of scape: fls. to 2 in. across; staminodes slender and longer than stamens. Va. to Fla., La. and Mo.

intermèdia. To 16 in.: lvs. ovate to kidney-shaped, to 1½ in. long, the st.-lf. ovate and sessile: fls. ¾ in. across, petals fringed. Nev., Ore.

montanénsis. To 8 in.: lvs. ovate, to ¾ in. long: fls. to ¾ in. across, petals entire. B. C. to Mont.

palústris. To 1 ft.: lvs. ovate, to 1½ in. long, cordate at base, the st.-lf. ovate and clasping, below middle of scape: fls. to 1 in. across. N. Amer., Eu., Asia.

parviflòra. To 1 ft.: lvs. oval, to 1 in. long, narrowed at base, the st.-lf. oval and clasping, about middle of scape: fls. about ½ in. across. N. Amer.

PARÓCHETUS. *Leguminosæ.* Per. trailer from trop. Asia and E. Afr. **P. commùnis.** Shamrock-Pea. Blue Oxalis. Lfts. 3, marked with brown crescent at base: fls. papilionaceous, cobalt-blue with pink wings, solitary or 2–3 in the axils: pods 1 in. long.—Useful for rock-gardens or hanging-baskets. Propagated by seeds.

PARÒDIA. *Cactaceæ.* By some authors this includes the monotypic genus Hickenia as well as other species: plants small, spines hooked or straight: fls. yellow to red, the tube hairy and bristly: native in S. Amer.

aureicéntra. Usually cespitose, depressed-globose, to 6 in. tall; ribs about 15, slightly tubercled; radial spines about 40, bristly, somewhat adpressed; centrals stouter, swollen at base, rose to yellow-brown: fls. bright blood-red, about 1⅝ in. long. Argentina.

aureispìna. Globose, bluish-green; ribs spiral and tubercled; radial spines 40 and white; centrals 6 and golden, one hooked: fls. golden, 1 in. across, tube white-hairy. N. Argentina. Var. **élegans** is listed.

catamarcénsis (*Malacocarpus catamarcensis*). Globose, becoming cylindrical; ribs divided into round flat-topped tubercles; radial spines about 9, spreading, slender, white; centrals 4, dark purple, curved: fls. pale yellow. Argentina.

chrysacánthion (*Echinocactus* and *Malacocarpus chrysacanthion*). St. simple or branched, globose to subcylindric, to 3 in. tall and 2 in. diam.; ribs 24–30, spiral, tubercled throughout; spines mostly alike, 30–40, the outer more slender than inner, golden-yellow, to ¾ in. long, unequal: fls. golden-yellow, to ¾ in. long. Argentina.

erythrántha. Spherical, to 2 in. high, spirally tubercled; radial spines about 20, to ¼ in. long, matted; centrals 4, reddish with white base, one hooked: fls. red, to 1 in. across, stigma white. N. Argentina.

islayénsis (*Echinocactus* and *Malacocarpus islayensis*). To 3 in. across, very spiny, woolly at top; ribs 19–25; radial spines 8–22 and spreading; central spines 4–7 and ½ in. long: fls. yellow, ½ in. long. Peru.

Maàssii (*Echinocactus* and *Malacocarpus Maassii*). Globular or short-cylindric, 6 in. across, yellowish-green; ribs 13 and undulate or tubercled; radial spines 8–10, weak and long; central spine to 3 in. long, curved or hooked: fls. orange-red, 6 in. across. Bolivia, Argentina.

microspérma (*Echinocactus* and *Malacocarpus microspermus. Hickenia* and *Microspermia microsperma*). Globose or short-cylindric, very spiny, simple or in clusters, to 8 in. high and 4 in. thick; tubercles in indefinite ribs; radial spines 11–25, to ¼ in. long, white; centrals 3–4, the lowest strongly hooked, red or brown: fls. yellow or red, to 2 in. across. Argentina. Var. **rigidispìna** has stouter spines.

mìnor (*Islaya minor*). Globose, to 4 in. diam., and 5 in. high, dark green; ribs 16–18, to ½ in. wide and half as high, areoles about ⅛ in. apart; spines black becoming grayish, radials 18–22, to ¼ in. long, centrals 4, to ⅜ in. long and stouter: fls. golden-yellow, to nearly 1 in. across: fr. red, pubescent. Peru.

mutábilis. Globose, to about 3½ in. diam., white-woolly on top; tubercles in indefinite ribs; radial spines about 50, bristly, white; centrals usually 4, one hooked, white to orange: fls. golden-yellow, to 2 in. across, throat often red. Argentina.

nivòsa (*Microspermia nivosa. Echinocactus nivosus*). Differs from *P. microsperma* in its larger habit, no central spines hooked, and fls. brilliant scarlet, to 1½ in. across. Argentina.

sanguiniflòra (*Microspermia sanguiniflora*). Solitary, depressed-globose, woolly on top; tubercles in spiral indistinct ribs, areoles woolly when young; radials about 15, to ⅓ in. long, spreading, bristly, white; centrals 4, brownish, the lowest one hooked, to ¾ in. long: fls. dark red, to 1¾ in. across. Argentina.

Schwebsiàna (*Echinocactus Schwebsianus*). Depressed-globose, 2 in. high and broad, white-woolly at top; ribs 13–20; radial spines 10 and ½ in. long; central spine 1, to ¾ in. long and curved: fls. red, 1 in. long. Bolivia.

setífera. Solitary, depressed-globose, to 3 in. diam.; ribs 18, to ¼ in. high; radial spines about 20, to ⅓ in. long, white; centrals 3–4, pink, one hooked, to ⅝ in. long and often deciduous: fls. pale yellow, to 1½ in. across. Argentina.

Stùemeri (*Echinocactus Stuemeri*). Globose, very spiny, to 4 in. high and broad; ribs about 20; radial spines about 25 and ½ in. long, white; central spines 4 and 1 in. long, brown: fls. orange-yellow, 1¾ in. long. Argentina.

tabulàris: *Notocactus tabularis.*

tilcarénsis. Differs from *P. Stuemeri* in having fewer spines and slightly smaller orange-red fls. Argentina.

PARONÝCHIA. Whitlow-Wort. Nail-Wort. *Illecebraceæ.* Small herbaceous tufted annuals and perennials with minute clustered fls. without petals, often hidden among silvery stipules or bracts: lvs. opposite, broad or narrow: mostly in the Medit. region but several native in U. S. Useful in the rock-garden. Of simple cult.; propagated by seed and the perennials also by division.

argéntea. Prostrate per.: lvs. ovate to lanceolate, ciliate: fls. in dense clusters among the lvs., concealed by silvery bracts. Medit. region.

argyrócoma (*Anychia argyrocoma*). Erect or ascending per. to 8 in., making broad tufts or mats, covered with silvery scale-like hairs: lvs. linear, stipules silvery-white: fls. in forking cymes, concealed by the large and silvery bracts. Rocky places, Me. to Ga. and Tenn. Var. **albimontàna** is listed as a dwarf form to 3 in. high.

bonariénsis. Prostrate tufted per.: lvs. ovate-oblong, usually acute, densely appressed-pubescent: fls. in axillary clusters. Probably Uruguay.

capitàta: see *P. serpyllifolia.*

dichótoma. Tufted per. to 14 in., woody at base: lvs. awl-shaped, stipules silvery: fls. yellow, in loose cymes with ascending branches. Dry soil, Md. to Tex.

Kapéla. Per. to 4 in.: lvs. oblong, bluish-green, ciliate: fls. in heads to ¾ in. across, concealed by silvery bracts. S. Eu.

Lindheìmeri. Ann. or bien. to 8 in.: lvs. thread-like: fls. in loose cymes. Tex., New Mex.

nívea. Per. to 5 in., woody at base, sts. ascending, pubescent: lvs. linear-lanceolate to lanceolate, acute, densely ciliate: fls. with large silvery-white bracts in dense heads. Medit. region.

pulvinàta. Mat-forming per.: lvs. oblong, obtuse, densely covering the short sts.: fls. terminal, sessile, few, nearly covered by the lvs. Colo., Wyo. and Utah.

serpyllifòlia. Creeping rooting per.: lvs. obovate: fls. in dense heads borne in cymes. S. Eu.—Probably a var. of the species *P. capitata*, which is a per. to 6 in., sod-forming, with fls. in dense terminal silvery-white heads.

sessilifòlia. Differs from *P. pulvinata* in its linear-subulate acute to mucronate lvs. Colo. to Sask.

PAROSELA: *Dalea.*

PARROT-BEAK: *Clianthus puniceus.*

PARRÒTIA. *Hamamelidaceæ.* Deciduous tree native in Persia, hardy N. and the foliage assuming brilliant autumnal colors. **P. pérsica.** To 15 ft.: lvs. oval, to 4 in. long, coarsely toothed above middle: fls. before lvs., in dense heads to ½ in. across surrounded by brown-tomentose bracts, without petals, the stamens drooping.—Propagated by seeds, layers and cuttings.

PARROTIÓPSIS. *Hamamelidaceæ.* Himalayan deciduous tree to 20 ft. **P. Jacquemontiàna** (*Parrotia Jacquemontiana*). Lvs. nearly orbicular, to 3 in. long, toothed, turning pale yellow in autumn: fls. with the lvs., in dense heads to 2 in. across surrounded by large white bracts, without petals, the stamens erect.—Rather tender in the N. Propagated by seeds, layers, and cuttings of green wood under glass.

PARROTS-BILL: *Clianthus puniceus.* **-Feather:** *Myriophyllum proserpinacoides.*

PÁRRYA. *Cruciferæ.* W. American per. herbs allied to Radicula, differing in having yellow or white fls. and pods flattened, not terete. One species, **P. Ménziesii,** may be grown in the rockery; propagated by seeds. To 6 in., cespitose: lvs. spatulate to oblanceolate, to 4 in. long, entire, usually densely stellate-hairy: fls. rose to purple, many in racemes: pods spreading horizontally. W. Nev. to Calif. and Ore.

PARSLEY: *Petroselinum crispum.*

PARSNIP: *Pastinaca.* **Cow-:** *Heracleum.* **Water:** *Sium suave.*

PARSONSIA: *Cuphea.*

PARTED: cleft or cut not quite to the base, as a leaf or petal.

PARTHÈNIUM. *Compositæ.* Herbs and shrubs, per. or sometimes ann., with alternate lvs. and small heads of white or yellow ray-and-disk-fls. borne in corymbs and panicles; pappus of awns or none; native N. Amer. to N. S. Amer.

The guayule is grown in southwestern United States for the rubber obtained from the stems and is now of commercial importance. The plants are set out late in March in rows 2–3 feet apart. Propagated by seeds.

argentàtum. Guayule. Shrub to 3 ft., much branched: lvs. lanceolate to ovate-lanceolate, to 2 in. long, silvery-pubescent: heads ¼ in. across. Mex., Tex.

integrifòlium. Per. to 4 ft., corymbosely branched above: lower lvs. oblong to lanceolate, toothed, to 6 in. long, upper ones ovate: heads whitish and small. Md. to Ga. west to Minn. and Tex.

PARTHENOCÍSSUS (*Psedera*). *Vitaceæ.* Many species of shrubs climbing by tendrils often with disk-like tips, having alternate lobed or digitately compound lvs., small greenish fls. in cymes, parts of the fl. in 5's and falling separately (see Vitis), and fr. a black berry.

These vines are grown as covering for walls, fences and arbors and allowed to grow on trees. They thrive in any good soil. Propagated by seeds, cuttings of hard and green wood, and by layers.

Henryàna (*Ampelopsis Henryana*). Young branchlets 4-angled: lvs. of 5 ovate to obovate lfts. to 2½ in. long, toothed above middle, marked with white above, purplish beneath. China.

heptaphýlla (*Ampelopsis heptaphylla*). Lvs. of mostly 7 oblong-lanceolate lfts. to 2½ in. long, coarsely toothed. Tex.

himalayàna. Allied to *P. tricuspidata:* lfts. 3, obovate to ovate, glaucous underneath. Himalayas; adaptable only far S.

hirsùta: *P. quinquefolia* var.

insérta: *P. quinquefolia* var. *vitacea.*

lætévirens. Lvs. of 5 obovate lfts. to 4 in. long, coarsely toothed, yellow-green, glabrous except perhaps on veins underneath. China.

quinquefòlia (*Ampelopsis quinquefolia* and *hederacea*). Virginia Creeper. American Ivy. Lvs. of 5 elliptic-ovate coarsely toothed stalked lfts. to 6 in. long, paler beneath. New England to Fla. and Tex. Var. **Éngelmannii** (*Ampelopsis Engelmannii*). Lfts. smaller. Var. **hirsùta** (*P.* and *Ampelopsis hirsuta*). Lvs. pubescent beneath. Var. **muròrum.** Tendrils short and numerous. Var. **Saint-Paùlii** (*Ampelopsis Saint-Paulii*). Branchlets often with aërial rootlets; lfts. pubescent beneath. Var. **vitàcea** (*P.* and *Ampelopsis vitacea, P. inserta*). Tendrils mainly without disks and not clinging well; lfts. deeply cut in one form.—In its many forms, the Virginia creeper is one of the hardiest and most adaptable of climbers; sometimes called Five-leaved Ivy and Woodbine.

Thómsonii (*Ampelopsis Thomsonii*). Lvs. of 5 elliptic toothed lfts. to 3 in. long, purplish when young. China, Himalayas.

tricuspidàta (*Ampelopsis tricuspidata*). Japanese or Boston Ivy. Lvs. variable, ovate to orbicular, to 8 in. across, 3-lobed or 3-parted, shining above. Japan, China. Var. **Lòwii** (*Ampelopsis Lowii*). Lvs. to 1½ in. long, purplish when young. Var. **purpùrea.** Lvs. dark purple. Var. **robústa** does not differ from the type. Var. **Veìtchii** (*Ampelopsis Veitchii*). Young lvs. purple, smaller. A small-lvd. form is offered as **minutifòlia.**

vitàcea: *P. quinquefolia* var.

PARTRIDGE-BERRY: *Mitchella repens.*

PASANIA: *Lithocarpus.*

PASITHÈA. *Liliaceæ.* One bulbous herb native in Chile, belonging to the Anthericum group. **P. cærùlea.** Lvs. narrow-linear, grass-like: fls. blue, 1 in. across, borne in loosely branched panicles on graceful scapes; perianth-tube very short, the lobes spreading.

PÁSPALUM. *Gramineæ.* Ann. and per. grasses of temp. and warm regions of the world, sometimes grown for ornament: spikelets in one-sided racemes which are solitary, paired or in panicles. See *Grasses.*

dilatàtum. Per. to 6 ft.: lvs. to 1 ft. long and ½ in. wide: racemes to 5 in. long, in panicles of 3–8. Argentina; nat. in S. U. S.

élegans: see *P. racemosum.*

racemòsum. Ann. with decumbent sts. to 3 ft. long: lvs. to 5 in. long and 1 in. wide: racemes to 1 in. long, numerous, in panicles to 6 in. long. Colombia to Peru.—Sometimes cult. as *P. elegans* and *P. stoloniferum.*

stoloníferum: *P. racemosum.*

PASQUE-FLOWER: *Anemone Pulsatilla.*

PASSIFLÒRA. Passion-Flower. *Passifloraceæ.* Many vines climbing by tendrils, with alternate entire or lobed lvs., solitary or racemose odd and often very showy fls. with stamens united in tube and fr. a many-seeded berry; some of them have edible frs. and others are grown as ornamentals.

Passifloras are hardy only in the southernmost United States but are sometimes grown under glass for the striking bloom. Propagated by seeds and cuttings. *P. edulis* and *P. quadrangularis* are the species mostly grown for the edible fruit.

alàta. Sts. slightly winged: lvs. entire: fls. fragrant, to 5 in. across, white, red inside, the crown red, purple and white: fr. yellow, to 5 in. long, edible. Trop. Amer.

alàto-cærùlea (*P. Pfordtii*). Hybrid between *P. alata* and *P. cærulea:* lvs. 3-lobed: fls. fragrant, 4 in. across, white, pink inside, the crown purple, blue and white.

álba: *P. subpeltata.*

antioquiénsis (*P. and Tacsonia Van-Volxemii*). Lvs. with 3 lanceolate toothed lobes: fls. to 5 in. across, bright red; calyx-tube to 1½ in. long: fr. edible. Colombia.

atropurpùrea. Hybrid between *P. racemosa* and *P. Raddiana:* fls. 3 in. across, dark red, the crown violet spotted with white.

Bánksii. Lvs. with 3 broad lobes: fls. pale at first but becoming scarlet. Australia.

biflòra. Sts. 5-angled: lvs. transversely linear to oblong, to 4 in. wide and 1 in. long: fls. white. Mex. to Venezuela and Bahama Isls.

cærùlea. Lvs. with 5 lanceolate lobes: fls. to 4 in. across, pale pink, the crown white and purple: fr. yellow, 1½ in. long. Brazil, and grown under glass. Var. **grandiflòra** has larger fls. and "Constance Elliott" white fls.

coccínea. Lvs. ovate, not lobed, coarsely toothed: fls. scarlet with orange crown. S. Amer.

Cólvillei. Hybrid between *P. incarnata* and *P. cærulea:* lvs. with 3–5 deep toothed lobes: fls. 3½ in. across, white spotted with red-brown, the crown purple, white and blue.

edùlis. Purple Granadilla. Lvs. with 3 deep toothed lobes: fls. 2 in. across, white with white and purple crown: fr. deep purple, to 3 in. long, edible. Brazil.

Eichwaldtii: listed name of unknown botanical standing.

exoniénsis. Hybrid between *P. antioquiensis* and *P. mollissima:* lvs. deeply 3-lobed, pubescent beneath: fls. to 5 in. across, brick-red, rose-pink inside, with tube 2½ in. long.

grácilis. Lvs. with 3 shallow lobes: fls. pale green or white, apetalous, about 1 in. across. Brazil.

grandiflòra: *P. cærulea* var.

ígnea: *P. manicata.*

incarnàta. Wild P. Maypop. Lvs. with 3 deep toothed lobes: fls. to 2 in. across, white with purple or pink crown: fr. yellow, to 2 in. long, edible. Va. to Fla. and Tex.

Jàmesonii (*Tacsonia Jamesonii*). Lvs. 3-lobed: fls. bright rose or coral-red, the calyx-tube about 4 in. long. Peru.—Some of the material cult. under this name is *P. tomentosa.*

kermesìna (*P. Raddiana*). Lvs. 3-lobed, slightly toothed, purplish beneath: fls. crimson, the crown dark purple with white filaments inside. Brazil.

lanàta (*Tacsonia lanata*). Lvs. entire, tomentose beneath: fls. white, with tube 2½ in. long. Andes.

latifòlia: confused name, perhaps referable to *P. alata.*

laurifòlia. Yellow Granadilla. Water-Lemon. Jamaica-Honeysuckle. Lvs. entire: fls. to 4 in. across, white spotted with red, the crown violet and white: fr. yellow, to 3 in. long, edible. Trop. Amer.

ligulàris. Sweet Granadilla. Lvs. entire: fls. to 3 in. across, greenish with white and purple crown: fr. brown or purplish, 3 in. long, edible. Trop. Amer.

lùtea. Lvs. broader than long, shallowly 3-lobed: fls. greenish-yellow, ¾ in. across: fr. purple, ½ in. across. Pa. to Fla. and Tex.

macrocárpa: *P. quadrangularis.*

malifórmis. Lvs. entire: fls. fragrant, to 5 in. across, white with red, violet and white crown: fr. yellowish-green, 2 in. across, edible. Trop. Amer.

manicàta (*P. ignea. Tacsonia manicata*). Lvs. with 3 ovate toothed lobes: fls. to 4 in. across, bright scarlet with blue crown, the calyx-tube 1½ in. long: fr. yellowish-green. Colombia, Ecuador, Peru.

militàris. Lvs. with 3 deep toothed lobes: fls. to 5 in. across, deep crimson with purple crown. Hybrid.

míxta (*Tacsonia mixta*). Lvs. with 3 deep toothed lobes: fls. rose-pink, to 4 in. across, the green calyx-tube to 5 in. long. Andes.

mollíssima (*Tacsonia mollissima*). Lvs. with 3 deep toothed lobes, very pubescent beneath: fls. to 3 in. across, rose, the calyx-tube to 5 in. long: fr. yellow. Andes.

Pfórdtii: *P. alato-cærulea.*

prínceps: *P. racemosa.*

quadrangulàris (*P. macrocarpa*). Giant Granadilla. Sts. winged: lvs. entire: fls. fragrant, 3 in. across, white with purple and white crown: fr. greenish-yellow, to 10 in. long, edible. Trop. Amer. Var. **variegàta** has foliage blotched yellow.

ràcemosa (*P. princeps*). Lvs. deeply 3-lobed, margins entire: fls. to 4 in. across, deep red with purple and white crown: fr. greenish-yellow, 2 in. long. Brazil.

Raddiàna: *P. kermesina.*

rosàcea: probably of hort. origin; the name has no botanical standing.

subpeltàta (*P. alba*). Lvs. broad-ovate, shallowly 3-lobed, glaucous beneath: fls. pure white, 2 in. across: fr. green becoming yellowish, size of an egg. Mex. to S. Amer.

tetrándra: *Tetrapathæa tetrandra.*

tomentòsa (*Tacsonia tomentosa*). Lvs. 3-lobed, tomentose beneath: fls. with pubescent tube to 3½ in. long. Peru.

trifasciàta. Lvs. 3-lobed, banded with purple along midribs: fls. small, yellowish, fragrant. Brazil.

Van-Vólxemii: *P. antioquiensis.*

violàcea. Lvs. 3-lobed: fls. to 4 in. across, violet with violet and white crown. Brazil.

PASSIFLORÀCEÆ. Passion-Flower Family. About 18 genera of woody vines or sometimes erect herbs, most abundant in S. Amer., characterized by alternate simple or lobed lvs., simple tendrils, regular mostly bisexual fls. with 3–5 sepals and separate petals or without petals, usually with a conspicuous often showily fringed crown in the center, and fr. a berry or caps. Passiflora is grown for ornament and for the edible fruits, also Tetrapathæa.

PASSION-FLOWER: *Passiflora.*

PASTINÀCA. Parsnip. *Umbelliferæ.* Thick-rooted herbs, mostly bien., with pinnately compound lvs., yellow or red fls. in compound umbels, and flattened frs.; grown for the edible root.

Parsnips should be grown in deep mellow soil so that the roots may develop straight and unbranched. Seeds may be sown in spring in rows 16–18 inches apart and the seedlings thinned to 5–6 inches in the row. If the ground becomes crusted or baked before the seeds germinate, it should be broken with a rake. Parsnips may be dug in autumn and stored in a cellar, or left in the ground till spring. They require the entire season in which to grow.

satìva. Cultivated P. To 5 ft., with grooved hollow st. and roots to 20 in. long: lvs. with 7–9 ovate toothed or lobed lfts.: fls. greenish-yellow. Eu.—The wild form, var. **sylvéstris,** is nat. in N. Amer.

PATA-VACA: *Bauhinia mexicana.*

PATERSÒNIA. *Iridaceæ.* Australian rhizome-bearing perennials with rosettes of stiff linear lvs. longer than the slender erect fl.-sts.: fls. usually blue, short-lived, in terminal clusters, the outer segms. spreading and inner ones minute and erect: fr. a linear caps. Summer blooming and somewhat difficult to establish.

glaùca. Lvs. narrowly linear, to 18 in. long, acute, pale green: fls. blue, 2–4 in solitary terminal spikes, outer segms. ovate, about ½ in. long.

umbròsa. Lvs. linear, to 24 in. long, more rigid than above: fls. with outer segms. obovate, to 1½ in. long.

PATRÍNIA. *Valerianaceæ.* Hardy perennials from N. Eu. and Asia, having pinnatifid or pinnatisect lvs., except for entire basal ones, and fls. yellow or white in corymbose-panicled cymes, and differing from those of other cult. genera of this family in having 4 stamens. Blossoming in early summer and adapted to rockery or border.

intermèdia. To 1½ ft.: lvs. pinnatifid with large terminal lobe, other segms. lanceolate: fls. yellow. Siberia.

palmàta: *P. triloba.*

rupéstris: confused name, the plants in cult. may be *P. intermedia* or *P. scabiosæfolia.*

scabiosæfòlia. Plant glabrous: basal lvs. ovate-oblong, lyrate, incised, st.-lvs. pinnatifid, segms. linear-lanceolate, acute, distal one longest: fls. yellow. Dahuria.

sibírica. To 1 ft.: basal lvs. long-spatulate, toothed or entire, st.-lvs. few, pinnate, segms. entire: fls. yellow, fragrant. Siberia.

trìloba (*P. palmata*). To 15 in., hairy at nodes and on peduncles, branched above: lvs. heart-shaped, palmately 3–5-lobed to entire, lower ones coarsely dentate to serrate: fls. golden-yellow, in clusters to 4 in. across. Japan.

villòsa. Coarse per. to 3 ft.: basal lvs. auricled, petioled, villous, st.-lvs. sessile, toothed: fls. white, in panicled corymbs. Japan.

PAULLÍNIA. *Sapindaceæ.* Climbing shrubs of the tropics with alternate compound lvs., small irregular fls. in axillary racemes, and somewhat fleshy capsular frs.; one species is grown in the greenhouse as a foliage plant. The tops should be pinched off to induce stocky growth. Propagated by cuttings in early spring.

thalictrifòlia. Tendril-bearing: lvs. fern-like, three times pinnate into 3 small lfts., of bronze tint when young: fls. pinkish: fr. 1 in. long, 3-winged. Brazil.

PAULÒWNIA. *Scrophulariaceæ.* Deciduous trees of E. Asia grown for their large attractive opposite catalpa-like lvs. and showy panicles of violet, or sometimes nearly white, tubular fls. with 5 spreading lobes: fr. a large caps. with winged seeds.

Paulownias are tender in far North but are root hardy north of their proper region and in the spring send up strong new shoots and make very large leaves. They thrive best in a light deep loam and northward in a sheltered position. Propagated by seeds sown in the spring or by root-cuttings, and in greenhouses from greenwood cuttings, also from the leaves, taken when unfolding and about 1 in. long.

Fórtunei. Tree to 20 ft.: lvs. ovate or ovate-oblong, to 10 in. long, densely tomentose beneath: fls. before lvs., white spotted inside with purple, to 4 in. long. China.—Grown in Calif.

imperiàlis: *P. tomentosa.*

tomentòsa (*P. imperialis*). Pubescent tree to 40 ft., much like catalpa in habit: lvs. broad-ovate, to 1 ft. and more long, entire or 3-lobed, tomentose beneath: fls. 2 in. or more long, pale violet, darker spotted inside, fragrant, in many-fld. panicles to 1 ft. long. China; escaped in the U. S.; hardy in the East to about the latitude of N. Y. City or somewhat farther, and along the Ohio River. Var. **lanàta** is yellow-tomentose beneath. Var. **pállida** has pale fls.

PAURÒTIS (*Acœlorraphe*). Saw Palmetto. *Palmaceæ.* Attractive hermaphrodite fan-palms of southern everglade Fla. and parts of W. Indies and probably Cent. Amer., producing several slender trunks in one clump, unarmed except for the short-spiny or sharp-toothed petioles: spadix long and branched, among the lvs. and surpassing them; fls. small, solitary or in 2's or 3's; stamens 6, nearly or quite equal in length, the filaments broad at base: fr. a globular glabrous drupe about ⅜ in. thick, black.

androsàna: *P. Wrightii.*

arboréscens: *P. Wrightii.*

Wrìghtii (*P. androsana* and *P. arborescens. Serenoa arborescens. Acœlorraphe arborescens* and *Wrightii. Acanthosabal cæspitosa*). Everglade Palm of Florida. Silver-Saw P. Saw-Cabbage P. Trunks slender, several or very many, strict, to 40 ft.: lvs. nearly or quite orbicular, 2–3 ft. and more across, divided below the middle into narrow segms., green above and silvery underneath.

PAVIA: *Æsculus.*

PAVÒNIA (*Malache*). *Malvaceæ.* Herbs and shrubs in warm parts of Old and New Worlds, with alternate often angled or lobed lvs., yellow, pink or purple fls. solitary or clustered and 5 carpels separating from axis at maturity; sometimes grown under glass N., or in the open in warm climates. Propagated by cuttings in spring or early summer, or by seeds.

flàva: *P. sepium.*

hastàta. To 6 ft., shrubby: lvs. toothed, halberd-shaped: fls. solitary, pale red with dark spot at base, to 1 in. long. S. Amer.; nat. in S. U. S.

multiflòra. Lvs. narrowly oblong, toothed: fls. in terminal clusters, purple, to 1½ in. long, the staminal column exserted. Brazil.

præmórsa. Shrub: lvs. broad-ovate, toothed: fls. yellow with dark center, solitary. S. Afr.

sèpium (*P. flava*). To 6 ft., shrubby: lvs. oblong-ovate, coarsely toothed: fls. about ½ in. long, in few-fld. racemes. S. Amer.

spìnifex. Shrub to 20 ft.: lvs. ovate, toothed: fls. solitary, yellow, 1 in. across. Trop. Amer.; nat. in S. U. S.

PAWPAW: *Carica Papaya*; also *Asimina triloba*, mostly spelled *papaw.*

PEA. The garden and field pea is a cool-season hardy annual tendril-climbing plant. It occupies the land only part of the season. Peas are grown for the edible green seeds, and one race for the edible pod with the seeds intact after the way of string beans but this sort is little known in North America. See *Pisum.* Garden peas are "smooth" and "wrinkled." The smooth kinds are inferior to the wrinkled in quality.

Since the pea plant is hardy and does not produce well in hot weather, plantings in most sections of the North should be made as early as the land can be prepared. The best method of obtaining a succession of peas is to plant early, medium, and late varieties about the same time in spring. In the South and in parts of the Southwest and in southern California, the crop is grown in winter and early spring, plantings being made at intervals during fall and winter. In home gardens and in commercial plantings, in some regions, tall-growing varieties are supported on strings attached to stakes or on trellises of chicken wire 2½ to 3 feet wide stapled to stout stakes; as soon as the crop is harvested the wire is rolled up and the stakes are pulled and allowed to dry, and the material is then stored, being used over and over for years. A large part of commercial plantings of both tall and dwarf varieties are not supported. In the home garden peas may be planted in rows 18 inches apart for hand cultivation and 30 to 36 inches apart for horse cultivation, using about 1 quart of seed for 100 feet of row. Most pea seed is planted too deeply, resulting in slow come-up and thin stand. A depth of 1 inch is sufficient in moist heavy soil and 1½ to 2 inches in dry soil. A covering greater than 2 inches is seldom justified in humid regions.

As a field crop, peas may be sown in rows far enough apart to admit of horse-hoeing, but usually they are broadcast or planted with a grain drill. For sale as green peas, the pods are picked by hand, but for canning the crop is harvested with a mowing-machine and hayrake. The canning crop is hauled to the factory as gathered and is there threshed; the straw has value as manure and as feed for livestock.

Pea louse is often a serious pest, particularly in broadcast fields where the insect spreads readily from plant to plant. In rows the louse or aphis can be controlled by spraying or dusting with nicotine preparations. The lice may be brushed from canning fields by a machine devised for the purpose. The pea weevil infests ripe peas in storage, where they may be killed by fumigation with bisulfide of carbon; but peas that have been injured by weevil should not be planted for they produce weak plants.

PEA: see *Lathyrus*. **Asparagus-:** *Psophocarpus tetragonolobus*. **Butterfly-:** *Centrosema, Clitoria*. **Chaparral-:** *Pickeringia*. **Chick-:** *Cicer arietinum*. **Glory-:** *Clianthus Dampieri*. **Partridge-:** *Cassia fasciculata*. **Pigeon-:** *Cajanus Cajan*. **Rosary-:** *Abrus precatorius*. **Scurfy-:** *Psoralea*. **Shamrock-:** *Parochetus communis*. **-Shrub:** *Caragana*. **-Tree:** *Caragana*. **Winged-:** *Lotus tetragonolobus*.

PEACH (*Prunus Persica*). In some of its forms the peach can be grown in nearly all parts of the United States and southern Ontario where winter temperatures do not fall beyond 12° to 15° below zero F. and where late spring frosts are not common. Although under the most favorable conditions dormant peach blossom-buds may withstand a temperature of 20° below zero, ordinarily 10° below is critical and lower temperatures may cause damage. Temperatures of 15° to 25° below zero may seriously injure the sapwood or kill the tree outright. Varieties do not differ enough in hardiness to make possible the extension of the peach industry by the choice of hardy varieties as can be done with the apple. Commercial peach growing is, therefore, confined to the southern and middle states, and those parts of the northern states that have the protection of bodies of water, as for example the fruit districts along the Great Lakes and some of the larger inland lakes. Outside these regions, peach growing is too uncertain to be commercially profitable, but may be undertaken in home plantings where occasional crop failure is of no great importance. In the warmer parts of the United States peaches often fail because of insufficient cold weather to break the rest period. The Honey and Peen-to races are adapted to southern conditions. Large quantities of clingstone varietes are raised in California for canning.

Peach trees bear young, often a partial crop the third year. In the northern states where severe winters take their toll, the average life of a peach orchard is only about a dozen years. Farther south and particularly in California the productive life of the trees is longer. Commerical growers have successive orchards coming on, but in the home garden young trees may be set every four or five years to replace older ones, thus having trees at a bearing age at all times on a small place. Peach trees are set when one year old, that is, one season's growth from the bud. Trees should be set 18 to 20 feet apart each way in spring or autumn, the former being the better time in the North. In regions where the trees attain large size, planting should be as much as 24 feet apart either way.

Although peaches may be grown with fair success on practically any good agricultural soil that is well drained and reasonably warm, the fruit attains its best development in color and quality on good sands, sandy loams or the lighter clay loams. In some regions, with abundant fertilizer, good commercial crops are grown in almost pure sand. Heavy or very fertile lands which prolong the growing season should be avoided in the North as late growth does not become sufficiently hardened to withstand the winter.

Peach varieties are budded on seedling stocks. The pits are planted in the nursery row in late summer, or they may be stratified and sown in spring; in either case germination does not take place until the spring following the ripening of the seed. The first-year seedlings are budded to the desired variety, in June in the southern states and in late August or September in the North. The buds inserted in late summer or autumn remain dormant until the following spring, when the stock (or young tree) is cut off just above the bud; this bud is forced into growth, and all other sprouts from the stock are pulled off. The age of the tree is reckoned from the bud, but of course the root is one year older. In June-budded trees in the South, the bud grows the same year in which it is inserted and the resulting tree is ready for planting that autumn. For heavy lands, peaches are sometimes budded on stocks of St. Julien or Damson plum.

Tillage and fertilizer are important. Although it is sometimes possible to grow peaches for home use without cultivation, by mulching with manure, fertilizing heavily, or planting the trees in the poultry yard, the universal practice in commercial orchards is to till thoroughly and turn under cover-crops. The land is plowed or disked in early spring and then tilled frequently enough to kill all weeds until July or August or until the peach crop is well along. A cover-crop of weeds or sowed crop, such as buckwheat, rape, clover or cowpeas, is allowed to grow. On light sandy soils a complete fertilizer is frequently added, although usually nitrate of soda is the most effective element. The nitrate may be applied at the rate of 2 to 4 pounds a mature tree, when the buds start growth. Nitrate should be applied with caution as an overdose will lower the color of the fruit and prolong growth too late in the season. Manure may be used to advantage in many cases.

Severe pruning at the time of setting is the common practice. The trees are headed to the desired height, usually 20–30 inches, and all but the three or four branches wanted for the head are removed and these are cut back to stubs 2 to 3 inches long. As the young shoots appear in the spring the trees should be disbudded by removing all young shoots except those desired for permanent scaffold branches. From this time until the first crops are borne, the tree, as grown in the northern states, should be pruned little except to keep it in shape and the head somewhat open. In the South and West where the trees grow more rapidly, the scaffold branches must be headed back to prevent them from becoming "leggy." Mature trees must be heavily pruned to maintain vigor of growth of the fruiting wood, to keep the tree low so that the fruit can be harvested from the ground or a six-foot step-ladder, and to open up the center of the tree. All this is accomplished by heading back the most vigorous growth to side branches and thinning out where necessary. The best time for pruning peach trees is in the late winter or early spring before the buds start.

Peaches are harvested when full sized and well colored, but still firm. The time of picking is very important and requires experience to determine it with nicety. Care must be taken not to tear the flesh about the stem. In its fourth or fifth year a well-grown tree may yield ½ to 1 bushel of fruit and when in full bearing 3 to 4 bushels are not exceptional. On the average, however, 150 to 250 bushels to the acre are all that can be expected. The yield of peach trees is not dependent on cross-pollination, except in the varieties J. H. Hale and the Mikado. Yields are larger in California.

Marketing and storage have changed in recent years. Roadside and local markets now absorb much of the peach crop. The commercial crop is shipped in various types of containers, among the most common being the Georgia carrier of the south Atlantic states, hampers of various sizes and the standard bushel basket. Because of the perishable nature of the fruit it is usually pre-cooled and shipped in iced cars if the distance is great. Firm fruit in prime condition can be held in cold storage for a week to ten days at 32° F., after which loss of quality is rapid.

Varieties of peaches are many, with regional adaptations. Many new varieties are being introduced yearly. The commercial grower should choose varieties suited to the particular market. The following varieties, listed in order of ripening, give a succession for either home or commercial use.

Varieties with hardy fruit-buds adapted to growing at the northern limits of peach culture: Greensboro, Carman, Oriole, Golden Jubilee, Rochester, Crosby, Hills Chili.

Varieties for fruit sections of New England, New York, and Michigan: Mikado (June Elberta), Oriole, Golden Jubilee, Rochester, Valiant, Halehaven, Veteran, Champion, Early Elberta, Early Crawford, J. H. Hale, Elberta.

Varieties for the Atlantic coast not including Florida: Mayflower, Golden Jubilee, Carman, Hiley, Halehaven, Belle, J. H. Hale, Elberta, Late Crawford.

Varieties for the Middle West: Golden Jubilee, Carman, Cumberland, Rochester, Halehaven, Champion, Early Elberta, Belle, Elberta, Wilma, Salberta.

Varieties grown on the Pacific coast, not including canners and driers: Mayflower, Alexander, Triumph, St. John, Hale's Early, Early Crawford, Early Elberta, Elberta, J. H. Hale, Salwey, Decker.

Varieties for southern Florida and other subtropical regions: Jewell, Suber, Waldo, Angel, Florida Gem, Honey, Imperial, Luttichau.

The spraying of the commercial orchard should be carefully planned to meet local conditions. In most cases a satisfactory program for home planting consists of two sprays. The first spray should be applied in autumn after the leaves are off or early in the spring before the buds start, using lime-sulfur 1–15 or an oil spray for the control of scale, leaf-curl and brown-rot; the second spray is applied when the "shucks" or calyx-rings are falling from the fruit, using wettable sulfur at manufacturers' directions, lead arsenate 2 pounds, hydrated lime 16 pounds, water 100 gallons. This is to control curculio, scab and brown-rot. The oriental peach moth, now widely distributed, cannot be controlled by spraying but is kept in check by liberating larval parasites.

The peach borer, one of the worst pests in many regions, can be controlled with ethylene dichloride emulsion or by digging them out with a knife. Ethylene dichloride emulsion has the advantage of application as a liquid in October after the rush of orchard work is past. Borers may also be dug out in the way described for the apple-tree borer. In using paradichlorobenzene, all gum is removed from the base of the tree and the ground made level for a space of about 1 foot. The dry white powder is then spread on the ground in a narrow ring about 2 inches from the base of the tree. The base of the tree is then mounded up with finely pulverized earth to a height of about 2 inches above the highest visible borer injury and the surface of the mound packed with a shovel. This mound should be left undisturbed for three weeks and then torn down. One ounce of powder for a tree six years old, ½ ounce for a three- to five-year tree, ¼–⅜ ounce for a one- to two-year tree is sufficient. An excess may cause serious injury. Applications should be made in the fall, about September 1 in a region like New Jersey, when the soil temperatures are about 55–70° F.

PEACOCK-FLOWER: *Delonix regia.* **Flower-Fence:** *Adenanthera pavonina.*

PEANUT: *Arachis hypogæa.* **Hog-:** *Amphicarpa.*

PEAR. In North America pomological pears are of three botanical groups: (1) The European pear, *Pyrus communis*, comprising all the old standard varieties. (2) The Asian or oriental pear, *P. pyrifolia* (*P. serotina*), native in China, characterized by the absence of calyx on the fruit, a very gritty hard flesh and long-keeping quality, mostly an apple-shaped fruit, and sharply serrate long-pointed leaves; the Sand pear belongs here, but the species is not much grown in America. (3) The Eurasian race, *P. Lecontei*, hybrid between the two, represented principally by Kieffer and Leconte. The Snow pear, *Pyrus nivalis*, is grown in Europe for the making of cider or perry but is known in America only in botanical collections.

No home fruit plantation is complete without trees of various kinds of pears, ripening from early August till winter. The late varieties are generally good keepers, and extend the season into February, thus supplying fruit for six or seven months. The pear is also a good commercial fruit although perhaps not maintaining its former importance in many of the fruit regions. Compared with the apple the pear is much more restricted in its geography. It cannot endure the low temperatures of many parts of the northern states nor the humid heat of the South, thriving only in those favored regions that have a fairly equable climate. Commercially, therefore, plantings of the European type of pear are largely confined to the fruit districts of New England, about the Great Lakes and on the Pacific coast. In home plantings, by the selection of cold-resistant varieties, the range can be extended somewhat farther north and by blight-resistant varieties, particularly those derived from the oriental or Asian pear, into the southern states.

Soils for the pear should be of the strong or heavy types. It thrives on the heavier sandy loams or clay loams, which have good humus content and moisture-holding capacity. Good drainage and a porous subsoil are essential for its best development. On the average the European pear is adapted to heavier soils than the apple.

The Kieffer and other oriental pears, however, thrive better on rather light soil.

Propagation of the pear is by seeds, which are imported from France, or from Japan if the oriental stock is desired. Commonly, however, nurserymen have imported seedling stocks from France. The desired varieties are budded or grafted on one-year seedling stocks as with the apple, shield-budding being the usual method. Dwarf pears are propagated by budding on French-grown Angers quince cuttings. Some varieties do not grow well on quince, but must be double-worked by budding a compatible variety, like Angouleme, directly on the quince stock and after the cion has grown a year or two grafting the desired variety on the Angouleme as an intermediate stock. As some varieties of pear grow to perfection on quince, the dwarf tree is peculiarly adapted to planting on small home grounds, and is often used as a boundary plant, or to serve the purpose of a screen. These dwarf trees should be set deep—4 to 6 inches below the union—to prevent the stock from growing. Dwarf trees may be set as near together as 10 to 16 feet, while the standard or tall-growing pears should be set farther apart. Trees are planted when two years old from the bud. Dwarfs are kept within bounds by thorough and systematic pruning and heading-in.

In orchards, one- or two-year-old nursery trees are planted very early in the spring in the northern states. In milder climates, fall planting may be successful. Planting distances are 20×25 or 25×25 for standards (not dwarfs). To provide satisfactory pollination it is advisable to plant at least two varieties in contiguous rows or alternating in the rows. Not more than three to four rows of one variety should be planted together. The two important varieties Bartlett and Seckel are intersterile.

Either tillage and cover-crops, or sod culture, are practiced as with the apple. Mulching trees with grass or straw in the home orchard is often advisable. Trees in sod require fertilization with manure or nitrate. Great care must be exercised not to force the tree into very soft growth and thus render it susceptible to fire-blight infection.

Pruning is similar to that described for the apple except that more scaffold limbs can be left on the young pear tree. As the trees mature they should be thinned out by removing crossing or crowded limbs and, in case the head becomes spurry, by cutting out many of the smaller branches. Severe pruning is to be avoided as the resulting succulent growth is susceptible to fire-blight. Kieffer and other oriental pears are cut back much more severely than varieties of the European pear. Pruning may be undertaken at any time when the trees are dormant, ordinarily in late winter or early spring.

The fruit is always hand-picked when mature but still firm. The fruit is raised and the stem separates from the twig; it should not be pulled off. Pears should not be tree-ripened even for home use. The yields vary with the variety, but under good conditions 200–400 bushels to the acre may be expected. In California the yields may be much larger. In the East, pears go on the general market in bushels and hampers. On the Pacific coast the box is the standard package. Local markets and canneries absorb much of the crop in some regions.

The cold storage of pears is not as well understood as that of the apple. Many varieties are perishable and should not be stored, or for a short time only. Bartlett, if picked while still very firm, can be held for three months at 30° F., although under most conditions a month or six weeks is the commercial limit of storage. Ripening Bartletts in high humidity at 65° F. after removal from storage improves the quality. Most varieties should be put into storage as soon as possible after picking. The Bosc, however, is an exception and should be ripened at 50° F. for ten days before going into the cold. Varieties like Anjou, Winter Nelis, and Lawrence, may be held until February in cold storage. In home storage, the fruit should be kept as cool as possible without freezing.

The question of varieties is very important inasmuch as there is great variation in regional adaptation and resistance to disease. In the following lists the varieties are given in order of ripening. Commercial varieties are starred:

Varieties of more than average hardiness adapted to growing in the colder parts of the pear regions: Tyson, *Clapp, *Seckel, Flemish Beauty, *Anjou, Lawrence.

Varieties adapted to milder fruit sections, such as the fruit districts of New England, New York, Ohio and Michigan: Tyson, *Clapp, *Bartlett, Gorham, *Seckel, Sheldon, Angouleme, *Bosc, *Clairgeau, *Anjou, Dana Hovey, *Kieffer, Lawrence, Winter Nelis.

Varieties for the states south of New York: Kieffer, LeConte, Garber, Pineapple.

Varieties for the Pacific coast: *Bartlett, *Comice, Easter Buerre, Hardy, *Bosc, *Anjou, *Winter Nelis.

Varieties resistant to fire-blight: Tyson, Seckel, Fred Clapp, Angouleme, Kieffer, Anjou.

Insects and diseases play an important part in pear culture. Of those common to both apple and pear the codlin-moth and borers are important and may be controlled as described under the former. Fire-blight is the most serious disease, becoming the limiting factor to pear growing in the southern part of the pear regions. It is caused by bacteria which gain entrance through flowers and insect punctures and cause the young growth and fruit to blacken and die. Frequently trees of susceptible varieties are killed outright. It can sometimes be kept in check by cutting out the diseased branches as soon as they are observed, making the cuts a foot or more below the point where the tissue is killed. The cut stub should be disinfected with a mixture of cyanide of mercury 1 part, bichloride of mercury 1 part, and water 500 parts. Dormant cankers on the trunk and limbs should have the bark removed from the diseased area and at least ½ inch beyond and the wound disinfected. After disinfection the wounds should be protected with some good wound dressing. Blossom blight can be controlled in part by spraying the trees in early full bloom with bordeaux mixture 2-6-100. In some regions pear psylla is a very troublesome pest as are also the pear midge and the pear thrip. The control of these insects is a complicated and difficult matter which, in the commercial orchard, requires expert advice. For the home orchard about the only spray that is practicable is the calyx application for codlin-moth control as for apple.

PEAR, ALLIGATOR-: *Persea americana.* **Balsam-:**

Momordica Charantia. **Prickly-:** *Opuntia.* **Vegetable-:** see *Chayote.*

PEARL-BUSH: *Exochorda.* **-Fruit:** *Margyricarpus setosus.*

PEARLWORT: *Sagina.*

PECAN. One of the hickory-nuts, *Carya Pecan,* of special value and attractiveness. In the United States, the species is indigenous throughout most of the valley of the Mississippi and its principal tributaries as far north as Iowa, especially on the lowlands along the rivers and creek bottoms. Farther west, it is found along most of the important streams in Texas and Oklahoma. In Mexico, the pecan is native over areas in the northern and central parts. The cultural range of the pecan, as is usual with most fruits and nuts, is much larger than its native habitat. Pecans have been planted successfully from the Atlantic coast to the western part of Iowa, Oklahoma, and west Texas, from the forty-third parallel on the north to the Gulf on the south. In addition fairly successful trial plantings have been made in Arizona and in the Pacific states, especially California.

In Texas, Oklahoma, Arkansas, and Louisiana the native pecan has become of considerable commercial importance as a nut-producing tree. It is estimated that in this area are well over a hundred million native seedling trees which produce an average of about 50,000,000 pounds of nuts annually. The largest seedling crop reported up until 1940 is 78,000,000 pounds in 1935. Although much of the production comes from seedling groves that are in no way improved, there is a considerable area in improved seedling pecan groves which receive more or less cultural management. Grove improvement consists of cleaning the ground of underbrush and the trees of vines and other competing vegetation. Trees other than pecans are removed and the remaining trees carefully observed as to the amount and quality of the crop borne. The grove is then further thinned to about a dozen well spaced trees to the acre, taking care to retain the best trees in both type of nut and quantity produced. Where the timber is not considered valuable, the cost of thinning out the trees is greatly reduced by the use of poison consisting of sodium arsenite and caustic potash which is applied in a girdling ring of axe cuts. Trees thus treated die within a few weeks and are then allowed to rot in place. Under some conditions seedling groves are further improved by top-working the trees to thin-shelled named varieties. The method of top-working is to cut back all the limbs of the seedling trees to stubs a few inches in diameter. These cuts are made when the tree is dormant and during the following season many sprouts grow from the branches. In late summer buds are inserted in a sufficient number in these sprouts to make a good distribution of wood of the new variety. After the buds have caught hold, the remaining sprouts are thinned out and the budded sprouts cut back to within 2 inches of the bud. The following season the buds grow to form the new top of the tree.

In recent years extensive plantings have been made of named varieties of pecans in orchard form. These occur not only in the regions where the pecan is native but also in the southeastern states, particularly northern Florida, Georgia, and South Carolina. Production of improved varieties furnishes about 15,000,000 pounds annually with a maximum of 21,000,000 in 1931. Trees are planted at distances ranging from 50–70 feet, depending upon the richness of the soil and the vigor of the variety. Pecans are best adapted to deep, well-drained alluvial soils, but may grow in other locations provided the soil is well drained, of a good depth, and care is given to supply the needed fertilizers and soil management. It has been a mistake to attempt to grow pecans on run-down cotton lands without suitable soil-building practice. On level lands the pecan orchards are cultivated for at least part of the year. Leguminous cover-crops have been shown to be a decided advantage in providing nitrogen and humus for the soil. Under some conditions commercial fertilizers can be used to advantage. In some of the areas where pecans have been planted, growth has been unsatisfactory because of various mineral deficiencies in the soil. In some cases an application of zinc compounds has been of value.

Many varieties of pecans have been named and propagated. These show great variation in their type of growth and particularly in the length of time required to mature their crop satisfactorily. Varieties adapted to the Gulf Coast require a growing season of 270 to 290 days. On the other hand, varieties adapted to the northern part of the natural range, particularly southern Indiana and parts of Iowa, mature crops in 170 to 190 days. In the northern United States, particularly parts of New York, Ohio and Michigan, the northern strains of pecan are hardy to winter cold but do not mature crops satisfactorily. Among the Gulf Coast varieties are the Schley, Stewart, and Frotscher. Some of the northern varieties are the Indiana, Busseron, Niblack and Posey. Many other sorts show intermediate requirements as to length of growing season and climatic adaptation. Varieties best adapted to different regions should be carefully chosen in establishing a plantation.

Pecans are usually propagated by budding named varieties on seedling stocks. The stratified nuts are planted in the nursery row. Seedlings are budded using the annular or ring type of bud. Whip-grafting may also be used. Nursery trees are somewhat harder to handle than others because of the long tap-root which must be dug carefully to assure successful transplanting.

Pecans are wind pollinated. Many varieties show self-sterility so that in any plantation several varieties should be included. The grower should make sure that the varieties shed pollen at the time that the pistils are receptive. Pecan yields are extremely variable. Specimen trees on rich soil with plenty of room have been known to yield upwards of a thousand pounds in a single year with an average of 400 or 500. In the orchards, however, the yields are much less and in fact are inclined to be disappointingly light and variable. The whole matter of yield is affected by variety, soil, and particularly the drop of the nuts due to the work of various pests and diseases. Nuts are allowed to fall on the ground at maturity or they may be shaken from the trees. They should be harvested promptly, cleaned and dried to prevent deterioration.

Much of the crop reaches the market as pecan meats or kernels. Effective mechanical crackers have been devised for handling the product. Deterioration of the meats is prevented either by packing in a vacuum or by holding in cold storage.

Pest and disease control in the pecan orchard is an important problem. The most serious disease, pecan scab, is particularly harmful in the Gulf states. Its control requires a number of spring and early summer sprays with 3–3–50 bordeaux mixture. The pecan nut and leaf case-bearers are among the most serious pests. These and some other chewing insects can be held in check by spraying with arsenicals. Commercial plantings require attention to the special pest and disease problems in the locality.

PECTIANTIA: *Mitella.*

PECTINATE: narrow segments or spines set close together along an axis like teeth of a comb.

PEDALIÀCEÆ. Pedalium Family. About 14 genera of the oriental tropics, mostly herbs but sometimes shrubs, with opposite lvs. or the upper alternate, covered with slime-secreting hairs or glands, irregular gamopetalous fls. having 5-lobed limb, 4 stamens, usually superior 2–4-celled ovary, and capsular frs; allied to Bignoniaceæ and Martyniaceæ. Sesamum is cult. for the oily seeds and medicinal purposes and Ceratotheca for ornament.

PEDATE: said of a palmately lobed or divided leaf of which the two sides are again 2-cleft; bird-footed.

PEDICEL: stem of one flower in a cluster.

PEDICELLARIA: *Gynandropsis.*

PEDICULÀRIS. Wood-Betony. Lousewort. *Scrophulariaceæ.* Herbs sometimes planted in the border or the rock-garden for the showy terminal bracted spikes of purplish, red, rose-colored or white 2-lipped tubular fls., and the finely cut foliage. Propagated by seed and division. Some of them are probably partially parasitic on roots and may not find the proper connections.

bracteòsa. Per. to 3 ft., glabrous: lvs. to 1 ft. long, divided to midrib into lanceolate laciniately toothed divisions: fls. yellowish, ¾ in. long. June–Aug. B. C. to Calif. and Colo.

canadénsis. Pubescent per. to 1½ ft.: lvs. to 5 in. long, pinnately parted: fls. yellow or reddish, rarely white, to ¾ in. long, Apr.–June: caps. 3 times as long as calyx. N. S. to Fla. and Mex.

densiflòra. Per. to 1 ft., pubescent or nearly glabrous: lvs. pinnate into oblong toothed or cut divisions: fls. crimson, 1 in. long. Calif.

grœnlándica. Per. to 1½ ft., glabrous: lvs. pinnate, to 6 in. long: fls. red or purple, upper lip of corolla compressed into a decurved beak to ¾ in. long. Greenland to B. C., south to New Mex. and Calif

lanceolàta. Per. to 3 ft., nearly glabrous: lvs. to 5 in. long, pinnately lobed: fls. yellow, to ¾ in. long, Aug.–Oct.: caps. about length of calyx. Conn. to Neb.

palústris. Ann. or bien. to 2 ft., glabrous: lvs. to 2 in. long, pinnately parted: fls. purple seldom white, ¾ in. long: caps. twice as long as calyx. N. N. Amer., Eu.

racemòsa. Per. to 20 in., cespitose: lvs. lanceolate to linear, to 3½ in. long, undivided, crenate: fls. white, to ⅝ in. long, June–Aug.: fr. with long strongly curved beak. Alta. to New Mex., west to B. C. and Calif.

verticillàta. To 7 in.: lvs. 1–2-pinnately parted: fls. red, ½ in. long. Arctic regions.

PEDILÁNTHUS. *Euphorbiaceæ.* Odd succulent shrubs of trop. Amer. with milky juice, alternate simple lvs., fls. in showy cyathia (see *Euphorbiaceæ*), and capsular fr.; grown for ornament in warm climates. For cult. see *Succulents.*

aphýllus. Differs from *P. macrocarpus* in the peduncle being attached to the back rather than center of involucre. Mex.

euphorbioìdes: listed name.

grandiflòrus: listed name.

macrocárpus. To 3 ft., with whitish sts. and minute lvs.: infl. green, lobe of the involucre above the spur 2-parted: caps. ¾ in. across. Mex., Lower Calif.

planifòlius: listed name.

retùsus. Much like the following but the lvs. obtuse and usually notched at end and midrib not keeled underneath. Brazil.—A state with white-bordered lvs. is grown in the tropics and is to be expected in Fla.

tithymaloìdes. Redbird-Cactus. Slipper-Flower. Jew-Bush. To 6 ft.: lvs. ovate, to 4 in. long, pointed, with midrib winged below: fls. (cyathia) red or purple, to ¾ in. long, pointed, in dense terminal cymes. W. Indies, Cent. Amer., N. S. Amer. Vars. **cucullàtus** and **variegàtus** have lvs. bordered with white.

PEDIOCÁCTUS. *Cactaceæ.* One (possibly 2) small simple or cespitose strongly tubercled very spiny cactus with dry dehiscent fr., areoles at first very woolly but nearly naked with age: fls. massed in woolly center of plant. See *Cacti.* **P. Símpsonii** (*Echinocactus* and *Mammillaria Simpsonii. M. Purpusii*). Snowball Cactus. Depressed-globular, to 6 in. broad; radial spines 15–20, white and needle-like; centrals 5–7 and stouter: fls. somewhat funnelform, pinkish, less than 1 in. long, partially closing at night, massed in center in whitish or brown wool. Kans. to Wash. and New Mex.

PEDIOMELUM: *Psoralea esculenta.*

PEDUNCLE: stem of a flower-cluster or of a solitary flower.

PEEPUL: *Ficus religiosa.*

PEERSIA: *Rhinephyllum.*

PEIRANISIA: *Cassia multijuga.*

PEIRESKIA: *Pereskia.*

PEJIBAYE: *Guilielma Gasipaës.*

PELARGÒNIUM. Storksbill. Geranium of florists (see *Geranium*). *Geraniaceæ.* Herbs or shrubs with entire, lobed or dissected lvs., irregular fls. in axillary 2–many-fld. umbels, the calyx with a nectar-spur adnate to the pedicel, stamens 10, and fr. of 5 valves which coil as they open. Species here entered are S. African or else hort. derivatives. They are perennials.

Geraniums are commonly grown as house and bedding plants. Propagated by cuttings. Bloom can be secured in four or five months. Plants over a year old are not satisfactory for the common house or conservatory subjects and should be discarded after cuttings are taken, although the Domesticum group may be retained longer. Plants of the common or fish geranium grown out-of-doors may be lifted in autumn and kept until cuttings can be taken from them for next year's plants. If wanted for winter bloom in the window, cuttings should be taken in summer. The show geraniums may be kept several years; cuttings taken late in spring will produce blooming plants the following winter or summer.

acerifòlium (*Geranium citriodorum*). Maple-leaved G. Shrubby, to 3 ft.: lvs. 3–5-angled or -lobed, about 3 in. across: fls. deep rose or purplish, in many-fld. umbels.

alchemilloìdes (*P. malvæfolium*). To 1½ ft., hairy: lvs. 5–7-lobed, to 3 in. across: fls. white veined with rose, in 3–6-fld. umbels.

capitàtum. To 1 ft. or less, sts. woody at base, weak and trailing: lvs. cordate, 3–5-lobed, long-petioled: fls. rose-purple, on peduncles longer than lvs., in dense heads.—Plant is rose-scented.

citriodòrum: hort. hybrid of unknown parentage said to have lemon-scented foliage.

coccíneum: *P. hybridum.*

críspum. Woody, to 3 ft.: lvs. numerous and small, 1 in. or less long, crisped on the margin, lemon-scented: fls. pink or rose, in 1–3-fld. umbels. Var. **latifòlium** is listed.

denticulàtum. To 1 ft.: lvs. with long linear deeply toothed lobes: fls. lilac or rose-purple, in 1–3-fld. umbels. Var. **màjus** is a larger form.

doméstìcum. Show, Fancy, or Lady Washington Geraniums or Pelargoniums. To 1½ ft., soft-hairy: lvs. 2–4 in. across, obscurely lobed, toothed: fls. large, white, pink and red, the two upper petals with dark blotches, in few- to many-fld. umbels. Cultigen of many forms.

echinàtum. Sts. short and fleshy with persistent spine-like stipules: lvs. cordate-ovate, with 3-7 shallow wavy-toothed lobes, white-tomentose: fls. white with purple center or all purple.

ferulàceum (*P. parviflorum*). To 2 ft., sts. fleshy, swollen at nodes: lvs. oblong, pinnatifid to pinnatisect, hairy on both sides, segms. incised, flat: fls. white, upper petals spotted rose, in umbels of 4–6, petals narrow, subequal with upper 2 eared at base.

filicifòlium: a name sometimes applied to *P. denticulatum.*

fìltrum: listed name of unknown botanical standing.

fràgrans. To 1 ft.: lvs. 1 in. across, the margins crenate or crisped: fls. whitish with pink veins, in 4–8-fld. umbels.

fúlgidum. Shrubby: lvs. pinnately 3-parted into lobed or cut toothed segms.: fls. bright scarlet with darker lines, in many-fld. umbels.

grandiflòrum. Shrubby: lvs. deeply 5–7-lobed, lobes acute, dentate, glabrous: fls. white, upper 2 petals with red lines and broader than others, usually 2–3 fls. on each peduncle.

gravèolens. Rose G. Woody, to 3 ft.: lvs. deeply 5–7-lobed, the divisions again lobed and toothed, fragrant: fls. rose or pink veined with purple, in 5–10-fld. umbels. Var. **ròseum** is listed.

grossularioìdes. Ann. to 18 in., sts. ascending or erect, glabrescent: lvs. reniform-cordate, palmately lobed, margins crenate-dentate, petioles of basal lvs. to 4 in. and of st.-lvs. to ¼ in. long: fls. red, small, petals rarely twice as long as calyx, spur to ½ in. long: beak of fr. about ⅝ in. long.

hederæfòlium: *P. lateripes.*

hirsùtum. To 8 in.: lvs. to 3 in. long, entire to pinnatifid, densely white-hairy, margins toothed: fls. in umbels of 10–15 on pedicels 1–4 in. long, flesh-colored to dark purple.

hortòrum. Fish G. Succulent, 1–2 ft. or more when grown in the open: lvs. 3–5 in. across, scalloped and crenate-toothed, with fishy odor: fls. red, pink, salmon, white, in many-fld. umbels. Cultigen of many races.

hýbridum (*P. coccineum*). Hybrid between *P. zonale* and *P. inquinans:* fls. deep scarlet.

latéripes (*P. hederæfolium*). Similar to *P. peltatum* and differing chiefly in having lvs. cordate with acute lobes rather than peltate with obtuse lobes.

Limòneum. Lemon G. A garden hybrid, lemon-scented, and with purple and lilac fls.

malvæfòlium: *P. alchemilloides.*

melíssinum. Hybrid of *P. crispum* and *P. graveolens:* lvs. size and shape of *P. graveolens* and crisp margin of *P. crispum:* fls. white, upper 2 petals obovate, emarginate, with red spots, lower petals narrowly lanceolate without spots.

odoratíssimum. Apple or Nutmeg G. Lopping plants with branches to 1½ ft. long: lvs. 1 in. across, crenate, sweet-scented: fls. white or whitish, in 5–10-fld. umbels.

parviflòrum: *P. ferulaceum.*

peltàtum. Ivy G. Trailing or somewhat climbing plants with branches to 3 ft.: lvs. 2-3 in. across, shallowly 5-angled or -lobed, broadly ovate and somewhat obtuse: fls. rose-carmine varying to white, the upper petals with dark markings, in 5–7-fld. umbels.

pinguifòlium. Hybrid of *P. peltatum* and *P. lateripes* characterized by non-peltate lvs. whose lobes are more obtuse than acute, sts. and petioles remotely pilose and occasionally 4-angled.

quercifòlium. Oak-leaved G. Shrubby, to 4 ft.: lvs. pinnately lobed with 2 to 3 toothed or angled lobes on each side: fls. pink to rose with dark markings, in 3-7-fld. umbels.

Rádula. To 1 ft.: lvs. deeply lobed into narrow toothed divisions: fls. rose with dark markings, in 5-fld. umbels.

ròseum: a garden name applied to plants of the *P. graveolens* type.

sæpeflòrens. Garden hybrid between *P. reniforme* and probably *P. echinatum,* flowering from late summer to late spring under glass: fls. bright rose with light spot in center and 2 dark marks.

scàbrum. Shrubby, sts. stiffly glandular-hairy: lvs. deeply 3-lobed, base wedge-shaped, terminal lobe usually trifid, laterals bifid, all toothed, bristly beneath on nerves: fls. small, many, in panicles, pedicels and calyx scabrous-bristly. S. Afr.

terebinthinàceum. A garden hybrid between *P. quercifolium* and *P. graveolens.*

tomentòsum. Shrubby, to several ft., white-hairy: lvs. cordate-ovate, 3–7-lobed, velvety, minutely toothed: fls. white, red spot near center.—Peppermint-scented.

vitifòlium. Grape-leaved G. Shrubby, to 3 ft.: lvs. 2–3 in. across, with 3 shallow angled crenate lobes: fls. rose or pink with darker veins, in 7–16-fld. umbels.

zonàle. One of the species from which the *P. hortorum* group is probably derived; apparently not in cult. in its original form.

PELECÝPHORA. Hatchet Cactus. *Cactaceæ.* Small cespitose tubercled cacti with watery juice, the tubercles strongly flattened sidewise and not on ribs and topped with elliptic areole bearing 1 scale-like pectinate spine and with woolly axils: fls. central on the plant. See *Cacti.*

aselliformis. Body cylindric, to 4 in. high and half as much in diam.; tubercles in spirals: fls. bell-shaped, purplish with outer segms. sometimes white, more than 1 in. broad. Mex.

pectinàta: *Solisia pectinata.*

pseudopectinàta. Solitary, to 2½ in. high and 1¾ in. diam., somewhat depressed on top, most of the st. under the ground; tubercles square at base, compressed; spines small, pectinate, yellowish: fls. rose-violet, to ¾ in. long. Mex.

Valdeziàna: *Thelocactus Valdezianus.*

PELICAN-FLOWER: *Aristolochia grandiflora.*

PELLÆA. Cliff-Brake. *Polypodiaceæ.* Small rock-loving ferns with nearly uniform fronds 1- or more pinnate, and sori in a marginal band, protected by the reflexed margin of the segms.: of wide distribution mostly in temp. and warm-temp. regions. Some of them are grown in rock-gardens and a few in cool greenhouses. They prefer limerock situations. See *Ferns.*

adiantoìdes: *P. viridis.*

andromedæfòlia. Fronds to 2½ ft. long, 2–4-pinnate, segms. oval or elliptic, ½ in. long, on flesh-colored stipes 1½ ft. long. Calif., Ore.

atropurpùrea. Hardy: fronds tufted, leathery, to 1 ft. long and 6 in. wide, 1-2 pinnate, segms. to 2 in. long, on dark purple stipes to 8 in. long. N. Amer.

brachýptera. Fronds to 1½ ft. long, 2-pinnate, segms. narrow-linear, to ¾ in. long, on purplish-brown stipes 1½ ft. long. Ore., Calif.

Brèweri. Fronds to 10 in. long, 1-pinnate, pinnæ mostly 2-parted, on brown slender stipes to 4 in. long. Wash. to Calif. and Utah.

Brídgesii. Fronds tufted, leathery, to 1 ft. long, 1-pinnate, segms. oval or oblong, on shining brownish stipes to 8 in. long. Calif., Ida.

dénsa (*Cheilanthes densa* and *siliquosa. Cryptogramma densa*). Fronds to 3 in. long, 3-pinnate, glabrous, margins of segms. revolute, on shining brown stipes to 9 in. long. Que., Ont., W. N. Amer.

falcàta (*Platyloma falcatum*). Fronds leathery, to 1½ ft. long and 3 in. wide, 1-pinnate, the lanceolate or oblong pinnæ to 2 in. long. India to New Zeal.

glabràta: listed name.

grácilis: *Cryptogramma Stelleri.*

hastàta: *P. viridis.*

mucronàta (*P. ornithopus*). Fronds to 1½ ft. long, 2–3-pinnate, segms. elliptic or linear-oblong, to ¼ in. long, on purplish stipes to 10 in. long. Calif. to Tex. and Colo.

occidentàlis (*P. pumila*). Fronds to 3 in. long, 1-pinnate, segms. few, oblong, shining and somewhat leathery, on shining dark brown stipes to 2 in. long. B. C. to Colo.—Possibly only a var. of *P. glabella.*

orníthopus: *P. mucronata.*

pùmila: *P. occidentalis.*

rotundifòlia (*Allosurus rotundifolius*). Fronds to 1 ft. long and 1½ in. wide, 1-pinnate, pinnæ oblong to orbicular, to ¾ in. long. New Zeal.—Sometimes seen in greenhouses.

víridis (*P.* and *Pteris adiantoides. P. hastata*). Fronds to 2 ft. long, 2–3-pinnate, segms. oblong to ovate. Afr.

PELLIÒNIA. *Urticaceæ.* Prostrate or depressed herbs with alternate lvs. and unisexual fls. borne commonly in dense cymes; native in Asia and Pacific Isls.; grown in greenhouses and baskets for the attractively colored sts. and lvs.; require warmth and moisture. Propagated by cuttings and division.

Daveauàna. Sts. prostrate, to 2 ft. long: lvs. oblong or orbicular, to 2½ in. long, bronzy olive-green, paler along midnerve. India to Cochin-China.—Some of the material cult. under this name is *Ruellia Devosiana.*

púlchra. Sts. creeping, purplish: lvs. oblong, light green with black nerves, pale purple beneath. Cochin-China.

PELLITORY: *Parietaria.*

PELTÁNDRA. ARROW-ARUM. *Araceæ.* Herbs native in the bogs of E. N. Amer., having arrow-shaped entire lvs. with long sheathing petioles, and unisexual fls. borne on spadices which are shorter than the spathes; sometimes transferred from the wild and easy to colonize.

virgínica. Lvs. about 1 ft. long and 6 in. wide, the petioles about 3 times longer: spathes green, to 8 in. long. Me. to Fla. and Mo.

PELTÀRIA. SHIELDWORT. *Cruciferæ.* Per. glabrous herbs of the Medit. region: lvs. entire, clasping on st.: fls. small, white or rose, in terminal clusters: fr. or silicle orbicular or nearly so. **P. alliàcea** is a low per. with an onion-like odor, useful in borders for its numerous white fls. in summer; it grows 1–1½ ft. high, branched.—Grown readily from seeds, blooming the following year, also by division.

PELTATE: attached to its stalk inside the margin; peltate leaves are usually shield-shaped.

PELTIPHÝLLUM. *Saxifragaceæ.* Per. herb similar to Saxifraga, native on banks of streams in Ore. and Calif. **P. peltàtum** (*Saxifraga peltata*). UMBRELLA-PLANT. To 4 ft.: lvs. basal, to 2 ft. across, 9–15-lobed and toothed, petioles often to 3 ft. long: fls. numerous, white or pinkish, ½ in. across, in terminal corymbs, appearing before the lvs., Apr.—Sometimes planted in wet places, and hardy in parts of the E.

PELTÓPHORUM (*Baryxylum*). *Leguminosæ.* Trop. trees with 2-pinnate lvs., showy yellow fls. in terminal panicles, and flattened winged pods; commonly cult. for ornament in the tropics.

dùbium. Large tree, rusty-tomentose: lfts. 20–30-pinnate, to ⅓ in. long: pods to 3 in. long. Brazil.

ferrugíneum: *P. inerme.*

inérme (*P. ferrugineum*). To 50 ft., brown-tomentose: lfts. 10–20-pinnate, to ¾ in. long: pods to 3½ in. long. Ceylon, Malaya, N. Australia.

PENICILLARIA SPICATA: *Pennisetum glaucum.*

PENIOCÈREUS. *Cactaceæ.* Slender plants with an enormous turnip-shaped root which is sometimes 2 ft. diam., and angled sts.; spines similar on all the areoles. See *Cacti.*

Gréggii (*Cereus Greggii*). DEERHORN CACTUS. Sts. somewhat erect to 10 ft. but not rising high, to 1 in. thick, pubescent on young plants; spines small and blackish, radials 6–9 and central 1 or 2: fls. white tinged red outside, nocturnal, to 8 in. long, the segms. acute. W. Tex. to Ariz., Mex.

Jóhnstonii. Sts. somewhat erect to 12 ft. tall; ribs 3–5; spines 9–12, brown to black, about ¼ in. long: fls. white, to 6 in. long. Lower Calif.

PENNÁNTIA. *Icacinaceæ.* Small genus native in New Zeal., Norfolk Isl. and Australia: shrubs or trees: lvs. alternate: fls. diœcious or polygamous, in terminal panicles or corymbs: fr. a small fleshy drupe.

corymbòsa. To 35 ft.: lvs. obovate or oblong, to 4 in. long, usually toothed or lobed: fls. white, fragrant, diœcious: fr. black, ⅓ in. long. New Zeal.

PENNISÈTUM (*Gymnothrix*). *Gramineæ.* Tall ann. and per. grasses of trop. and subtrop. regions, spikelets subtended by bristles and borne in spike-like contracted panicles; several grown for ornament and *P. glaucum* for grain and forage. See *Grasses.*

alopecuroìdes (*P. japonicum*). Per. to 4 ft.: lvs. long and narrow, to 2 ft. and ¼ in. or less broad: spikes solitary and terminal, to 6 in. long, silvery with purplish anthers and long bristles. China.

americànum: *P. glaucum.*

atrosanguíneum: a form of *P. Ruppelii.*

cùpreum: a form of *P. Ruppelii.*

glaùcum (*P.* and *Panicum americanum* of authors. *Penicillaria spicata*). PEARL, INDIAN or AFRICAN MILLET. Ann. to 10 ft.: lvs. to 3 ft. long and 2 in. wide, rough: spike solitary and terminal, very dense and cat-tail-like, to 1½ ft. long and 1 in. thick: fr. bluish or whitish and used for food. Cultigen.

japónicum: *P. alopecuroides.*

latifòlium. Per. to 4 ft.: lvs. to 1 ft. long and 1 in. wide: spikes several on the st., to 4 in. long, green, nodding, with long bristles. Peru to Brazil and Uruguay.

longístylum: *P. villosum.*

macrophýllum: *P. macrostachyum.*

macrostàchyum (*P. macrophyllum*). Per. to 5 ft.: lvs. to 1 ft., and to 1 in. broad: spikes solitary and terminal, to 1 ft. long, E. Indies. Var. **atropurpùreum** has purplish lvs.

macroùrum. Per. to 3 ft. or more: lvs. to 2 ft. long and ¼ in. wide, usually convolute: spikes in cylindrical panicles to 1 ft. long. S. Afr.

purpùreum. NAPIER-GRASS. Per. to 12 ft.: lvs. to 1 in. wide: spikes in dense panicles, purplish or yellow, to 8 in. long. Afr.—Grown for fodder in the S.

Ruppeliànum: *P. Ruppelii.*

Rùppelii (*P. Ruppelianum*). FOUNTAIN-GRASS. Per. to 4 ft., curving: lvs. to 2 ft., ⅛ in. or less broad, often involute: spikes solitary and terminal, to 1 ft. or more long, nodding or curved, rose, purple or copper-colored in cult. forms, with long bristles. Abyssinia. See *Grasses.*

villòsum (*P. longistylum*). Per. to 2 ft.: lvs. 4 in. and more long and ¼ in. across, spikes solitary and terminal, to 4 in. long, with long feathery bristles. Abyssinia.

PENNYROYAL: *Mentha Pulegium, Hedeoma pulegioides.*

PENNYWORT: *Umbilicus pendulinus.*

PENSTÈMON (*Pentstemon, Pentastemon*). BEARD-TONGUE. *Scrophulariaceæ.* Many attractive herbaceous perennials or shrubs with opposite or whorled lvs., bright colored 2-lipped tubular fls. in terminal racemes or panicles in summer, with 4 fertile and 1 sterile stamen, and capsular frs.; mostly native in N. Amer.

Nearly all penstemons succeed in full sun but in a hot dry place they may not last long. Many species are not hardy North, but many others are, especially if given winter protection. Some forms of *P. gloxinioides* are treated successfully as annuals. Propagated by seed, somewhat by division, rarely by cuttings in summer.

acaùlis. Almost stemless tufted per. 2 in. tall or less: lvs. linear-acute, to ¾ in. long, in bunches or whorls: fls. blue, to ⅝ in. long and ¼ in. across, throat yellow-hairy. Wyo.

acuminàtus. To 2 ft., glaucous and glabrous: st.-lvs. ovate, to 3 in. long, entire: fls. blue, ¾ in. long; sterile stamen bearded. Wash., Ore.—Name has been used for *P. secundiflorus* and *P. Fendleri.*

Adamsiànus. To 10 in., glabrous except infl.: lvs. oblong or obovate, to 1½ in. long, shining: fls. dark purple, to 1 in. long; sterile stamen bearded. Mt. Adams, Wash.

albertìnus. To 8 in., glabrous: lvs. rhombic-ovate to elliptic-lanceolate, to 1 in. long, entire or st.-lvs. slightly toothed: fls. light blue, ½ in. long; sterile stamen bearded. Mts., Alta., B. C.

álbidus. To 1 ft., the st. glandular-pubescent: st.-lvs. lanceolate or oblong, toothed, to 2½ in. long: fls. white, ¾ in. long; sterile stamen slightly bearded. Minn. to Tex.

alpìnus (*P. glaber* var. *alpinus*). To 1 ft., glabrous: st.-lvs. lanceolate, to 4 in. long, entire: fls. bluish-purple, 1 in. long; sterile stamen glabrous. Rocky Mts.

amábilis. To 8 in., tufted, glabrous except infl.: lvs. lanceolate or basal ovate, to 1 in. long, toothed: fls. blue, ½ in. long; sterile stamen densely bearded. Wash.

ambíguus. To 2 ft., sts. usually much branched and woody at base: lvs. linear-filiform: fls. white within with deep rose throat, usually purplish outside, corolla salverform. Colo. to Mex. and Ariz.

angustifòlius (*P. cæruleus*). To 1 ft., glabrous and glaucous: lvs. linear or linear-lanceolate, to 2½ in. long, entire: fls. blue, ¾ in. long; sterile stamen bearded. S. D. to Mont. and N. Mex.

antirrhinoìdes (*P. Lobbii*). Shrub to 6 ft.: lvs. linear or oblong, ½ in. long: fls. yellow, to ¾ in. long, very broad; sterile stamen bearded. S. Calif.

áridus. To 8 in., slightly pubescent: lvs. oblanceolate to linear, to 1½ in. long, entire: fls. purplish, ½ in. long, sterile stamen slightly bearded. Mont.

arizónicus. To 8 in., glabrous: lvs. oval, crenate or entire, leathery: fls. purplish, 1 in. long; sterile stamen glabrous. Ariz.

atropurpùreus: hort. name for *P. campanulatus.*

attenuàtus (*P. veronicæfolius*). To 2 ft., glabrous except infl.: lvs. spatulate to lanceolate, to 1½ in. long: fls. sulfur-yellow, ¾ in. long; sterile stamen bearded. Wash., Ore., Ida.

austràlis. To 2½ ft. or more, pubescent: lvs. usually narrowly lanceolate, to 3 in. long, finely serrulate, acute or obtuse: fls. reddish-purple outside and paler within, veins darker, to 1 in. long. S. Va. to Cent. Fla. and Miss.

azùreus (*P. heterophyllus* var. *azureus*). To 3 ft., glaucous and slightly pubescent: lvs. narrow-ovate to lanceolate, entire: fls. blue or violet, 1½ in. long; sterile stamen glabrous. Calif.

barbàtus (*Chelone barbata*). To 6 ft., glabrous: lvs. lanceolate or linear, entire: fls. red, 1 in. long, strongly 2-lipped, the lower lip bearded; sterile stamen glabrous. Utah to Mex. Var. **coccíneus,** fls. scarlet. Var. **præcox** is listed as early flowering. Var. **ròseus,** fls. rose-pink. Var. **Tórreyi** is *P. Torreyi.*

Bárrettiæ. To 1 ft., glabrous and glaucous: lvs. ovate to lanceolate, to 3 in. long, thick and leathery: fls. lilac-purple, 1½ in. long; sterile stamen glabrous. Ore.

Brádburyi: *P. grandiflorus.*

Brándegei. To 2 ft., usually glabrous: st.-lvs. ovate, to 2¾ in. long; basal lvs. glaucous: sterile stamen nearly glabrous. Mts., Colo.

Brídgesii. To 2 ft., nearly glabrous: lvs. linear to oblong, to 3 in. long, entire: fls. red or scarlet, 1 in. long; sterile stamen glabrous. Calif., Ariz., Colo.

cærùleo-purpùreus: *P. confertus* var.

cærùleus: *P. angustifolius.*

cæspitòsus. Sts. decumbent, to 8 in. long, pubescent: lvs. spatulate, to ½ in. long: fls. lilac-purple, to ¾ in. long, the sterile stamen bearded. Wyo. to Colo.

calycòsus. To 4 ft., nearly glabrous: lvs. spatulate to lanceolate, to 6 in. long, entire or toothed: fls. 1 in. long, purple; sterile stamen bearded. Ind. to Ala.

campanulàtus (*Gerardia hybrida*). To 2 ft., nearly glabrous: lvs. lanceolate, toothed: fls. 1 in. long, rose-purple or violet, sometimes white; sterile stamen bearded. Mex., Guatemala.

canéscens. To 2 ft., pubescent: lvs. elliptic-lanceolate, irregularly toothed: fls. pale purple, white inside lined with purple, 1 in. long; sterile stamen bearded. Pa. to N. C. and Ala.

Cárdwellii. Evergreen, to 10 in., from woody base, mostly glabrous: lvs. thick, lanceolate or ovate, to 1 in. long, sharp-serrate: fls. purple, to 1½ in. long; sterile stamen slender and short. Ore. Var. **ròseus** has rose-colored fls.

centranthifòlius. To 3 ft., glaucous: lvs. ovate-lanceolate, thick, to 2½ in. long, entire: fls. scarlet, 1 in. long, the lobes very short; sterile stamen glabrous. Calif. to Ariz.

cinèreus. Tufted, gray-pubescent: lvs. somewhat leathery, lanceolate, to ¾ in. long, entire: fls. dark blue, to ½ in. long; sterile stamen bearded at top. Ore.

Clèvelandii. To 2½ ft., glabrous: lvs. ovate, to 2 in. long, entire to denticulate, lower ones petioled: fls. purplish-red, tubular-funnelform, to ¾ in. long, in narrow racemose panicles to 1 ft. long. Calif. to Lower Calif.

Cobæa. To 2 ft., pubescent: lvs. oblong or ovate, to 5 in. long, toothed: fls. 2 in. long, purple, scarcely 2-lipped; sterile stamen bearded. Mo. to Tex.

comarrhènus. To 16 in., nearly glabrous: lvs. oval or spatulate, to 4 in. long: fls. deep blue, 1 in. long; sterile stamen bearded. Utah, Colo.

confértus. To 2 ft.: lvs. oblong to linear, to 2 in. long, entire, glabrous: fls. yellow, densely hairy patch on lower lip, to ½ in. long; sterile stamen bearded. Alta. to Wash. Var. **atropurpùreus** is not distinct from var. **cærùleo-purpùreus** (*P. cæruleo-purpureus*) which is a low mat-forming variant with fls. white tipped blue. Var. **procèrus** is *P. procerus.*

cordifòlius. Pubescent half-climbing shrub: lvs. ovate, to 2 in. long, toothed: fls. to 1¼ in. long, scarlet, the limb short; sterile stamen bearded. S. Calif.

corymbòsus. Tufted subshrub to 16 in., nearly glabrous: lvs. oblong or obovate, to 1¼ in. long, toothed or entire: fls. scarlet, to 1¼ in. long; sterile stamen bearded. Calif.

Crándallii. To 8 in., sts. prostrate or ascending, slightly pubescent: lvs. linear-oblanceolate, to ¾ in. long: fls. blue, 1 in. long; sterile stamen bearded. Mts., Colo. Var. **álbus,** fls. white. Var. **procúmbens** is a prostrate habit form. Var. **ròseus,** fls. rose-pink.

crassifòlius. Shrub to 2 ft., glabrous: lvs. oblanceolate, to 2 in. long: fls. lilac-purple, 1 in. long; sterile stamen glabrous. Mts., Wash. to Wyo.

craténsis: *P. crateris.*

cràteris: provisional name for an Ore. dwarf plant with small lvs. and blue fls.

cristàtus: *P. erianthera.*

cyanánthus (*P. glaber* var. *cyananthus*). To 3 ft., glabrous and glaucous: lvs. ovate, entire: fls. 1 in. long, blue; sterile stamen bearded. Utah, Ida., Wyo.

cyathóphorus. To 16 in.: lvs. spatulate to orbicular, 2½ in. long: fls. pinkish-purple, ½ in. long; sterile stamen bearded. Colo., Wyo.

Dàvidsonii (*P. Menziesii* var. *Davidsonii*). Matted prostrate alpine with sts. to 2 in.: lvs. ovate, ⅓ in. long, entire: fls. lilac-purple, to 1½ in. long; sterile stamen bearded. Calif. to Wash. Var. **ròseus** is listed.

deústus. To 1 ft., nearly glabrous, alpine: lvs. ovate to oblong-lanceolate, to 1¼ in. long, toothed: fls. blue, ⅓ in. long; sterile stamen glabrous. Wyo. to Wash. and Calif. Var. **álbus** is listed.

diffùsus. To 2 ft., rather bushy and pubescent: lvs. ovate or lanceolate, 2 in. or more long, deeply toothed: fls. ¾ in. long, blue or purple; sterile stamen bearded. B. C. to Ore. Var. **álbus** is listed.

Digitàlis (*P. lævigatus* var. *Digitalis*). To 5 ft., nearly glabrous: lvs. ovate to lanceolate, to 7 in. long, toothed: fls. 1 in. long, white or pinkish, tube dilated at middle; sterile stamen bearded. Me. to S. D. and Tex.

Doúglasii. Similar to *P. fruticosus* but dwarf and with broad short lvs. Mts., Ore., Wash.

Dracophýllum: listed name of unknown botanical standing.

Èatonii. To 2 ft., glabrous: lvs. ovate to linear-lanceolate, to 4 in. long: fls. bright red, 1 in. long; sterile stamen bearded. Utah, Colo., Ariz.

Èdithiæ: hort. name.

ellípticus. Per. to 6 ft.: lvs. broadly elliptic to roundish: fls. violet-purple, to 1½ in. long, swollen, calyx densely sticky-pubescent. Alta. to Ida. and Mont.

erianthèra (*P. cristatus*). To 16 in., pubescent: st.-lvs. oblong or linear, entire: fls. purplish, 1 in. long; sterile stamen with long yellow hairs. N. D. to Wash.

euglaùcus. To 1½ ft., glabrous and glaucous: lvs. oblong-lanceolate, to 2½ in. long, entire: fls. blue, ½ in. long; sterile stamen bearded. Ore.

flagellifórmis: listed name of unknown botanical standing.

fruticòsus. Shrub to 3 ft.: lvs. spatulate, about 1 in. long, toothed: fls. purple, 1 in. long; sterile stamen glabrous. Alta. to Wash. and Ida. Var. **Adamsiànus** is *P. Adamsianus.* Var. **azùreus** is listed and may be *P. azureus.*

Gàirdneri. To 10 in., tufted, gray-pubescent: lvs. linear or spatulate, to 1 in. long: fls. dark blue or purple, ¾ in. long; sterile stamen bearded. Wash., Ore. Var. **hìans** has larger fls.

Gàrrettii. To 1½ ft., nearly glabrous, somewhat glaucous: lvs. lanceolate, to 4 in. long: fls. blue, ¾ in. long; sterile stamen bearded. Utah.

gentianoìdes: *P. Hartwegii.*

glàber (*P. Gordonii*). To 2 ft., glabrous: lvs. oblanceolate, to 6 in. long, entire: fls. blue or purple, to 1¼ in. long; sterile stamen slightly hairy. N. D. to Wyo. Var. **alpìnus** is *P. alpinus.* Var. **cyanánthus** is *P. cyananthus.* Var. **ròseus** is listed. Var. **speciòsus** is *P. speciosus.*

glandulòsus. To 3 ft., sticky-pubescent: lvs. ovate to lanceolate, to 6 in. long, toothed: fls. lilac, to 1½ in. long; sterile stamen glabrous. Wash., Ore., Ida.

glaùcus: may be applied to either *P. gracilis* or *P. Whippleanus.*

gloxinioìdes. A race of variants from *P. Hartwegii* or hybrids between *P. Hartwegii* and *P. Cobæa,* in many colors.

Górdonii: *P. glaber.*

Górmanii. Per. to 10 in.: basal lvs. spatulate-oblong, to 2 in. long; st.-lvs. oblong-linear, to 2 in. long, upper ones glandular-villous: fls. purple, to ¾ in. long, very hairy within. Alaska.

graciléntus. To 15 in., sts. woody at base: lvs. linear to oblong-lanceolate, mostly basal, glabrous: fls. violet-blue, to ½ in. long, on viscid 2–5-fld. peduncles. N. Calif. to Nev. and Ore.

grácilis. To 16 in.: lvs. oblanceolate to linear-lanceolate, to 3 in. long: fls. lilac or whitish, ¾ in. long; sterile stamen bearded. Man. to Sask. and N. Mex.

grandiflòrus (*P. Bradburyi*). To 6 ft., glabrous: lvs. obovate to ovate, to 2½ in. long, entire: fls. 2 in. long, lavender-blue; sterile stamen bearded. Ill. to N. D. and Wyo.

Grinnéllii (*P. hians*). Similar to *P. Palmeri* but with bright green foliage and cream fls. tinted pink, having a shorter tube and 2 wide-spreading lips. S. Calif.

Hállii. Tufted alpine to 8 in., glabrous: lvs. linear-lanceolate to linear, entire: fls. violet, to ¾ in. long, with very short tube; sterile stamen bearded. Colo.

Hártwegii (*P. gentianoides*). To 4 ft., nearly glabrous: lvs. ovate-lanceolate to lanceolate, entire: fls. to 2 in. long, scarlet, slightly curved. Mex. Vars. **álbus** and **grandiflòrus** are listed.

Héctori: hort. name.

heterophýllus. Shrub to 5 ft., glabrous: lvs. lanceolate to linear, to 2½ in. long, entire: fls. purple, to 1¼ in. long; sterile stamen glabrous. Calif. Var. **azùreus** is *P. azureus.* Var. **eréctus,** a very dwarf form to 1½ ft. with blue fls. Var. **Púrdyi,** a decumbent mat-forming plant to 10 in. tall; fls. blue to light purple; sometimes listed as California Blue Bedder.

hìans: *P. Grinnellii.*

hirsùtus (*P. pubescens*). To 3 ft., sticky-pubescent: lvs. oblong or lanceolate, to 4½ in. long, toothed: fls. 1 in. long, purplish or violet, densely bearded in the throat; sterile stamen bearded. Me. to Va. and Wis. Var. **pygmæ̀us** is listed as only 6 in. high.

hùmilis. To 1 ft., pubescent: lvs. ovate to lanceolate, to 1¼ in. long, entire: fls. deep blue, less than ½ in. long; sterile stamen bearded. Wyo., Ida., Utah. Var. **álbus** is listed.—Name has been used for *P. virens* of Colo.

hýbridus: listed name.

imbérbis. Per. to 20 in.: lvs. narrowly linear, to 3 in. long, entire, subobtuse, glabrous: fls. pinkish-red, to ¾ in. long, beardless within, in terminal panicles to 9 in. long. Mex.—Some of the material in cult. with yellow-bearded throat is a variant of *P. barbatus.*

isophýllus. To 2 ft., nearly glabrous: lvs. lanceolate, entire: fls. nodding, 1½ in. long, scarlet, the throat white-pubescent. Mex.

Jaffrayànus. To 14 in., glabrous and glaucous: lvs. obovate to elliptic, to 1½ in. long: fls. lilac or purplish-blue, to 1½ in. long; sterile stamen glabrous. Calif.

Jàmesii. To 1 ft.: lvs. narrowly linear-lanceolate, to 4 in. long: fls. purplish, to 1 in. long, glandular-villous. Colo.

labròsus. To 2½ ft., glabrous and glaucous: lvs. linear or oblanceolate, to 4½ in. long, entire: fls. scarlet, to 1½ in. long; sterile filament glabrous. Calif. and Lower Calif.

læ̀tus. To 14 in., pubescent: lvs. lanceolate or linear, to 3 in. long, entire: fls. blue or bluish-purple marked with white, 1 in. long; sterile stamen glabrous. Ore., Nev., Calif.

lævigàtus (*Chelone Pentstemon*). To 3 ft., nearly glabrous: lvs. oblong or lanceolate, to 6 in. long, toothed: fls. purplish, to 1 in. long; sterile stamen bearded. Pa. to Fla. Var. **Digitàlis** is *P. Digitalis.*

lavéndulus: *P. secundiflorus* var.

Làveri: listed as a bushy plant to 1 ft., with lavender-blue fls. white at base.

linarioìdes. To 1½ ft., pubescent: lvs. linear to thread-like, to 1 in. long: fls. lilac or purple, ½ in. long; sterile stamen bearded. New Mex., Ariz.

linearifòlius. Per. to 1 ft., sts. woody at base: lvs. linear to linear-lanceolate, long-acuminate, to 3 in. long, leathery: fls. light purple, to 1½ in. long. Mont. and Ida.

lineolàtus. To 1 ft., tufted, slightly pubescent: lvs. oblanceolate to oblong-linear, to 1 in. long, entire: fls. purple, ¾ in. long; sterile stamen bearded. Nev.

Lóbbii: *P. antirrhinoides.*

Lỳallii. To 1 ft., woody at base, nearly glabrous: lvs. lanceolate or linear-lanceolate, to 4 in. long, toothed: fls. purple, 1½ in. long; sterile stamen glabrous. B. C. to Mont.

Ménziesii. Woody at base, about 6 in. high: lvs. oblong to ovate, to ¾ in. long: fls. 1 in. long, violet-blue to purple; sterile stamen bearded. B. C. to Ore. Var. **álbus** is listed. Var. **Dàvidsonii** is *P. Davidsonii.*

mexicànus: *Allophyton mexicanum.*

montànus. To 1 ft., somewhat cespitose and gray-hairy: lvs. ovate to elliptic, to 1¾ in. long, dentate: fls. pinkish-purple, to 1½ in. long, calyx glandular with lanceolate lobes. Wyo. to Ida. and Mont.

Murrayànus. To 3 ft., glabrous and glaucous: lvs. ovate to oblong, to 4 in. long, upper connate: fls. deep scarlet, 1 in. long; sterile stamen glabrous. Ark., Tex.

Nélsoniæ. To 3 ft., glabrous: lvs. lanceolate to ovate-lanceolate, to 5 in. long, acuminate, entire or toothed: fls. yellow, to ¾ in. long, calyx-lobes linear-lanceolate; sterile stamen yellow-hairy. Wash.

nemoràlis: *P. nemorosus.*

nemoròsus (*Chelone nemorosa*). To 2 ft.: lvs. ovate to lanceolate, to 2 in. long, short-petioled: fls. violet-purple, 1 in. long, in loose clusters. Wash. to Calif.

Neẁberryi. To 20 in., woody at base: lvs. orbicular or ovate, to 1¼ in. long, toothed, leathery: fls. red, about 1 in. long; sterile stamen bearded at apex. Calif.

nítidus. To 1 ft., glaucous: lvs. oblanceolate to lanceolate, to 2 in. long, usually acute to acuminate: fls. blue, to ¾ in. long, somewhat funnelform, in loose infl. Wyo to Alta. and Wash.

ochroleùcus: hort. name.

oligánthus. Slender per. to 1 ft.: basal lvs. oblong-ovate, to ¾ in. long; st.-lvs. linear-lanceolate: fls. white, pale blue or pink, to 1 in. long, densely villous in throat. Mts., Colo. to New Mex.

oregànus. To 1½ ft., woody at base, pubescent: lvs. linear-oblanceolate, to 1½ in. long, entire: fls. purple, ¾ in. long; sterile stamen bearded. Ia., Ore.

ostrìnus: provisional name for a pink-fld. penstemon from Ore.

ovàtus. To 4 ft., pubescent: lvs. broad-ovate, to 3 in. long, toothed: fls. blue changing to purple, ¾ in. long; sterile stamen bearded. Ore. to B. C. Var. **Doúglasii** is listed.

Pálmeri. To 3 ft., glabrous: lvs. ovate to lanceolate, to 4 in. long, toothed, upper connate: fls. cream-white tinted with pink, 1 in. long, short-tubed; sterile stamen bearded. Utah and Ariz. to Calif. Var. **Grinnéllii** is *P. Grinnellii.*

palústris: listed name for a plant with violet fls. shading to pink.

Pàrishii. To 3 ft., woody at base, glabrous: lvs. ovate to lanceolate, to 2½ in. long, entire or toothed: fls. red, 1 in. long; sterile stamen glabrous. Calif.

pinetòrum: *P. Wilcoxii.*

procèrus. To 1 ft.: lvs. oblanceolate, to 3 in. long, glabrous: fls. purplish-blue, to ½ in. long; sterile stamen bearded. Sask. to B. C. and Calif. Var. **mìnor** is listed as a dwarf form. Var. **Tólmei** is *P. Tolmei.*

pseudohùmilis. To 1 ft., glabrous: lvs. elliptic to spatulate, basal ones petioled: fls. bluish-purple, to ⅝ in. long, funnelform; sterile stamen yellow-bearded. Ida. to Alta. and B. C.

pubéscens: *P. hirsutus.*

pulchéllus. Similar to *P. campanulatus,* with violet or lilac fls. with white veins, throat spotted. Mex.

puníceus. To 6 ft., very glaucous: lvs. ovate: fls. 1 in. long, scarlet; sterile stamen bearded. Ariz., Mex.

purpùreo-cærùleus: probably *P. confertus* var. *cæruleo-purpureus.*

pygmæ̀us: hort. name for a dwarf alpine form, or for *P. hirsutus* var. *pygmæus.*

Ráttanii. To 1½ ft.: st.-lvs. oblong- or triangular-ovate, to 2¼ in. long, toothed: fls. lavender, ¾ in. or more long; sterile stamen slightly hairy. Calif. Var. **Kleèi,** has clasping lvs. and fls. to 1¼ in. long. Var. **mìnor** has smaller fls.

Ríchardsonii. To 3 ft., glabrous: lvs. ovate to lanceolate, to 3 in. long, deeply toothed or pinnatifid: fls. red, 2 in. long; sterile stamen slightly bearded. B. C. to Ida. Var. **dentàtus** is listed and may not be distinct from type.

Roézlii. To 1 ft.: lvs. lanceolate or linear: fls. pale blue or violet, ½ in. long; sterile stamen glabrous. Mts., Calif.

rupícola. Decumbent shrub to 4 in., pubescent: lvs. ovate or orbicular, to ½ in. long, glaucous: fls. rose-crimson, 1½ in. long; sterile stamen glabrous. Wash. Vars. **màjus** and **ròseus** are listed.

Rýdbergii. To 1½ ft., glabrous: lvs. oblong, to 2 in. long, entire: fls. pale blue to purple, ½ in. long; sterile stamen bearded. Wyo., Colo. to Nev.

sàliens. Probably per., to 1 ft., sts. viscid-puberulent: lvs. obovate to oblanceolate, to 2 in. long, sharply dentate to subentire: fls. purplish, to 1 in. long, swollen, calyx glandular-hairy; sterile stamen bearded. Mont.

saxosòrum. To 2½ ft., glabrous: lvs. lanceolate, to 3 in. long: fls. deep blue, ¾ in. long; sterile stamen bearded. Wyo., Colo.

Scoùleri. Shrub to 1½ ft., slightly pubescent: lvs. lanceolate, to 2 in. long, toothed: fls. lilac, to 2 in. long; sterile stamen glabrous. B. C. to Calif. A var. **álbus** with white fls. is offered.—Probably only a var. of *P. fruticosus.*

secundiflòrus. To 2 ft., glabrous and glaucous: lvs. oblanceolate, to 3 in. long, entire: fls. lilac, ¾ in. long; sterile stamen bearded. Wyo. to New Mex. Var. **lavéndulus,** fls. lavender-pink or lavender-blue, smaller than type.—Name has been used for *P. unilateralis.*

serpyllifòlius: listed name.

Smállii. To 4 ft.: lvs. lanceolate or ovate-lanceolate, to 6 in. long, toothed: fls. pink-purple striped with white within, 1 in. long, with yellow hairs in throat; sterile stamen bearded. N. C., Tenn.

speciòsus (*P. glaber* var. *speciosus*). To 2 ft., glabrous: lvs. oblanceolate to linear-lanceolate, to 4 in. long, entire: fls. bluish-purple, 1 in. long; sterile stamen glabrous. Wash. to Calif.

spectábilis. To 6 ft., glabrous and glaucous: lvs. ovate or ovate-lanceolate, to 3½ in. long, toothed: fls. 1 in. or more long, rose-purple or lilac; sterile stamen glabrous. Ariz., Calif. Var. **coronàrius** is listed.

stenosépalus: *P. Whippleanus.*

stríctus. To 1½ ft., glabrous: lvs. spatulate to linear, to 4 in. long: fls. deep blue, 1 in. long; sterile stamen glabrous. Wyo. to New Mex.

subglàber. To 1½ ft., glabrous: lvs. oblanceolate to linear-lanceolate, to 4 in. long: fls. blue or violet, 1 in. long; sterile stamen bearded. Mts., Ida. to Colo.

supérbus. Per. to 3 ft. or more: basal lvs. obovate, connate-perfoliate; st.-lvs. ovate-acute, connate, fleshy: fls. brilliant scarlet, to 1 in. long, in narrow panicles. Calif.

ternàtus. Straggling shrub to 6 ft., glabrous and glaucous: lvs. linear-lanceolate, to 2 in. long, toothed, in 3's: fls. pale scarlet, 1 in. long; sterile stamen bearded. Mts., S. Calif.

teucrioìdes. Sts. ascending to 6 in., grayish: lvs. linear-spatulate, to ½ in. long, entire, gray-green: fls. deep purple, to ½ in. long, corolla not much swollen. Colo. to Utah.

Tólmiei. Tufted per. to 9 in., with woody roots: lvs. lanceolate, entire: fls. ½ in. long, in dense racemes. Wash.

Tórreyi (*P. barbatus* var. *Torreyi*). Similar to *P. barbatus* but with larger scarlet fls., lower lip not bearded. Colo. to Mex. Var. **ròseus** is listed.

trichánder. To 2½ ft., slightly pubescent, glaucous: lvs. spatulate to linear, to 3 in. long: fls. scarlet, 1 in. long; sterile stamen glabrous. Mts., Colo., Utah.

tubiflòrus. To 3 ft., nearly glabrous: lvs. ovate to lanceolate, to 4 in. long, entire: fls. scarcely 2-lipped, white or tinged purple, ¾ in. long; sterile stamen bearded. Mo. to Ark. and Okla.

unilateràlis. To 2 ft., glabrous: lvs. oblanceolate to linear-lanceolate, to 4 in. long: fls. blue, ¾ in. long, in one-sided infl.; sterile stamen glabrous. Wyo. to Utah.

utahénsis. To 2 ft., glabrous: lvs. oblanceolate, to 3 in. long: fls. carmine, ¾ in. long; sterile stamen glabrous. Utah, Ariz.

variábilis. To 2 ft., much branched, glabrous except infl.: lvs. lanceolate, to 2 in. long, usually toothed: fls. yellowish-white striped with red, ½ in. long; sterile stamen bearded. Wash.

venústus. To 2 ft., nearly glabrous: lvs. lanceolate, to 2 in. long, toothed: fls. light purple, 1 in. long; sterile stamen hairy. Wash., Ore., Ida.

veronicæfòlius: *P. attenuatus.*

versícolor. To 15 in.: lvs. ovate to obovate, to 2 in. long, base cordate, very glaucous, acute: fls. pink changing to blue, to ¾ in. long, in fascicles forming narrowly elongate thyrsus, sepals ovate-acuminate. Colo.

vìrens. Per. to 1 ft. or more: lvs. lanceolate-oblong, to 2 in. long, lower ones petioled, upper usually toothed: fls. deep blue, to ½ in. long, funnelform, lower lip bearded. Alta., Colo. and Nev.

Wátsonii. To 1½ ft., glabrous: lvs. lanceolate, 2 in. long: fls. violet-purple, ½ in. long; sterile stamen yellow-bearded. Ida. to Ariz.

Whippleànus (*P. stenosepalus*). To 1½ ft.: lvs. spatulate to linear-lanceolate, to 3 in. long: fls. purple or lavender, to ¾ in. long; sterile stamen bearded. Wyo. to New Mex.

Whitedii. Per. to 1 ft.: basal lvs. narrowly spatulate, to 3½ in. long; st.-lvs. ovate-lanceolate, to 2 in. long, acute, entire or remotely dentate: fls. light blue, to ¾ in. long, glandular-pubescent without. Wash.

Wìlcoxii (*P. pinetorum*). To 4 ft., glabrous: lvs. ovate, to 3 in. long, entire: fls. bright blue or pink, to ¾ in. long; sterile stamen bearded. Wash. to Mont.

Wrìghtii. To 2 ft., glabrous, slightly glaucous: lvs. obovate or oblong, entire: fls. bright red, ¾ in. long; sterile stamen bearded. W. Tex. to Ariz.

PENTAGLÓTTIS (*Caryolopha*). *Boraginaceæ.* European per. herb differing from Anchusa in technical characters of the nutlet: fls. in long-peduncled lf.-subtended glomerules. **P. sempérvirens** (*Anchusa sempervirens*). To 2 ft.: lvs. broadly ovate: fls. rich blue, in spring and summer: grown for ornament.

PENTAPTERÝGIUM. *Ericaceæ.* Asian epiphytic shrubs with alternate leathery lvs., tubular fls. solitary or clustered, and fr. a berry. Grown in Calif.

sérpens. Sts. drooping: lvs. oblong, to ⅜ in. long, margins recurved: fls. bright red with darker V-shaped markings, ¾ in. long. Himalayas.

PÉNTAS. *Rubiaceæ.* Herbs and subshrubs of Afr., with opposite lvs., long-tubular fls. in corymbs, and capsular frs.; grown in warm greenhouses or bedded out in S. U. S. Propagated by cuttings of half-ripe wood over heat.

cárnea: *P. lanceolata.*

lanceolàta (*P. carnea*). To 2 ft., somewhat woody at bottom: lvs. ovate to lanceolate-oblong, to 6 in. long: fls. pale purple, 1 in. long, hairy in throat. Trop. Afr., Arabia. Vars. **álba** and **coccínea** are listed.

mussaendoìdes. Erect shrub or tree to 15 ft., twigs brown-pubescent becoming glabrous: lvs. oblong-lanceolate, to 5 in. long, tapering at ends, petioled, stipules fringed: fls. with pilose tube to 1 in. long, in large terminal panicles. Madagascar.

PENTASTEMON, PENTSTEMON: *Penstemon.*

PEONY: *Pæonia.*

PEPERÒMIA. *Piperaceæ.* Usually succulent and often prostrate or somewhat scandent herbs, widely distributed in trop. regions, having minute bisexual fls. borne in dense slender spikes; grown as foliage plants in the greenhouse.

Peperomias require warm temperature and careful watering. Propagated by cuttings of stems or leaves in sand over bottom heat, and by rooting joints when produced. The cultivated kinds are small plants, suitable for pot culture.

argyroneùra. Sts. erect, fleshy, to 4 in.: lvs. alternate, elliptic or oblong, to 1 in. long and ½ in. wide, the nerves above silvery: spikes ¾ in. long. Bismarck Archipelago.

arifòlia: *P. Sandersii.*

blánda. Sts. weak: lvs. opposite or in 3's, obovate, to 1½ in. long; spikes to 4 in. long. Venezuela to Bolivia.

crassifòlia. Sts. decumbent, to 1 ft.: lvs. alternate, orbicular, ½ in. long: spikes to 3 in. long. Trop. Afr.—Plants grown under this name may belong to a different species.

maculòsa. Sts. erect, green spotted with brownish: lvs. alternate, ovate, to 7 in. long: spikes to 1 ft. long. Trop. Amer.—Plants cult. under this name may be *P. Sandersii* var. *argyreia.*

magnoliæfòlia: *P. tithymaloides.*

nummularifòlia: *P. rotundifolia.*

obtusifòlia. Sts. erect or decumbent, rooting at nodes: lvs. alternate, fleshy, oblanceolate or obovate, to 4 in. long and 2½ in. wide. Trop. Amer.

ochetìna: listed name.

pellùcida. To 8 in.: lvs. ovate or triangular, ¾ in. long: spikes ½ in. long. S. Amer.; nat. in tropics.

pericáttii: listed name.

rotundifòlia (*P. nummularifolia*). Sts. rooting at nodes: lvs. oblong to orbicular, about ¼ in. long: spikes to ¾ in. long. Trop. Amer.

Sándersii (*P. arifolia*). Stemless: lvs. ovate, to 5 in. long, peltate or splitting at base, the stalks dark red: spikes to 4 in. long. Brazil. In var. **argyrèia** the lvs. are lighter colored between the veins.

tithymaloìdes (*P. magnoliæfolia*). Ann. or bien.: lvs. alternate, ovate to ovate-elliptic, to 3 in. long, acute, base cuneate, nerves 10 or more, petiole about 1 in. long and keeled beneath. Santo Domingo.

velùtina. Plant erect, sts. villous and reddish: lvs. ovate, acute, fleshy, short-petioled, dark green above with ivory-colored veins and reddish-brown beneath: fls. not known. Ecuador.

PEPINO: *Solanum muricatum.*

PEPPER. The pepper of world commerce and spice markets is the small fruit or berries of *Piper nigrum*, known as black pepper when the outer shell is intact, white pepper when the shell is removed. The plant is native in the Old World tropics, but is now widely spread in warm countries.

The peppers of vegetable-gardens and green-grocery markets are the fruits of a very different plant, *Capsicum frutescens* and its derivatives. The plants are tender while young, although they endure some frost in autumn. Their culture is that recommended for eggplant, being grown as annuals. A small seedsman's packet of seed is sufficient for a large number of plants, say 200. The large Bell peppers are the mildest, and are used for making "stuffed peppers" and other dishes. Paprika is made from the long pointed type of fruit. The small hot peppers are used for seasoning and sauces. Seeds would better be started indoors for the northern states, although early varieties bear well from seed sown in the open ground as soon as it is thoroughly warm. From the original pan or flat the little seedlings may be transplanted to other flats or to pots before putting them in the garden. Rows should be as far apart as will admit of good tillage, usually 2–3 feet, and the plants may stand 10 to 18 inches apart in the row depending on the variety. The commercial culture is not essentially different from that indicated above. See *Capsicum*.

PEPPER: *Piper*. **-Tree:** *Schinus*. **-Tree, Monks:** *Vitex Agnus-castus*. **-Vine:** *Ampelopsis arborea*.

PEPPERBUSH, SWEET: *Clethra alnifolia*.

PEPPERIDGE: *Nyssa sylvatica*.

PEPPERMINT: *Mentha piperita*.

PEPPERWORT: *Marsilea*.

PERAMIUM: *Goodyera*.

PERDICIUM: *Gerberia*.

PEREGRINA: *Jatropha hastata*.

PERENNIAL, Latin *perennis*, enduring, perpetual, is a noun and adjective denoting in horticulture a plant that persists more than two years, a one-year plant being an annual and a two-year plant a biennial. All shrubs and trees are perennial, but the word ordinarily connotes an enduring herbaceous plant, one that remains year after year; the "perennial border" is comprised of such plants, among which may be larkspurs, peonies, columbines, sedums. A perennial may not endure indefinitely, however; many of them are at their best in about the third year and then gradually fail; but tansy and bouncing-bet may remain after the house falls down. It is enjoyable work to grow perennials from seed. Sown one spring, or sometimes in midsummer, the seeds should give fresh blooming plants the following season.

PERÉSKIA. *Cactaceæ*. Perhaps a score of leafy shrubby or arboreous or vine-like cacti native in Mex. and W. Indies to S. Amer., a few of them long known in cult. in warm countries: spines single, paired or clustered in axils of the broad alternate lvs., no glochids: fls. solitary, corymbose or paniculate, rotate. See *Cacti*.—Sometimes spelled Peireskia or Peirescia, but the original spelling used by Linnæus is adopted here.

Although the pereskias are leaf-bearing plants, their culture does not differ particularly from that of other cacti. They are used as stocks on which to graft other kinds but otherwise they are not much known as glasshouse subjects. They propagate from cuttings.

aculeàta (*P. Pereskia*). Barbados-Gooseberry. Lemon-Vine. Erect at first but becoming a vine to 30 ft. long; axillary spines 2 or 3 and recurved: lvs. thick, lanceolate to ovate, acute, to nearly 3 in. long: fls. paniculate or corymbose, white, yellow or pinkish, 1–1¾ in. across. Trop. Amer. Var. **rubéscens** (*P. rubescens*) has red-variegated lvs.

Blèo. Tree to 20 ft., trunk to 4 in. diam. and becoming naked; spines in fascicles of 5 and 6 but on young shoots fewer: lvs. thin, oblong to oblanceolate, to 8 in. long: fls. rose-color, style red: fr. truncate and naked. Panama, Colombia.—The plant cult. under this name is usually *P. grandifolia*.

Conzáttii. Tree to 40 ft., bark smooth: lvs. orbicular to obovate, about 1 in. long, acute; spines 2–6, on small sts. and 10–20 on large branches, to 1 in. long, yellowish to dark brown: fr. pyriform, to 2 in. long, smooth. Mex.

Godseffiàna. Sport of *P. aculeata*, with lvs. mottled or blotched above with crimson, yellow and green, purplish underneath.

grandifòlia. Shrub or tree to 15 ft., with very spiny trunk; spines 1 or 2: lvs. oblong, to 6 in. long: fls. in mostly few-fld. terminal clusters, rose-color or white and sepals green, style and stigma-lobes white: fr. pear-shaped, leaf-bearing. Brazil.—Usually cult. under the name *P. Bleo*.

lychnidiflòra. Tree or shrub, sts. terete: lvs. ovate-oblong, to 3 in. long, apex acute, base obtuse, sessile; single stout spine to 2 in. long in lf.-axils: fls. solitary, to 2½ in. diam., terminal on short lateral shoots, petals fringed terminally. Mex.

Moòrei. Shrub to nearly 4 ft. tall, much branched: lvs. orbicular to obovate, to 3¼ in. long, apex obtuse or acute: spines 2–4, to 3 in. long, unequal, gray or blackish: fls. purplish-red, to nearly 2 in. across. Brazil.

Nicoyàna. Tree to 25 ft.; spines 1 and 1½ in. long or wanting: lvs. lanceolate or oblanceolate and nearly sessile, lateral veins nearly parallel: fls. yellow, petals fimbriate. Costa Rica.

Peréskia: *P. aculeata*.

rubéscens: *P. aculeata* var.

sacharòsa. Shrub or small tree to 25 ft., sts. green, becoming yellowish-brown with age: lvs. lanceolate to oblanceolate, to 5 in. long, acute: spines 1–3 on young and 3–6 on old branches, to 2 in. long, unequal: fls. white to rose-pink, to 3½ in. across, in terminal clusters. Argentina, Paraguay.

spathulàta: *Pereskiopsis spathulata*.

subulàta: *Opuntia subulata*.

tampicàna. Shrub, sts. spiny or spineless: lvs. ovate, to 2 in. long, petioled: spines about 3–5, to 1¼ in. long, sharp, black: fls. rose-pink. Mex.

PERESKIÓPSIS. *Cactaceæ*. Group that differs from Pereskia in bearing glochids on the areoles and in having opuntia-like fls.; from Opuntia in carrying true lvs. and in tree-like or shrub-like habit: species 10 or more in hedges and thickets of Mex. and Guatemala. See *Cacti*.

aquòsa. Shrub, sts. green, spineless: lvs. elliptic, acute, about 1 in. long, glabrous; spines solitary, white, glochids yellow: fls. yellow, outer segms. red-blotched. Mex.

Chapístle. Branching shrub to 16 ft.: spines 1 and 2½ in. long and white: lvs. obovate, to 1½ in. long: fls. yellow. Mex.

Diguètii (*Opuntia Diguetii*). Shrub to 10 ft. or more, sts. becoming reddish with age: lvs. elliptic-obovate, to 2 in. long, almost cuspidate: spines 1–4, to 3 in. long, unequal, black to gray, glochids brown: fls. yellow. Cent. Mex.

echinàta: listed name.

Gàtesii. Differs from *P. Porteri* in thicker, smaller and more rounded lvs. and in deep rose-colored fr. ¾ in. long. Lower Calif.

Pórteri. To 4 ft. high and 1 in. diam., branching: spines 1–8 or more on trunk, areoles with many brown glochids: lvs. obovate, 1 in. long: fls. yellow, 1½ in. across: fr. orange, 2 in. long. Mex.

rotundifòlia (*Opuntia rotundifolia*). Sts. thick and woody: lvs. nearly orbicular: spines 1: fls. reddish-yellow, 1¼ in. across. Mex.

spathulàta (*Opuntia* and *Pereskia spathulata*). Branching bush to 6 ft., somewhat glaucous, branches deflexed: spines 1 or 2 and about 1 in. long: fls. red. Mex.

subulàta: *Opuntia subulata*.

velùtina. Low, spreading, compact shrub to 4 ft. high, sts. green becoming reddish-brown with age: lvs. broadly elliptic, to 2¼ in. long, acute, puberulent: fls. bright yellow, borne on second-year sts. Cent. Mex.

PERÈZIA. *Compositæ*. Per. herbs native from Tex. to Patagonia, with alternate leathery lvs. and heads of rose, purple, white of blue disk-fls., solitary or in panicles; pappus of bristles. Sometimes planted for ornament.

microcéphala. To 3½ ft.: lvs. oblong-ovate, to 7½ in. long, toothed, clasping: heads whitish or purplish, ½ in. or less long, in panicles. Calif.

multiflòra. To 1 ft. or more: lvs. pinnately cut into triangular segms., to 6 in. long, spiny-margined: heads blue, in dense corymbs. Peru to Argentina.

PERFUME-PLANT: *Mathiola bicornis.*

PERIANTH: the floral envelope considered together; commonly employed for flowers in which there is usually no clear distinction between calyx and corolla, as the lilies.

PERICARP: the ripened ovary, or fruit.

PERÍCOME. *Compositæ.* Tall herbs from N. Mex. and S. W. U. S., having opposite petioled lvs. and small yellow fls. in rayless heads arranged in large discoid cymes. **P. caudàta** is adapted to the border and is propagated by seeds. To 4½ ft.: lvs. hastate or deltoid, to 4 in. long, acuminate, minutely puberulent and punctate: heads to ⅓ in. across, on pedicels to ¾ in. long, disk-fls. tubular, to ¼ in. long. W. Tex. to S. Calif. and Mex.

PERÍLLA. *Labiatæ.* Asian herbaceous annuals, one of which is grown for the attractive colored foliage something like a Coleus: fls. small, in axillary or terminal simple or panicled racemes, the corolla-tube not exceeding the calyx.

Perillas require a sunny or half-sunny position, and the same treatment as other half-hardy annuals. Propagated by seed.

frutéscens. The form known in cult. is var. **críspa** (var. *nankinensis*) with dark purple-brown or bronzy foliage: lvs. broad-ovate, to 4½ in. long, toothed: fls. white or reddish, ¼ in. long, in autumn. India to Japan. Other vars. have lvs. wrinkled or crisped, fringed or cut, sometimes variegated, in the trade under the names *atropurpurea, laciniata, frutescens laciniata.*

nankinénsis: *P. frutescens* var. *crispa.*

PERÍPLOCA. Silk-Vine. *Asclepiadaceæ.* Woody vines, ours deciduous, with opposite lvs., wheel-shaped fls. in terminal or axillary clusters, and milkweed-like frs.; native in S. Eu., Asia and trop. Afr., more or less hardy in N. U. S.

Silk-vines grow in well-drained soil in sunny situations. They may need winter protection in the North. Propagated by seeds, layers or cuttings under glass in summer.

græca. To 40 ft.: lvs. ovate-lanceolate, to 5 in. long: fls. greenish, brownish-purple inside, 1 in. across, in summer. S. Eu., W. Asia.

sèpium. Lvs. narrower and fls. smaller than in the above. N. China.

PERISSOLOBUS: *Machairophyllum.*

PERISTÈRIA. *Orchidaceæ.* American terrestrial or epiphytic orchids with pseudobulbs, large plaited lvs. and fls. in laterally produced racemes, the sepals and petals similar and cup-shaped, the base of lip united with the column by broad wings. For cult. see *Orchids.*

cerìna. Pseudobulbs ovoid, to 3 in. tall: lvs. 2–4, to about 18 in. long and 3 in. wide: fls. pale citron-yellow, in dense raceme on short pendulous scape. Apr.–June. Cent. Amer., Trinidad.

elàta. Holy-Ghost-Flower. Dove-Flower. Plant tall: pseudobulbs ovoid, with 3–5 lvs. to 40 in. long and 6 in. wide: infl. tall, erect, to 5 ft. high with very loose many-fld. raceme; fls. fleshy, waxy-white with lip spotted with purple, fragrant. Aug.–Oct. Costa Rica, Panama, Colombia.—Requires liberal supply of moisture and treatment given Calanthe.

péndula. Pseudobulbs subconic to ovoid, to 6 in. tall: lvs. 3–4, elliptic-lanceolate, to 20 in. long: scape pendulous, to 7 in. long, densely fld.; fls. globose, 2 in. across, greenish-white spotted with purple. Sept.–Jan. British Guiana, Brazil.—Said rarely to flower in cult.

PERÍSTROPHE. *Acanthaceæ.* Herbs or shrubs of the Old World tropics with opposite entire lvs. and rose or purple tubular 2-lipped fls. in bracted clusters or solitary; grown in the greenhouse where they need abundant air and rich loamy soil. Propagated by cuttings.

angustifòlia. Grown as ann.: lvs. lanceolate, to 3 in. long: fls. rose, in terminal clusters. Java. Var. **aùreo-variegàta** has lvs. variegated with yellow.

speciòsa. Woody per. to 3 ft.: lvs. ovate, to 5 in. long: fls. violet-purple, 2 in. across, 2–3 together. India.

PERIWINKLE: *Vinca.*

PERNÉTTYA (originally spelled Pernettia by Gaudichaud who a year later corrected it to Pernettya). *Ericaceæ.* Low evergreen shrubs adapted to rock-gardens, having small toothed lvs., urn-shaped nodding usually solitary fls., and fr. a bright colored berry persistent throughout the winter.

Pernettyas thrive in sunny positions in rather moist peaty soil. Fairly hardy North. Propagated by seeds, cuttings of half-ripe wood, layers and suckers.

mucronàta. To 2 ft., much branched: lvs. ovate to ovate-lanceolate, to ¾ in. long: fls. white or pinkish, ¼ in. long, May–June: fr. white to red or purple, as indicated in the names **álba, coccínea, lilácina, nigra, purpùrea, ròsea, rùbra.** Magellan region to Chile.

nàna. Low creeping mat-forming shrub to 3 in. high: lvs. oblong-lanceolate, acutish, to ¼ in. long, thick and leathery, entire or remotely toothed, mostly glabrous: fls. urceolate, to ⅙ in. long, usually solitary, axillary; calyx-lobes acute; filaments as long or longer than styles, anthers minutely bristle-tipped. New Zeal.

speciòsa: a form of *P. mucronata.*

tasmánica. Creeping glabrous per., sts. to 3 in. long: lvs. oblong, to ⅙ in. long, subacute, leathery, obscurely crenate: fls. campanulate, to ¼ in. long, solitary in axils on pedicels to ⅙ in. long; calyx-lobes obtuse; filaments shorter than styles, anthers not bristle-tipped. Tasmania.—Material so listed in cult. may be *P. nana.*

PERÓVSKIA. *Labiatæ.* Asian herbs or subshrubs with opposite lvs. and rather small 2-lipped fls. in whorls in terminal spikes; one species grown for ornament.

Perovskia succeeds in sunny places in good loam, and is fairly hardy North. Propagated by cuttings of young wood under glass.

atriplicifòlia. To 5 ft., hoary-tomentose: lvs. ovate-lanceolate to lanceolate, to 2½ in. long, toothed: fls. blue, ⅓ in. long, the spikes forming panicles to 1½ ft. long. Aug.–Sept. W. Asia.

PÉRSEA. *Lauraceæ.* Broad-lvd. evergreen trees with alternate entire lvs., small bisexual greenish not showy fls. in panicles, and fr. a berry or drupe, edible in the case of the avocado, which see for cult.

The perseas are small trees of warm and tropical regions, the avocado now much grown for fruit, the others more or less planted for ornament because of the laurel-like habit and foliage. Most of them bear greenish, reddish or glaucous young shoots. The ornamental kinds require no special treatment. Propagation by seeds and cuttings.

americàna (*P. gratissima. P. Persea*). Avocado. Much branched tree to 60 ft. or more: lvs. elliptic or oval, 4–8 in. long, acute or short-pointed: fls. small, greenish, in close terminal panicles, the parts prominently gray-pubescent: fr. large, fleshy, pyriform to oblong or globular, with rich buttery flesh, thick skin, and one large seed. Trop. Amer., cult. in the warmest parts of U. S., as West Indian and Guatemalan avocado; somewhat nat. in S. Fla.; the fr. was formerly known somewhat as "alligator-pear," a name that should be discontinued. Var. **drymifòlia** (*P. drymifolia*), is the Mexican avocado of cult.: lvs. mostly elliptic and acute at either end, anise-scented when crushed: perianth more or less persistent: skin of fr. thin and soft.

Borbònia (*P. carolinensis. Tamala Borbonia. Notaphœbe borbonica*). Red Bay. Bull Bay. Tree 30–40 ft.: lvs. oblong to long-oblong, tapering to base, glabrous and somewhat glaucous, to 6 in.: fls. few or several, in short-peduncled clusters: fr. blue or blue-black, about ½ in. diam. Del. to Fla. in swamps.—Sometimes planted for ornament.

carolinénsis: *P. Borbonia.*

drymifòlia: *P. americana* var.

glaùca: advertised as a tree to 30 ft. with lvs. to 5 in.

long and 2 in. wide, whitish beneath: fr. black, pear-shaped, ½ in. long.

gratíssima: *P. americana.*

índica. Attractive small tree with finely pubescent or nearly glabrous young shoots: lvs. oblong to lance-oblong, to 6 in., coriaceous, pubescent underneath, mostly acute: fls. small and few in upper axillary peduncled clusters: fr. oblong, scarcely fleshy, ¾ in. long. Canary, Madeira, Azores Isls.—Planted for ornament in S. Calif. and Fla., named *Laurus indica* by Linnæus, but habitat given by him as Virginia.

leiógyna. Trapp Avocado. Differs from *P. americana* in the perianth glabrous within and only sparsely pilose outside, pistil and staminodes glabrous. Probably trop. Amer.

macrodènia: listed name of unknown botanical standing.

Meyeniàna. Tree, with elliptic obtuse or acutish lvs. glaucous beneath: fls. with silky-tomentose perianth, the outer parts ovate, inner twice as long and elliptic-oblong; staminodes usually hairy at tip. Chile.—Intro. in Calif.

Nánmu: *Phœbe Nanmu.*

palústris (*P. pubescens. Tamala pubescens*). Swamp Red Bay. Shrub or small tree: lvs. elliptic, to 8 in. long, obtuse, tomentose beneath: fr. dark blue and bloomy, ⅓ in. long. N. C. to Fla. and Tex.

Pérsea: *P. americana.*

pubéscens: *P. palustris.*

ròsea: probably hort. name.

PERSICA VULGARIS: *Prunus Persica.*

PERSICARIA: *Polygonum.*

PERSIMMON. Species of Diospyros. Although noteworthy varieties of the American persimmon, *Diospyros virginiana*, native from Connecticut and southern Iowa to Florida and Texas, have been introduced, no important orchard industry is based on it. The small size of the fruit and its pulpy character when mature have been real drawbacks not offset by its high quality and delicious flavor. Hence, persimmon culture has been undertaken with varieties of *Diospyros Kaki* introduced from Japan and China, commonly known as oriental or Japanese persimmons and as kaki.

Roughly, the oriental persimmons are adapted climatically to the cotton-belt. They are grown as garden fruits over wide areas but a commercial industry has been developed for the most part only in California, Texas, Florida, southern Georgia and the southern parts of those states bordering on the Gulf of Mexico. Outside of California, individual orchard holdings usually are not large.

The persimmon is not particular in its soil requirements. It may be grown on any good farming land, provided water is available for irrigation in dry sections and drainage is satisfactory where rainfall is heavy. Lands of good quality produce more abundant crops of finer fruits than do lighter soils.

Native persimmon stocks are employed for propagation in the southern and eastern districts entirely, while in California seedling *D. Kaki* and *D. Lotus* stocks are also used; the Lotus has been freely utilized in recent years. Native persimmon roots are adapted to moist soils, *D. Lotus* to dry soils, while *D. Kaki* is intermediate in its moisture requirements. *D. Lotus* has a fine fibrous root system while *D. Kaki* and *D. virginiana* have well-developed taproots, naturally very deficient in lateral and fibrous roots. Their root systems can be greatly improved by transplanting and by root pruning. Propagation is by whip-grafting in winter just below the surface of the ground on one-or two-year seedling stocks or by shield-budding with long heavy buds just before the stocks become dormant in summer.

In the eastern districts persimmons are planted 15 by 20 feet apart each way. In California they are spaced the same distances on lighter soils and 25 to 30 feet on heavy soils. Orchards are clean-cultivated in spring and early summer, followed by cover-crops of cowpeas, beggarweed or crotalaria for summer, and oats, rye or vetch for winter. It is important that the organic matter content be well maintained. Commercial fertilizers are applied in spring and again in June as for other tree crops.

While many varieties of oriental persimmons may be found in gardens and a fruiting season from August to January maintained, commercial plantings are usually made with Tane-Nashi and Fuyu in the East and with Hachiya and Fuyu in California. Hyakume is present in the earlier California plantings in large numbers. Fuyu has the distinct advantage of being hard light-fleshed and non-astringent at all stages, while both Tane-Nashi and Hachiya are astringent until they are soft-ripe. Pollination is required for Fuyu in the eastern districts and a good pollinator such as Gailey should be interplanted one tree in ten.

Persimmons are attacked by such insects as white-fly, mealy-bug, white peach scale and black scale. These are controlled by spraying with miscible oil. The most serious pest in the southern and eastern districts is the flat-headed borer which attacks the trunk and branches. It is controlled by going carefully over the trees in spring, locating the places attacked, digging or cutting them out and painting with a good tree paint.

PERSISTENT: remaining attached; not falling off annually or frequently, as leaves of pines; evergreen.

PERSONATE: said of a 2-lipped corolla the throat of which is closed by a palate, as in snapdragon and linarias: like a masked face.

PERSOÒNIA. *Proteaceæ.* Small trees or shrubs of Australia and New Zeal., with mostly alternate entire lvs., small yellowish or white fls., and fr. a drupe; one species intro. in Calif.

Tòru. Tree to 40 ft.: lvs. linear-lanceolate, to 8 in. long, thick and leathery: fls. yellowish-brown, to ⅓ in. long, in rusty-pubescent axillary racemes: fr. reddish, to ⅔ in. long. New Zeal.

PERULARIA: *Habenaria flava.*

PERUVIAN BARK TREE: *Cinchona.*

PESCATÒREA. *Orchidaceæ.* Epiphytes with fragrant showy fls. solitary in the axils of distichously tufted lvs., the lateral sepals forming a chin with the column-foot, the lip clawed and with a thick crest at base; native in trop. Amer. For cult. see *Orchids.*

cerìna. Lvs. to about 20 in. long and 1½ in. wide: fls. white or citron-yellow with orange-yellow semicircular grooved callus on lip, on peduncles to 6 in. long. June–Dec. Costa Rica, Panama.

Dayàna. Lvs. to 15 in. long and 2 in. wide: peduncles to 4 in. long; sepals and petals cream-white with pale green tips; lip white stained with crimson. June–Sept. Colombia.

Klabochòrum. Lvs. to 20 in. long and about 2 in. wide: peduncles short, pendulous; fls. to 4 in. across; sepals and petals white with brown-purple apex; lip white densely covered with purple papillæ and purple crest. May–Aug. Ecuador, Colombia.

PETAL: one of the separate leaves of a corolla.

PETALOID: petal-like; of color and shape resembling a petal; it may be a bract, sepal, or expanded stamen.

PETALOSTÈMUM. Prairie-Clover. *Leguminosæ.* Herbs, mostly per., or subshrubs with pinnate lvs., papilionaceous fls. in spikes, and short pods included in the calyx; native in N. Amer. and any of the species may be planted in the rock-garden, border or wild-garden.

cándidum. To 2 ft.: lfts. oblong or oblanceolate: fls. white, in cylindric spikes to 4 in. long. Ind. to La. and Tex.

corymbòsus (*Kuhnistera pinnata*). To 4 ft.: lfts. 3–7, linear-spatulate to filiform, usually only to ¼ in. long or less, minutely glandular-dotted: fls. white, in several to many subglobose condensed head-like spikes to ½ in. diam.: pods less than ⅛ in. long. N. C. to Fla. and Miss.

decúmbens. Sts. decumbent or ascending: lfts. linear or linear-oblong: fls. pink or rose-purple, in ovoid or short-oblong spikes to ¾ in. long. Ark., Tex.

multiflòrus. To 2 ft.: lfts. linear to oblanceolate: fls. white, in spikes ½ in. long. Kans. to Tex.

obovàtum. To 20 in., silky-hairy: lfts. obovate or oval: fls. yellowish-white, in cylindric spikes to 4½ in. long. Tex.

oligophýllum. To 2½ ft.: lfts. linear or linear-oblong: fls. white, in oblong spikes to 3 in. long. Minn. to Ariz.

purpùreum (*P. violaceum*). To 3 ft.: lfts. linear: fls. violet or purple, in dense spikes 2 in. long. Ind. to Sask. and Tex.

Seárlsiæ. To 1½ ft.: lfts. linear-lanceolate to ovate: fls. rose, in dense oblong spikes to 2 in. long. Utah, Ariz.

Stánfieldii. To 1 ft.: lfts. linear: fls. rose-purple, in cylindric spikes to 1 in. long. Tex.

villòsum. To 2 ft., ascending or decumbent, densely hairy: lfts. oblong or oblanceolate: fls. rose-purple or rarely white, in cylindric spikes to 4 in. long. Mich. to Tex.

violàceum: *P. purpureum.*

PETASÌTES. BUTTER-BUR. *Compositæ.* Herbaceous perennials with thick and often creeping rootstocks, large basal felty lvs. that appear after the very early clustered purple to white heads of diœcious disk-fls. or sometimes with ray-fls., the scapes scaly; pappus of bristles; native in the north temp. zone. Of easy cult. Usually increased by division; also by seeds. The name is pronounced in four syllables.

fràgrans. WINTER-HELIOTROPE. SWEET COLTSFOOT. To 1 ft.: lvs. orbicular, small toothed, green and silky below, evergreen: heads small, fragrant, pale lilac to purple. Medit. region.

frígidus (*P. nivalis*). To 10 in.: lvs. triangular or heart-shaped, 5–7-lobed, to 4 in. long, white-tomentose beneath: heads ½ in. long. Alaska to Wash.

hýbridus (*P. officinalis. P. vulgaris*). To 2 ft.: lvs. reniform or orbicular, to 1 ft. across, toothed, gray-tomentose beneath: heads ½ in. across, purplish, fragrant, in dense spike-like racemes. Eu., Asia; nat. in E. N. Amer.

japónicus. To 6 ft.: lvs. to 4 ft. across: fl.-heads in a fastigiate thyrse. Isl. of Sachalin. Var. **gigantèus** has densely clustered fl.-heads and wavy-margined lvs.—The stalks are used as a vegetable and the fl.-buds as a condiment.

nivàlis: *P. frigidus.*

níveus. To 1 ft.: lvs. broadly cordate, toothed, densely white-woolly beneath: heads pinkish-white. Eu.

officinàlis: *P. hybridus.*

variegàtus: trade name for a variegated form.

vulgàris: *P. hybridus.*

PETIOLE: leaf-stalk.

PETIOLULE: stalk of a leaflet.

PETIVÈRIA. *Phytolaccaceæ.* Herbs or subshrubs with alternate lvs. and small fls. in racemes or solitary; one species has medicinal properties and is sometimes planted under glass for interest.

alliàcea. GUINEA-HEN WEED. To 3 ft., with a strong garlic odor: lvs. ovate or elliptic, entire: fls. pink, white or green, in long interrupted spike-like racemes. Trop. Amer.

PETRÈA. PURPLE WREATH. *Verbenaceæ.* Shrubs, erect or climbing, grown out-of-doors in the S. and under glass, having opposite leathery simple lvs. and violet, purple or bluish fls. in long racemes. Propagated by cuttings of the shoots over heat and by seeds.

arbòrea. Shrub, sometimes vine-like, to 25 ft.: lvs. sessile or with petioles less than ⅛ in. long, elliptic, to 6 in. long, obtuse to emarginate, entire to undulate, cordate: fls. blue, in axillary racemes 2–6 in. long. Trinidad to Venezuela and British Guiana. Var. **Bróadwayi** has white fls.—Much of the cult. material under this name is *P. volubilis.*

Kohautiàna. Woody vine or tortuous nearly self-supporting shrub to 30 ft. or more: lvs. with petioles to ⅛ in. long, elliptic to elliptic-ovate, to 6 in. long, usually obtuse to emarginate at apex, cordate at base, glabrous on both sides: fls. lilac-blue to dark purple, in terminal racemes 6–20 in. long. W. Indies, particularly the French Antilles. Var. **anómala** has white fls. and lvs. narrowed at ends. —Sometimes cult. as *P. volubilis.*

volùbilis. Woody vine or subshrub to 35 ft.: lvs. with petioles to ½ in. long, elliptic, 2–8 in. long, apex mostly acute to short-acuminate, base acute or obtusely cuneate, rough-scabrous on both sides: fls. pale lilac to purple, in axillary racemes 3–12 in. long. Mex., Cent. Amer., W. Indies. Var. **albiflòra** has white fls.

PETROCÁLLIS. *Cruciferæ.* Draba-like per. in the Pyrenees, Alps and east (another in Persia), grown in rock-gardens. **P. pyrenàica** (*Draba pyrenaica*). Mat-like, 2–3 in., with simple sts.: lvs. all radical in rosette, wedge-shaped, lobed: fls. white changing to pink: silicle or pod short, little longer than broad.

PETROCÓPTIS. *Caryophyllaceæ.* Perennials of small size, the lvs. mostly tufted or in a rosette, fls. with uncut petals; a few species from the Pyrenees, sometimes used in the rock-garden. Very similar to Lychnis.

Lagáscæ (*Lychnis Lagascæ*). Low, tufted, glaucous, to 4 in. high: lvs. linear to ovate-lanceolate, to ¾ in. long, acute: fls. pale rose with white center, about ⅜ in. across, long-pedicelled.

pyrenàica (*Lychnis pyrenaica*). Low, tufted, to 6 in. high, glabrous: lvs. obovate-spatulate, to ¾ in. long, glaucous, mucronate: fls. white to rose, to nearly ½ in. across, not long-pedicelled, petals slightly notched at tip.

PETRÓPHILA. *Proteaceæ.* Shrubs with stiff lvs. and white or yellow fls. borne beneath scales or bracts and forming dense spikes or cones; intro. in Calif., from Australia.

bíloba. Lvs. flat, ternately divided into obliquely ovate or oblong pungent-pointed segms. to ½ in. long: fls. hairy, to ¾ in. long: cones ¼ in. long.

mèdia. Lvs. cylindrical, 2–3 in. or occasionally to 10 in. long: fls. hairy, about ½ in. long: cones ½ in. across.

Shuttleworthiàna. Lvs. flat, divided into pungent-pointed segms. 1 in. long: fls. glabrous, ⅓ in. long: cones to 1 in. long.

PETRÓPHYTUM. *Rosaceæ.* Prostrate evergreen shrubs native in W. N. Amer. and adapted to the rock-garden: lvs. crowded, entire: fls. small, white, in terminal racemes: fr. a leathery follicle. It succeeds in sunny positions in limestone soil. Propagated by seeds and division.

cæspitòsum (*Spiræa cæspitosa*). Forming mats to 3 ft. across: lvs. to ½ in. long, 1-nerved: fl.-spikes to 2 in. long. S. D. to Calif.; hardy N.

cineráscens (*Spiræa cinerascens*). Differs from *P. Hendersonii* chiefly in lvs. being gray-pubescent. Wash.

Héndersonii (*Eriogynia* and *Spiræa Hendersonii*). Mat-forming, sts. ascending to 4 in.: lvs. spatulate, to ¾ in. long, 3-nerved: fls. in dense racemes to 3 in. long, petals obovate to oval. Olympic Mts., Wash.

PETRORHAGIA: *Tunica Saxifraga.*

PETROSELÌNUM. *Umbelliferæ.* Herbs of the Old World with pinnately compound lvs., greenish-yellow or reddish fls. in compound umbels, and ovate compressed frs.; one species is grown as a garnish and for salads.

Seeds of parsley should be sown in rows 10–12 inches apart, and the seedlings thinned to 5 or 6 inches in the row. As germination is very slow, it is well to soak the seeds in warm water. For winter use roots may be transplanted to boxes or pots and kept in a sunny window.

críspum (*P. hortense. P. sativum. Apium Petroselinum*). PARSLEY. Bien. to 3 ft.: lvs. ternately decompound, those of the typical form curled and crisped. Eu., W. Asia. Var. **filicìnum** is a fern-lvd. form, nat. in E. N. Amer. Var. **latifòlium** has lf.-segms. flat and not crisped and roots fibrous. Var. **radicòsum.** Turnip-rooted P., has thick parsnip-like edible roots and flattened non-crisped lf.-segms.

horténse: *P. crispum.*

satìvum: *P. crispum.*

PE-TSAI. A leaf vegetable, *Brassica pekinensis*, much grown in China and now well known in this country as "Chinese cabbage" and "celery cabbage." Annual and biennial; sown in spring, it produces a close mass of foliage and a tender central core in summer and early autumn. The leaves are used as greens, and the white heart for salad. For harder heads, the seeds should be sown later so that the plant will mature in late autumn. The excellence of the crop apparently depends much on the care practiced in seed selection. The product does not have the strong flavor and odor of real cabbages, and it should not be called a cabbage.

A related product is Pak-choi, *Brassica chinensis* and *B. parachinensis.* This plant does not produce the solid head of Pe-tsai, and it is more definitely biennial, if not even sometimes short-perennial.

All these plants are probably natives of eastern Asia. See *Brassica.*

PETTÈRIA. *Leguminosæ.* Deciduous shrub native in Dalmatia, sometimes planted for ornament. Cult. as for Laburnum. **P. ramentàcea** (*Cytisus Weldenii*). To 6 ft.: lvs. of 3 lfts. to 2 in. long: fls. yellow, papilionaceous, fragrant, in dense upright racemes to 3 in. long, in May and June: pods to 1½ in. long.

PETÙNIA. *Solanaceæ.* Soft more or less hairy branching annuals and perennials, of weak straggling growth, with simple lvs., alternate or the upper ones opposite, and white, purple or reddish fls. funnel- or salver-shaped, fragrant, blooming all summer; native in S. S. Amer.

Petunias are treated as annuals in gardens and are very satisfactory for bedding, to fill in spaces in the border, and in window- and porch-boxes; also grown in the greenhouse. They require sunny exposure. Petunias may be propagated from seed, the large frilled and double forms sometimes from cuttings. These latter high-bred types require more care than the smaller single-flowered kinds; the seeds should be started indoors; the weak plants usually have the most double and daintily colored flowers.

argéntea: trade name for a form of *P. hybrida.*

Átkinsii: form of *P. hybrida.*

axillàris (*P. nyctaginiflora*). Large White P. Usually erect, sticky-pubescent, to 2 ft.: fls. dull white, to 2½ in. long, fragrant at night, tube 3–4 times as long as calyx. Argentina.

compácta: *P. hybrida.*

élegans: *P. hybrida.*

fimbriàta: *P. hybrida.*

grandiflòra: *P. hybrida.*

hýbrida. Common Garden P. Reputed to be a series of hybrids between *P. axillaris* and *P. violacea*, funnel-shaped fl.-tube broader than in the former species and longer with a broader limb than in the latter, to 3½ in. long: growth stocky and plant often sticky. There are many vars. and strains with fls. varying in size, color and form, sometimes to 5 in. across, from white to deep red-purple often striped, with star-like markings radiating from the throat or irregularly marked, some deeply fringed or even full double; both tall and more or less dwarf forms. Some of the Latin-named forms, often listed as binomials, are **álba, compácta, élegans, fimbriàta, gigantèa, grandiflòra, kermesìna, maculàta, nàna, péndula, purpùrea, ròsea, superbíssima.**

inflàta. Much like *P. violacea* but corolla-tube much broader as if swollen or inflated: lvs. rather narrow. Paraguay, Argentina.

nàna: dwarf hort. form of *P. hybrida.*

nyctaginiflòra: *P. axillaris.*

parviflòra. Ann. to 18 in., pubescent: lvs. to ¾ in. long: fls. purple, to ⅜ in. across, corolla-lobes abruptly pointed. N. C. to Fla., west to Calif., W. Indies, Mex. to S. Amer.

phœnícea: apparently one of the *P. hybrida* group.

superbíssima: *P. hybrida.*

violàcea. Violet-flowered P. Sts. to 10 in. long, slender, prostrate or tips erect: fls. rose-red or violet, the tube lighter, funnel-shaped, to 1½ in. long, about twice as long as calyx, with unequal limb. Argentina.—Perhaps some of the material so listed represents color forms of *P. hybrida.*

PEUCÉDANUM. *Umbelliferæ.* Large and complex group of herbs with lvs. that are much divided, white, yellow or rarely purple small fls. in umbels, and flattened frs.

austrìacum. Per. to 3 ft.: lf.-segms. linear to linear-lanceolate, not dentate: fls. white, bracts reflexed: fr. to ⅜ in. long. Eu.

Cervària. Per. to 3½ ft.: lf.-segms. oval to elliptic-lanceolate, lobed or dentate: fls. white or pink, bracts reflexed. Cent. Eu. and Medit. region.

Ostrûthium (*Imperatoria Ostruthium*). To 3½ ft.: lvs. 1–2-pinnate into broad toothed segms.: fls. polygamous, white or pinkish. Mts. of Cent. and S. Eu.

PEÙMUS. *Monimiaceæ.* Evergreen diœcious tree to 20 ft., native in Chile. **P. Bóldus** (*Boldoa fragrans*). Boldo. Lvs. opposite, ovate, leathery and rough: fls. white, ½ in. across, in panicles: fr. an edible drupe.—Sometimes grown in S. Calif. The tree has many economic uses, as the hard wood is valuable for charcoal and implements, the bark for tanning and dyeing, and the lvs. have medicinal properties.

PEYOTE: *Lophophora Williamsii.*

PFEÌFFERA. *Cactaceæ.* A monotypic epiphytic genus from W. Argentina, growing on trees and somewhat resembling Rhipsalis. **P. ianothèle** (*P. cereiformis. Rhipsalis cereiformis*). Sts. 3–4-angled, without aërial roots, to 15 in. long or more and to ¾ in. thick, areoles about ⅝ in. apart, reddish; spines 6–7, to nearly ¼ in. long: fls. white within, pale pinkish-purple to pink outside, campanulate, about 1 in. long, tube short or nearly absent: fr. spherical, wine-red, to ⅝ in. diam. but usually less.

PHACA: *Astragalus.*

PHACÈLIA. *Hydrophyllaceæ.* More than 100 species of herbs, ann. and per., in Amer., the larger part western, with mostly alternate lvs., blue, purple or white fls. in scorpioid cymes or racemes and deciduous corolla; some of them are grown for summer bloom in the flower-garden. The individual fls. are commonly not showy but produce a bold effect in mass.

Seeds of the annual species may be sown in spring where the plants are to stand. The perennials are propagated by division as well as by seeds.

bipinnatífida. Bien. to 2 ft.: lvs. pinnatifid: fls. violet or blue. Ohio to Ga. and Tenn.

campanulària (*P. minor* var. *campanularia*). Ann. to 8 in.: lvs. ovate, toothed: fls. blue. S. Calif., in dry or desert regions.

ciliàta. Ann. to 1½ ft., rough-pubescent: lvs. pinnate into oblong toothed or cut segms.: fls. blue. Calif., Lower Calif.

congésta. Ann. to 2½ ft.: lvs. pinnatifid, often finely dissected: fls. blue. Tex., N. Mex.

divaricàta. Ann. to 1 ft., straggling: lvs. ovate or oblong, entire: fls. blue. Calif. Var. **Wrangeliàna** has lvs. slightly lobed or toothed at base.

gloxinoìdes: *P. Whitlavia* var.

grandiflòra: *P. Whitlavia.*

lineàris (*Eutoca multiflora*). Ann. to 1 ft.: lvs. linear to lanceolate: fls. violet or white. Calif. to Wash. and Utah.

leucophýlla. Per. to 1½ ft., densely silky-pubescent: lvs. lanceolate to oblong, entire: fls. white or bluish, corolla-lobes entire. S. D. to B. C. south to Colo. and Neb.—Sometimes confused with *P. heterophylla* which has some lvs. divided.

Lỳallii. Per. to 8 in., tufted: lvs. oblanceolate, to 4 in. long, somewhat strigose, divided half way to midrib: fls. dark blue, to ⅓ in. long, in short dense infl., calyx-lobes hairy. Mont., Ida. to B. C.

mìnor. Widespread hairy and viscid ann. in S. Calif., to 2 ft.: lvs. broad-ovate, coarsely serrate, to 2½ in. long: fls. long-campanulate, the lobes not reaching middle, blue or purple.—Known in cult. in its forms or relatives *P. campanularia* and *P. Whitlavia.*

Párryi. Ann. to 1½ ft.: lvs. ovate, toothed or lobed: fls. deep violet. Calif.

Púrshii. To 1 ft.: lvs. pinnate-lobed, lobes 5–9, lanceolate to elliptic: fls. pale blue with white center, lobes briefly fringed. Tenn.

serícea. Per. to 1 ft., silvery-silky: lvs. pinnate into linear segms.: fls. violet-blue. Alta. to Wash. and Nev.

tanacetifòlia. Ann. to 3 ft.: lvs. pinnatifid, finely cut like those of tansy: fls. blue or lavender. Calif.

víscida (*Eutoca viscida*). Ann. to 2 ft.: lvs. ovate, toothed: fls. deep blue, with purple or whitish center. Calif.

Whitlàvia (*P. minor* var. *Whitlavia. Whitlavia grandiflora*). CALIFORNIA BLUEBELL. Ann. to 1½ ft.: lvs. ovate, toothed: fls. blue or purple with swollen corolla-tube. S. Calif.—Probably not specifically distinct from *P. minor*, but long known in gardens as *Whitlavia*. Var. **álba** has white fls. Var. **gloxinoìdes** (*Whitlavia gloxinoides*) has white fls. with blue center.

Wrangeliàna: *P. divaricata* var.

PHÆDRANÁSSA. *Amaryllidaceæ.* Bulbous herbs of Cent. and N. S. Amer., allied to Eucharis, but differing in the subcylindrical colored corolla whose segms. spread only at the tip. One species from Costa Rica, **P. Carmiòlii,** has recently been intro. to Calif. To 2 ft., bulb to 3 in. diam.: lvs. 1–3, oblanceolate, to 15 in. long and 2 in. wide, obtuse, appearing at flowering time, petiole to 8 in. long: fls. scarlet with segms. green margined yellow, to 2 in. long, usually 6–10 in umbels, pedicels 1 in. long, scape terete, naked.

PHÆDRÁNTHUS. *Bignoniaceæ.* Showy Mexican evergreen climber grown in subtrop. climates and in cool greenhouses. Propagated by cuttings. **P. buccinatòrius** (*Bignonia buccinatorius* and *B. Cherere*). Lvs. of 2 ovate or oblong lfts. to 3 in. long and a terminal 3-parted tendril: fls. blood- or purple-red with yellow base, funnelform, 4 in. long, in terminal racemes.

PHÆTHUSA: *Verbesina virginica.*

PHAGNÀLON. *Compositæ.* Old World genus having alternate lvs. and heads of disk-fls.; allied to Senecio and Erigeron, differing from the former in involucral bracts of several series and imbricated, and from Erigeron in being white-tomentose and not merely pubescent.

rupéstre. To 1 ft., somewhat woody at base, erect: lvs. oblong to linear, to 2 in. long, obtuse, white-tomentose beneath and somewhat so above, undulate: heads yellow, to ½ in. across, solitary on slender naked peduncles to 2½ in. long. Medit. region and Asia Minor.

PHÀIUS. *Orchidaceæ.* Old World epiphytic or terrestrial orchids with leafy sts. or several-lvd. pseudobulbs and fls. in showy racemes, the sepals and petals similar, the lip 3-lobed, free, usually spurred at base. For cult. see *Orchids.*

flàvus (*P. maculatus*). Pseudobulbs produced into a leafy st.: lvs. 2–8, to about 2 ft. long, often spotted with whitish or pale yellow: scape to 3 ft. high, many-fld.; fls. to 3 in. across, yellow with apex of lip orange or reddish and wavy. Spring and summer. Malaya, China, Japan.

grandifòlius. Pseudobulbs with 4–6 lvs. to 40 in. long: scapes to 4 ft. long, to 18–fld.; fls. to 4 in. across, silvery-white outside and yellowish-brown inside; lip yellow or brown-yellow marked with rose-purple. Himalayas, Indo-China, China, Australia.

maculàtus: *P. flavus.*

Sanderiànus: a hort. form, referred to as a var. of *P. Blumei*, with sepals and petals coppery or bronzy and lip dull rose with white margin.

PHALÆNÓPSIS. *Orchidaceæ.* Epiphytic orchids of eastern hemisphere with short non-pseudobulbous leafy sts., thick leathery lvs. and fls. in loose racemes or panicles, the sepals and petals equal or the latter larger, the lip 3-lobed and united with base of column, sometimes with appendages at apex. Raised in a greenhouse with minimum temperature not below 65°; grown in osmundine or sphagnum and must be well supplied with moisture. See *Orchids.*

amábilis (*P. grandiflora. P. amabilis* var. *Rimestadtiana*). Lvs. oblong-lanceolate, to 1 ft. long: infl. a drooping raceme or panicle, loosely 3- to many-fld., to about 3 ft. long; fls. white, to 4 in. across; lip marked with yellow and red at base, terminating in a pair of divergent tendrils. Blooms at various seasons. Malaya. Var. **Aphrodìte** (*P. Aphrodite, P. Sanderiana*) is a form distinguished from the species by the retuse apex of the arms of the callus of the lip, and by slightly smaller fls.; the form designated as *P. Sanderiana* has fls. suffused with rose.

amethýstina. Lvs. cuneate-oblong, to 4 in. long: peduncles simple or branched, few-fld.; fls. small, white; sepals about as wide as petals; lip amethyst striated with white, notched at apex. Malaya.

Aphrodìte: *P. amabilis* var.

Elízabethiæ. Hybrid between *P. amabilis* and *P. amabilis* var. *Rimestadtiana.*

equéstris (*P. rosea*). Lvs. to about 8 in. long and 2¾ in. wide: infl. a raceme or panicle, many-fld., to 16 in. long; fls. about 1½ in. across; sepals and petals white tinged with rose in the center; lip rose-purple. Blooms nearly all year. Philippines.

Esmerálda: *Doritis pulcherrima.*

grandiflòra: *P. amabilis.*

Lueddemanniàna. Lvs. to 11 in. long and about 3 in. wide: infl. racemose or rarely paniculate, about length of lvs., few-fld.; fls. to 2 in. across; sepals and petals yellowish-white banded with violet-purple; lip amethyst-purple with white side lobes. Blooms nearly all year. Philippines. Var. **ochràcea** has stripes on sepals and petals light ochre-yellow.

Rimestadtiàna: *P. amabilis.*

ròsea: *P. equestris.*

Ròsenstromii. Lvs. oblong, to about 15 in. long: panicles to nearly 3 ft. long, racemose branches 10 in. long, each 8–10-fld.; fls. white stained with yellow, similar to *P. amabilis* but smaller; petals rhombic, wider than other segms. Queensland.

Rothschildiàna. Hybrid between *P. amabilis* and *P. Schilleriana.*

Sanderiàna: *P. amabilis* var. *Aphrodite.*

Schilleriàna. Lvs. to 20 in. long and 4½ in. wide, mottled above with gray and beneath with red-brown: infl. loosely paniculate, to 4 ft. high; fls. to 3½ in. across; sepals and petals rose-purple tinted with white, lateral sepals dotted with purple near the base; lip white dotted with purple. Spring and early summer. Philippines. Var. **grandiflòra** is listed.

Stuartiàna. Lvs. to 1 ft. long and 4 in. wide, mottled with gray above, purplish beneath: infl. a many-fld. drooping panicle; fls. to 2½ in. across; dorsal sepal and petals white; lateral sepals white with inner half yellowish covered with purple spots; lip yellowish spotted with red-purple. Jan.–Feb., May. Philippines.

violàcea. Lvs. to 9 in. long and 4 in. wide: infl. racemose, about 2–5-fld.; fls. to 3 in. across; dorsal sepal and petals greenish-white with violet near base; lateral sepals greenish-white with inner half mostly violet-purple; lip with yellow side lobes and violet-purple mid-lobe. Sumatra.

PHALANGIUM: *Anthericum.*

PHÁLARIS. *Gramineæ.* Ornamental ann. and per. grasses with flat lvs. and flattened spikelets in narrow panicles or spikes; native in Old World and N. Amer. See *Grasses.*

arundinàcea. REED CANARY-GRASS. Per. to 6 ft.: lvs. to 1 ft. long and ¾ in. wide: panicles dense, to 8 in. long, branches erect. Eu., Asia, N. Amer. Var. **pícta** (var. *variegata*), RIBBON-GRASS, has lvs. striped with white and yellowish, common in yards as clumps or patches and sometimes infrequently blooming.

canariénsis. CANARY-GRASS. Ann. to 2 ft.: lvs. to 6 in. long and ¼ in. wide: spikes ovoid, to 1½ in. long. Eu.; nat. in N. Amer.—Grown for the shining straw-colored seeds which are fed to birds.

mìnor. Similar to *P. canariensis* but with cylindric-oblong spikes and differing in floral characters. Eu.

stenóptera: *P. tuberosa* var.

tuberòsa var. **stenóptera** (*P. stenoptera*). Per. to 1½ ft. or more, with short vertical or ascending branched rhizomes: lvs. ¼ in. or less broad: panicle spike-like, dense, often lilac. Probably Medit. region.—Sometimes mistakenly written *stenophylla*. It has been sold as "Peruvian winter-grass."

PHARIUM: *Bessera elegans.*

PHASÈOLUS. Bean. *Leguminosæ.* Mostly twining, native in warm regions and extensively grown for the edible seeds and pods: lvs. of 3 lfts. or sometimes reduced to 1: fls. papilionaceous, in axillary racemes or clusters: pods flattened. For cult. of the annual garden beans, see *Bean.*

aconitifòlius. Moth B. Ann., trailing or diffuse, to 2 ft.: lfts. divided into 3–5 narrow lobes: fls. yellow: pods to 2 in. long; seeds oblong, very small. Probably E. Indian.

acutifòlius var. **latifòlius.** Tepary B. Ann., bushy or twining: lfts. ovate, pointed: fls. white or violet: pods to 3 in. long; seeds roundish, ¼ in. or more long. Ariz., Mex.

angulàris. Adzuki B. Ann., bushy, to 2½ ft.: lfts. ovate, abruptly short-pointed, sometimes slightly 3-lobed: fls. bright yellow: pods to 5 in. long; seeds oblong, ¼ in. or less long. Asia.

aùreus. Mung B. Green or Golden Gram. Ann. to 3 ft. and more: lfts. ovate, acuminate: fls. yellow: pods to 4 in. long; seeds globular, small. Probably E. Indian.

calcaràtus. Rice B. Ann., half-climbing: lfts. ovate, pointed: fls. bright yellow: pods to 5 in. long; seeds oblong, ¼ in. or more long. Asia.

Caracálla. Snail-Flower. Corkscrew-Flower. Per., twining to 20 ft.: lfts. ovate, pointed: fls. light purple or yellowish, fragrant, the keel coiled like a snail-shell. Tropics.

coccíneus (*P. multiflorus*). Multiflora B. Scarlet Runner. Per. but grown as ann., tall-twining: lfts. broadly ovate: fls. bright scarlet, large: pods to 1 ft. long; seeds broad, to 1 in. long. Trop. Amer. Var. **álbus,** White Dutch Runner, has white fls. Var. **albonànus** is a bushy form with white seeds and var. **rubronànus** is erect and has red fls.

liménsis (*P. lunatus* var. *macrocarpus*). Lima B. Per. but grown as ann., high-climbing: lfts. ovate, long-pointed: fls. white or yellowish: pods with thick margins, to 5 in. long; seeds flat, ½ in. and more long. Trop. Amer. Var. **limenànus,** Bush or Dwarf Lima, is a bushy form.

lunàtus. Sieva B. Civet B. Ann., climbing: lfts. broadly ovate, long-pointed: fls. white or yellowish: pods to 3½ in. long, seeds flat and thin, ½ in. long. Trop. Amer. Var. **lunonànus,** Dwarf Sieva B., is a bush form. Var. **salícis,** Willow-leaf B., has narrowly lanceolate lvs.

Métcalfei (*P. retusus*). Metcalfe B. Per. with fleshy roots: lfts. oblong, obtuse: fls. reddish-purple: pods to 2½ in. long; seeds circular, about ½ in. long. New Mex., Ariz., Mex.

multiflòrus: *P. coccineus.*

Múngo. Urd. Black Gram. Ann., spreading, to 3 ft.: lfts. ovate, acuminate: fls. yellow: pods to 2 in. long; seeds oblong, small. Probably E. Indian. Var. **radiàtus** (*P. radiatus*), sts. and pods with silky reddish pubescence.

nànus: perhaps *P. vulgaris* var. *humilis*, but identity uncertain.

radiàtus: *P. Mungo* var.

retùsus: *P. Metcalfei.*

trílobus. Ann. or per., trailing to 2 ft.: lfts. ovate, lobed: fls. minute: pods 2 in. long. Old World tropics.

trinérvius. Per., twining· lfts., ovate, often lobed: fls. yellow or reddish: pods to 2½ in. long. Malaya.—Grown as cover-crop in tropics.

violàceus (*Dolichos violaceus*). Ann. to 3 ft.: lfts. ovate-lanceolate, acute, usually glabrous: fls. 2–3, wings violet, standard and keel white, calyx glabrous. Ethiopia.

vulgàris. Kidney B. Haricot. Ann., tall-twining: lfts. ovate, long-acuminate: fls. white, yellowish or violet-purple: pods to 8 in. long; seeds oblong or globular, about ½ in. long. Probably American. Var. **hùmilis,** Bush B., is a low non-climbing form; the common garden and field bean.

PHEASANTS-EYE: *Adonis.*

PHEBÀLIUM. *Rutaceæ.* Shrubs with alternate simple lvs. and small white or yellow fls. usually in corymbs; native in Australia and New Zeal. and adapted to cult. in Calif.

argénteum. Lvs. lanceolate, to 4 in. long, entire: infl. densely covered with silvery scales. W. Australia.

PHEGOPTERIS: see *Dryopteris* and *Athyrium.*

PHELLODÉNDRON. Cork-Tree. *Rutaceæ.* Trees from E. Asia with the aspect of Juglans, diœcious, bearing opposite pinnate lvs., small greenish fls. in terminal panicles or corymbs and black berry-like frs.; grown for ornament.

Cork-trees are hardy in the North and adapted to most soils. Propagated by seeds, cuttings over heat, and root-cuttings stored over winter in moist sand or sphagnum.

amurénse. To 50 ft., with corky bark: lfts. 5–13, glabrous and glaucous beneath. China, Japan.

chinénse. To 30 ft.: lfts. 7–13, pubescent beneath. China. Var. **glabriúsculum** is pubescent only on veins.

japónicum. To 30 ft.: lfts. 9–13, pubescent beneath. Japan.

sachalinénse. To 50 ft.: lfts. 7–11, glabrous beneath. Japan, Korea, China.

PHELLÓPTERUS. *Umbelliferæ.* Per. herbs with fleshy roots and subterranean sts., related to Levisticum, bearing at the surface of the ground a cluster of pinnate lvs. and white or purplish fls. on naked peduncles; native in W. N. Amer.

macrorhìzus. To 8 in., glaucous, roots to 2 in. diam.: lvs. to 3 in. long, of many ovate lfts.: fls. pinkish, in open umbels: fr. ⅙ in. long. N. E. Tex.

PHELLOSPÉRMA. *Cactaceæ.* Small cactus characterized by the large corky base of the seed. See *Cacti.* **P. tetrancístra** (*Mammillaria tetrancistra. M. Phellosperma*). Solitary or cespitose, globular or becoming cylindric and 1 ft. long, root long and often thick; tubercles terete and axils naked; radials numerous and needle-like; centrals 1–4: fls. purple, about 1½ in. long, S. Utah and Nev., W. Ariz., S. Calif., Lower Calif.

PHENOMENAL BERRY: *Rubus loganobaccus.*

PHILADÉLPHUS. Mock-Orange. *Saxifragaceæ.* Popular floriferous shrubs, mostly erect but with curving or drooping branches, with simple commonly deciduous opposite lvs. and white fls., often very fragrant, solitary or in small clusters or racemes; a confused genus of wide distribution in Asia, Eu., U. S. and Mex., and many cultigens. Sometimes called Syringa but this name belongs to the lilac.

The mock-oranges commonly bloom in late spring. They are well adapted to shrubberies. If pruning is needed it should be after flowering, since the blossoms appear from wood of the previous year. They are propagated by seeds, layers, suckers and cuttings, the latter usually of mature wood. Well-marked varieties are grown from cuttings of soft wood in summer in frames.

argénteus. Low spreading shrub, older branches with exfoliating bark: lvs. elliptic to ovate, to ⅝ in. long, entire, white-silky beneath, strigose above, coriaceous, almost sessile: fls. white, in leafy panicles, sepals white-silky without, tomentose within, petals obtuse to retuse. Ft. Huachuca, Ariz.

aùreus: *P. coronarius* var.

Billiárdii: *P. insignis.*

brachýbotrys: *P. pekinensis* var.

califórnicus. To 10 ft.: lvs. ovate, to 3 in. long, mostly glabrous beneath: fls. 1 in. across, fragrant, in panicles, calyx glabrous. Calif.

columbiànus: *P. Gordonianus* var.

cordifòlius. To 6 ft.: lvs. ovate, to 4 in. long, nearly glabrous beneath: fls. to 1½ in. across, in panicles, calyx glabrous. Calif.

coronàrius. To 10 ft.: lvs. ovate to ovate-oblong, to 3 in. long, hairy only on veins beneath: fls. to 1½ in. across, very fragrant, creamy, in 5–7-fld. racemes, calyx usually glabrous. Eu., S. W. Asia. There are many hort. vars. such as: **aùreus** (var. *foliis aureis*), lvs. yellow; **deutziæflòrus,** double with narrow petals; **dianthiflòrus,** double; **dùplex** (var. *flore-pleno*), double or partially so, dwarf; **multiflòrus plènus,** fls. double; **nànus** is var. *pumilus*; **primulæflòrus,** double with broad petals; **pùmilus** (var. *nanus*), dwarf; **rosæflòrus,** double; **salicifòlius,** lvs. lanceolate; **speciosíssimus** (*P. speciosissimus*) is lower than the species and has smaller lvs.; **variegàtus,** lvs. bordered with creamy-white.

Còulteri. To 10 ft.: lvs. ovate to ovate-oblong, to 2 in. long, white-tomentose beneath: fls. about 1 in. across, with red spot at base of petals, solitary, calyx white-tomentose. Mex.

cymòsus. Hybrid between *P. Lemoinei* and probably *P. grandiflorus:* lvs. elliptic-oblong, to 4 in. long, pubescent beneath: fls. 2 in. or more across, often double, in 3–9-fld. cymes or racemes, calyx glabrous. Hort. names belonging here are Bannière, Conquête, Mer de Glace, Norma, Perle Blanche, Rosace.

Delavàyi. To 15 ft.: lvs. ovate-oblong, to 4 in. long, grayish-tomentose beneath: fls. 1½ in. across, very fragrant, in 5–13-fld. racemes, calyx glabrous and purple. W. China.

dianthiflòrus: *P. coronarius* var.

Fálconeri. Hybrid between *P. coronarius* and probably *P. laxus:* lvs. ovate-lanceolate, to 3 in. long, nearly glabrous beneath: fls. 1 in. across, fragrant, in 3–7-fld. racemes, petals oblong, acute.

floribúndus. Hybrid between *P. coronarius* and probably *P. Gordonianus:* lvs. ovate, to 4 in. long, pubescent beneath: fls. 1½ in. across, slightly fragrant.

flóridus. Resembling *P. grandiflorus* but with lvs. pubescent beneath and calyx and pedicels densely pubescent. N. C., Ga.

gloriòsus: *P. grandiflorus.*

Gordoniànus (*P. Lewisii* of cult.). To 12 ft.: lvs. ovate to elliptic-oblong, to 3 in. long, pubescent beneath: fls. about 2 in. across, fragrant, in 7–11-fld. racemes, calyx slightly pubescent. B. C. to N. Calif. Var. **columbiànus** (*P. columbianus*) is smaller throughout.

grandiflòrus (*P. inodorus* var. *grandiflorus. P. gloriosus*). To 10 ft.: lvs. elliptic-ovate, to 5 in. long, nearly glabrous beneath: fls. 2 in. across, 1–3 together, calyx glabrous. N. C. to Fla. and Ala.

hirsùtus. To 8 ft.: lvs. ovate, to 3 in. long, densely grayish-pubescent beneath: fls. 1 in. across, creamy, usually in 3's, calyx pubescent. N. C. to Ga. and Ala.

incànus. To 10 ft. or more: lvs. ovate to oblong-ovate, to 3 in. long, densely gray-pubescent beneath: fls. 1 in. across, in 5–7-fld. racemes, calyx densely tomentose. W. China. Var. **Sargentiànus** is listed.

inodòrus. To 10 ft.: lvs. ovate, to 4 in. long, glabrous beneath except on veins, usually entire: fls. 2 in. across, 1–3 together, calyx glabrous. N. C. to Ga. and Miss.

insígnis (*P. Billiardii*). To 20 ft.: lvs. ovate, to 2¾ in. long, entire or toothed, smooth above, grayish-pubescent beneath: fls. white, to 1¼ in. across, slightly fragrant, in 15–30-fld. leafy panicles. A late-flowering hort. hybrid of *P. pubescens* and *P. cordifolius* or *P. californicus.*

Karwinskyànus. Tall shrub with long scandent branches: lvs. narrow-ovate, to 2½ in. long, hairy beneath: fls. about 1 in. across, in 5–13-fld. panicles, calyx hairy. Mex.—See *P. mexicanus.*

Keteleèri. Shrub with slender sts. to 8 ft. or more: lvs. oval, acuminate, scabrous beneath, nerves pubescent: fls. white, semi-double or double, fragrant, petals ovate-acute. Probably of hort. origin.

latifòlius: *P. pubescens.*

láxus (*P. speciosus*). To 4 ft.: lvs. drooping, elliptic-ovate to oblong-lanceolate, to 3 in. long, slightly hairy beneath: fls. to 1½ in. across, 1–3 together, calyx glabrous. Ga.

Lemòinei. Hybrid between *P. microphyllus* and *P. coronarius:* lvs. ovate to ovate-lanceolate, to 2 in. long, slightly hairy beneath: fls. 1½ in. across, very fragrant, in 3–7-fld. racemes. Some of the hort. forms are Avalanche, Boule d'Argent, Candelabra, Erectus, Manteau d'Hermine, Mont Blanc. Var. **purpùreo-maculàtus** is *P. purpureo-maculatus.*

Lèwisii: of cult is *P. Gordonianus*, true *P. Lewisii* of N. W. U. S. differs in lvs. glabrous or nearly so and is not known to be in general cult.

Mágdalenæ. To 12 ft.: lvs. ovate, to 3 in. long, rough-pubescent beneath: fls. 1 in. across, in 7–11-fld. racemes, calyx pubescent. China.

máximus. Hybrid between *P. tomentosus* and *P. pubescens:* lvs. beneath and calyx tomentose.

mexicànus. To 15 ft. or more, with long scandent branches: lvs. ovate to lanceolate, to 3 in. long, slightly hairy beneath: fls. to 1½ in. across, fragrant, creamy, 1–3 together, calyx hairy. Mex.—The material commonly cult. under this name is *P. Karwinskyanus.*

microphýllus. To 4 ft.: lvs. oblong, to 1¼ in. long, entire, hairy beneath: fls. 1 in. across, very fragrant, usually solitary, calyx nearly glabrous. Colo. to New Mex. and Ariz.

nepalénsis. To 6 ft.: lvs. ovate-oblong, to 4 in. long, glabrous except in axils of veins beneath: fls. 1½ in. across, pure white, in 5-fld. racemes, calyx glabrous. Himalayas.

nivàlis. Hybrid between *P. pubescens* and *P. coronarius:* lvs. ovate, slightly pubescent beneath: fls. 1½ in. across, in 5–8-fld. racemes, calyx hairy.

pekinénsis. To 6 ft.: lvs. oblong-ovate, to 3 in. long, glabrous except in axils of veins beneath, petioles purplish: fls. about 1 in. across, creamy, slightly fragrant, in 5–9-fld. racemes, calyx glabrous. N. China to Korea. Var. **brachýbotrys** (*P. brachybotrys*) has short dense racemes and green petioles.

polyánthus. Hybrid between *P. Lemoinei* and probably *P. insignis:* lvs. ovate, 1 in. long, usually entire, hairy beneath: fls. 1½ in. across, in cymes or racemes, calyx pubescent. Some of the hort. forms are Favorite, Gerbe de Neige, Pavillon Blanc.

pubéscens (*P. latifolius*). To 10 ft.: lvs. ovate, to 4 in. long, gray-pubescent beneath: fls. 1½ in. across, in 5–9-fld. racemes, calyx pubescent. Tenn. to Ala. and Ark.

purpuráscens. To 12 ft.: lvs. elliptic- to lanceolate-ovate, to 2 in. long, pubescent beneath: fls. 1 in. across, pure white with purple glabrous calyx, very fragrant, in 5–9-fld. racemes. China.

purpùreo-maculàtus. Hybrid between *P. Lemoinei* and *P. Coulteri:* lvs. ovate, to 2 in. long, hairy beneath: fls. about 1 in. across, with purple spot at base of petals, 1–3 together, calyx slightly pubescent. Some of the hort. forms are Fantasie, Nuage Rose, Ophelia, Romeo, Surprise, Sybille.

pyramidàlis: listed name.

satsumànus. To 8 ft.: lvs. ovate to ovate-lanceolate, to 3 in. long, hairy only in axils beneath: fls. 1 in. across, somewhat fragrant, in 5–9-fld. racemes, calyx nearly glabrous. Japan.

Schrénkii. To 6 ft. and more: lvs. ovate to oblong-lanceolate, to 5 in. long, hairy only on veins beneath: fls. 1½ in. across, in 5–7-fld. racemes, calyx hairy on nerves. Manchuria to Korea.

sempérvirens: name sometimes applied to *P. mexicanus.*

sericánthus. To 12 ft.: lvs. ovate, to 4 in. long, hairy on veins beneath, the petiole often reddish: fls. 1 in. across, in 5–9-fld. racemes, calyx pubescent. China.

speciosíssimus: *P. coronarius* var.

speciòsus: *P. laxus.*

spléndens. Hybrid between *P. grandiflorus* and probably *P. Gordonianus:* lvs. nearly glabrous: fls. 2 in. across, in 5–fld. racemes, calyx glabrous.

subcànus. To 10 ft.: lvs. oblong-ovate, to 5 in. long, pubescent on veins beneath: fls. 1 in. across, in 5–9-fld. racemes, calyx densely pubescent. China. Var. **Wílsonii** (*P. Wilsonii*) is larger.

tomentòsus. To 10 ft.: lvs. ovate, to 3 in. long, grayish-pubescent beneath: fls. 1 in. across, fragrant, in 5–7-fld. racemes, calyx nearly glabrous. Himalayas.

verrucòsus. To 10 ft.: lvs. ovate, to 4 in. long, pubescent beneath: fls. 1 in. across, in 5–7-fld. racemes, calyx pubescent. Origin uncertain.—Some of the material under this name may be *P. nivalis.*

virginàlis. Hybrid between *P. Lemoinei* and probably *P. nivalis:* lvs. ovate, to 3 in. long, pubescent beneath: fls. double or partially so, in 3–7-fld. racemes, calyx pubescent. Some hort. forms are Albâtre, Argentine, Bouquet Blanc, Fleur de Neige, Girandole, Glacier, Virginal.

Wílsonii: *P. subcanus* var.

Zèyheri. Hybrid between *P. coronarius* and *P. inodorus* or *P. grandiflorus:* lvs. ovate, to 4 in. long, hairy only on veins beneath: fls. 2 in. across, in 3–5-fld. racemes, calyx glabrous.

PHILÈSIA. *Liliaceæ.* Evergreen shrub about 3 ft. high, native from Chile to Magellan. **P. magellánica** (*P. buxifolia*). Lvs. alternate, narrow-oblong, about 1½ in. long, glaucous beneath: fls. rosy-red, 2 in. long, nodding: fr. a berry.—It thrives in cool temperatures and partially shaded situations and requires peaty soil; sometimes grown under glass. Propagated by cuttings of ripened wood which are slow in rooting.

PHILIBERTELLA: *Philibertia clausa.*

PHILIBÉRTIA. *Asclepiadaceæ.* Twining or scrambling herbs and subshrubs native from Tex. to Argentina, with opposite lvs., wheel- or bell-shaped fls. in umbels, and long slender frs.; grown in the open S., or under glass in a soil composed of loam, peat and sand. Propagated by cuttings over bottom heat.

claùsa (*Philibertella clausa. Funastrum clausa*). Lvs. evergreen, ovate- or lanceolate-oblong, to 3 in. long: fls. white, ½ in. across, fragrant, in summer, Fla.

PHILLÝREA. *Oleaceæ.* Evergreen small trees and shrubs native in the Medit. region, with opposite lvs., small white diœcious fls. in racemes in spring, and fr. a black 1-seeded drupe; grown in mild and warm climates for ornament. Propagated by seeds, cuttings of half-ripe wood under glass, by layers, and by grafting on the privet.

angustifòlia. To 15 ft.: lvs. oblong- or linear-lanceolate, to 2 in. long, commonly entire: fr. ¼ in. long. S. Eu., N. Afr.

decòra (*P. Vilmoriniana*). To 10 ft.: lvs. oblong to oblong-lanceolate, to 5 in. long, commonly entire, shining above: fr. ½ in. long. W. Asia.

latifòlia. To 30 ft.: lvs. ovate, to 2 in. long, toothed, shining above: fr. ¼ in. long. S. Eu., Asia Minor. Var. **mèdia** (*P. media*) is lower with smaller lvs. entire or wavy-toothed. Var. **spinòsa** has spiny-toothed lvs.

mèdia: *P. latifolia* var.

Vilmoriniàna: *P. decora.*

PHILODÉNDRON. *Araceæ.* More or less woody climbers in trop. Amer., bearing thick lvs. which are entire or pinnately cut, sheathing petioles, and unisexual fls. on erect spadices slightly shorter than the fleshy spathes which are white, yellow or red.

Philodendrons are grown as foliage plants in the greenhouse and in the open in frostless countries, where they should be given supports on which to climb and abundant moisture. Propagated by division of the stems.

acuminatíssimum. Lvs. arrow-shaped, the linear-oblong posterior obtuse lobes slightly twisted upwards, the anterior acuminate lobe to 1 ft. long: spathes to 3½ in. long. Ecuador.

Andreànum. Lvs. oblong-arrow-shaped, to 3 ft. long and 10 in. wide, shining green suffused with yellow. Colombia.

argyrèum Sanderiànum: hort. name.

asperàtum (*P. imperiale*). Lvs. cordate-ovate, to 1½ ft. long and 1 ft. wide: spathes to 5 in. long, reddish outside, pale yellowish-white inside. Brazil.

bipinnatífidum. Sts. erect: lvs. 2-pinnate into linear or oblong segms., the terminal segm. 3–5-lobed: spathes about 8 in. long, purple outside and whitish inside. S. Brazil.

Cárderi: *P. verrucosum.*

cordàtum. Lvs. cordate-oblong, to 16 in. long and 6 in. wide, the posterior lobes to 4 in. long: spathes to 3 in. long. Brazil.

Corsoniànum. A hybrid having lvs. to 2½ ft. long and to 1½ ft. across, shortly pinnatifid, dark green above and purplish-green beneath with distinct green veins: spathe tube purple-crimson spotted with light green, limb red spotted on outside. Hort. origin.

Devansayeànum. Lvs. ovate-cordate, to 2 ft. long and broad, long-acuminate, red when young: spathes to 6 in. long, margined with red, the tube white. Peru.

dùbium: a listed name of unknown botanical standing.

elegantíssimum: hort. name.

erubéscens. Lvs. ovate-triangular, to 10 in. long and 5 in. wide: spathes to 6 in. long, dark purple. Colombia.

fimbriàtum: listed name of unknown botanical standing.

gigantèum. Lvs. broadly cordate-ovate, to 3 ft. long and 2 ft. wide: spathes to 10 in. long, the limb pale green and tube purplish outside and red within. W. Indies.

gloriòsum. Lvs. cordate-ovate, to 10 in. long and 8 in. wide, reddish on margins and pale green on nerves and beneath, petioles marked with white. Colombia.

grandifòlium. Lvs. arrow-shaped, to 2 ft. long and 14 in. wide: spathes to 4 in. long, pale greenish-yellow outside and yellowish-white inside. Venezuela, Guiana.

imperiàle: *P. asperatum.*

lácerum. Lvs. with petioles to 14 in. long and much dissected blades to 12 in. long, lobes of lvs. oblong, obtuse or acute: spathe slender, to 5 in. long, tube purple, limb yellowish, spadix to 1½ in. long. Cuba.

Líndenii: *P. verrucosum.*

Màmei. Lvs. cordate-ovate, to 10 in. long and 6 in. wide, deep green above irregularly spotted with silvery-white, petioles pinkish. Ecuador.

mìcans. Lvs. oblong-lanceolate to ovate-lanceolate, to 3 in. long, base cordate, variegated red and green, petiole to 3 in. long, reddish: fls. not known. Cent. Amer.

pertùsum: *Monstera deliciosa.*

scándens. Vine: lvs. to 10 in. long, cordate, with petiole to 4 in. long; juvenile lvs. reddish, mature lvs. green, usually with 5–6 pairs of prominent veins. Puerto Rico.

Sellòum. Lvs. 2-pinnate into oblong lobes, the terminal segm. 3-lobed: spathes to 1 ft. long, white inside. Brazil, Paraguay.

speciòsum. With tall woody st.: lvs. simple, sagittate, petiole about twice as long as blade: spathes somewhat fleshy, green with purple edges, spadix shorter than spathe. Brazil.

spectábile. A name of uncertain botanical standing, said to have silky or velvety-green lvs. about 15 in. long.

trifoliàtum: listed name of uncertain botanical standing.

tripartìtum. Lvs. 3-parted, to 10 in. long and 3 in. wide, yellowish-green: spathes to 4 in. long, whitish. Trop Amer.

verrucòsum (*P. Carderi. P. Lindenii*). Lvs. ovate-cordate, to 8 in. long and 6 in. wide, shining green above with paler lines and sunken nerves, lined with salmon-violet beneath, the petioles deep red and armed with bristles: spathes purplish. Costa Rica, Colombia.

Wállisii. Lvs. broadly ovate-cordate, to 1½ ft. long and 1 ft. wide, deep green above: spathes to 5 in. long, brownish-green. Colombia.

PHILOTRIA: *Anacharis canadensis.*

PHLEBODIUM: *Polypodium.*

PHLÈUM. *Gramineæ.* Grasses with flat lvs. and spikelets in dense terminal spikes; native in temp. regions of the world and one valuable for pasture and hay; mostly per. See *Grasses.*

praténse. TIMOTHY. HERDS-GRASS. To 5 ft.: lvs. to 1 ft. long and ¼ in. wide: spikes to 8 in. long, cylindrical, awned. Eu., Asia; nat. in N. Amer.—An abundant meadow grass.

PHLÒMIS. *Labiatæ.* Per. herbs or low shrubs with opposite lvs. and purple, yellow or white, 2-lipped fls. in axillary whorls subtended by hairy bracts, the upper lip densely hairy.

These are rather coarse plants suitable for the wild-garden and rear plantings. Propagated by seeds, cuttings, division, and *P. tuberosa* by underground tubers.

alpìna. Per. to 1½ ft., sts. square: lvs. cordate, lower to 8 in. long and 6 in. across: fls. purplish, in 20–30-fld. whorls, the bracts subulate. Siberia.

cashmeriàna. Per. to 3 ft., densely white-woolly, sts. cylindrical: lvs. leathery, linear-oblong, to 9 in. long: fls. pale purple, in whorls to 1½ in. across, the bracts subulate. Himalayas.

ferrugínea: the plant cult. under this name is *P. fruticosa.*

fruticòsa. JERUSALEM-SAGE. Erect more or less woody herb or shrub to 4 ft., densely white- or yellow-woolly: lvs. ovate or oblong, to 4 in. long, very rugose: fls. yellow, in 20–30-fld. whorls, the bracts ovate. S. Eu.

lanàta. Shrub, the sts. square, densely yellow-woolly: lvs. ovate, 1 in. or less long, wrinkled: fls. yellow, in 6–8-fld. whorls, the bracts ovate-lanceolate. Italy.

Lychnìtis. LAMPWICK PLANT. Shrubby, to 1½ ft., densely tomentose: lvs. oblong-linear, to 3 in. long, clasping, the floral lvs. dilated at base: fls. yellow, in 6–10-fld. whorls, the bracts subulate. S. Eu.

púngens. Per. to 2 ft.: lvs. ovate-lanceolate, shining above, tomentose beneath: fls. purplish-violet, in 6–10-fld. whorls, bracts subulate. S. E. Eu.

Russeliàna: *P. viscosa.*

sàmia. Per. to 3 ft., pubescent: lvs. ovate-oblong, wrinkled, tomentose beneath: fls. purple, in 10–15-fld. whorls, the bracts subulate. Greece.

spectábilis. To 6 ft., sts. cylindrical, tomentose: lvs. ovate-cordate, to 1 ft. across, on long petioles: fls. rose-purple, in many-fld. whorls to 2 in. across, the bracts thread-like. Himalayas.

tomentòsa: the plant grown under this name is *P. fruticosa.*

tuberòsa. Per. to 6 ft., nearly glabrous, with square sts. and tuber-like roots: lvs. cordate-ovate, to 8 in. long: fls. purple, in 30–40-fld. whorls, the bracts subulate. S. Eu., Asia.

viscòsa (*P. Russeliana*). Shrubby, pubescent, viscid above: lvs. ovate to oblong-lanceolate, to 4 in. long, tomentose beneath: fls. yellow, in many-fld. whorls, the bracts subulate. Asia Minor.

PHLÓX. *Polemoniaceæ.* Many ann. and per. herbs with mostly opposite entire lvs. and bright-colored salverform fls. in shades of blue, purple, pink, crimson and white, borne in cymes or panicles; popular flower-garden subjects yielding many garden forms.

The annual phloxes are of easy culture in any garden soil but will bloom longer if given abundant moisture and plant-food. Seeds should be sown in early spring or sometimes started in boxes and transplanted. The perennial summer phloxes require fertile soil and plenty of water and should be set 2–3 feet apart. Clumps will bloom for three or four years and should then be divided. Propagated by side shoots. Seeds do not reproduce the type, and named or special forms are multiplied from the strong young shoots that arise from the crown or root as the plant spreads, and clumps may be divided. Most of the phloxes are hardy North.

aculeàta. Cespitose depressed per.: lvs. subulate, ½–1 in. long: fls. pink to white, small, the calyx viscid-pubescent. Ida.—This, like most of the other dwarf species here listed, blooms in early spring.

adsúrgens. Per., with creeping shoots, sending up flowering sts. to 1 ft.: lvs. elliptic or ovate upward, to 1¼ in. long, glossy, evergreen: fls. rose to salmon-pink with white center, to 1 in. across, in cymes, in late spring. Ore., N. Calif.

alyssifòlia. Tufted per. to 4 in.: lvs. linear to oblong, to 1 in. long, margins ciliate and thickened: fls. bluish, to ⅝ in. across, calyx shorter than tube. Sask. to Mont. south to Wyo. and N. W. Neb.

amœ̀na. Per. to 1 ft., decumbent at base: lvs. oblong-lanceolate, to 2 in. long: fls. purple, rarely pink or white, to ¾ in. across, in terminal compact clusters subtended by an involucre of lvs., in spring and early summer. Ky. to Fla.—Rarely cult., the plant grown under this name being *P. procumbens*, which see for hort. vars.

amplifòlia. Per. to 5 ft.: lvs. to 6 in. long, lower ones broad-ovate, scabrous: fls. pale pink, the petals narrower than those of *P. paniculata*, the panicle shorter. Ind. to Ala. and Mo.

andícola. Tiny erect per., spreading by rootstocks: lvs. subulate, ½–1 in. long: fls. white, on short pedicels, about ¾ in. across. N. D. to Colo.

Árendsii. Per. to 2 ft.: lvs. lanceolate-ovate to linear-lanceolate, to 4 in. long: fls. lavender or mauve, 1 in. across, in loose clusters to 6 in. across, in summer. Hybrid between *P. divaricata* and probably *P. paniculata*.

argillàcea: *P. pilosa*.

austràlis: reddish-purple race of summer perennial phlox, *P. paniculata*.

bífida. Sand P. One of the subulate phloxes: low tufted hairy per. with well-separated nodes: lower lvs. mostly 1–2 in. long, awl-like: fls. pale violet to white with violet tube; corolla-lobes notched to nearly or about ⅛ in. deep; stamens partly exserted. S. W. Mich. to Tenn., Ark. and Kans. Var. **álba** has white fls.

Bríttonii: *P. subulata* var.

bryoìdes. Little per. 2 in. or less high, with densely imbricated cobwebby pointed narrow lvs.: fls. solitary, white or lilac, less than ½ in. long. Neb. to Utah.

cærùlea: advertised as a trailing phlox with bright blue fls.: *P. stolonifera* var. *violacea*.

cæspitòsa. Cespitose per. with prostrate sts.: lvs. subulate, ⅓–½ in. long: fls. white to lilac, with corolla exceeding calyx, solitary on numerous branchlets. Mont. to Ore. and Utah.

camlaénsis: listed name.

canadénsis: *P. divaricata*.

carolìna. Thick-leaf P. Per. to 4 ft.: lvs. lanceolate to ovate, thick and scarcely veiny, to 5 in. long: fls. purple varying to rose and white, about ¾ in. across, in panicles, early summer to fall. Ohio to W. Fla.—Early-blooming phases are widely cult. as *P. suffruticosa*, in several hort. forms. A variant listed as *triflora* is reported to represent an early-blooming form.

condensàta. Cespitose per. to 1½ in.: lvs. linear-acute, to ¼ in. long, overlapping, stiff, ciliate: fls. white, to ⅜ in. across, tube much longer than calyx. Colo. Var. **Hénder-sonii** is listed.

costata: same as *P. multiflora*.

Còwardii: listed as bearing crimson blooms most of the summer; hort. race of *P. stolonifera*.

cuspidàta: a name often applied to *P. Drummondii* var. *stellaris*.

decussàta: a name applied to hort. forms of *P. paniculata* and sometimes *P. maculata* or *P. suffruticosa*.

diffùsa. Loosely tufted per. a few in. high: lvs. linear-subulate, about ½ in. long: fls. lilac to white, ½ in. across, solitary on numerous branchlets. B. C. to Calif.

divaricàta (*P. canadensis*). Blue P., or Wild Sweet William. Per. to 1½ ft., with many sterile creeping shoots: lvs. ovate to oblong, to 2 in. long: fls. pale violet-blue to mauve, to 1½ in. across, in open clusters, in spring; corolla-lobes mostly notched or erose. Que. to Fla. and Tex. Color forms are vars. **álba** and **lilácina**. Var. **Láphamii** has entire corolla-lobes and large fls. of rich blue-violet.

Doúglasii. Similar to *P. diffusa*, but herbage glandular. Wash. to W. Mont.

Drúmmondii. Annual or Drummond P. Ann. to 1½ ft.: lvs. ovate to lanceolate, to 3 in. long, the upper alternate: fls. rose-red varying to white, buff, pink, red and purple, 1 in. across, in close clusters. Tex. Color forms are represented by such names as **álba oculàta, atropurpùrea, cærùlea-striàta, cárnea, coccínea, ròsea, violàcea.** Var. **rotundàta** has large broad petals, and is also known as **grandiflòra** and **spléndens.** Var. **stellàris,** Star P., has narrow cuspidate petals which are often cut and fringed. Other varietal names listed are **gigantèa, Isabellìna, Lèopoldii, nàna, Radowítzii.**

fimbriàta: race of *P. Drummondii*.

glabérrima. Smooth P. Per. to 5 ft.: lvs. linear or linear-lanceolate, to 4 in. long: fls. purple, about ¾ in. across, in cymes, in early summer. S. E. Va. to W. Fla., E. Tex. and S. E. Wis.

glabràta (*P. Hoodii* var. *glabrata*): a glabrous-lvd. form of *P. Hoodii*. Wyo. to N. D.

Héntzii: *P. nivalis*.

Hoòdii. Dwarf cespitose per. to 2 in.: lvs. subulate, to ⅓ in. long, woolly: fls. white, ⅓ in. across, solitary. N. W. N. Amer. to W. Neb.—The stock cult. under this name is likely to be *P. diffusa* or other similar species.

Kélseyi. Per., sts. ascending, to 6 in. long, very leafy: lvs. narrowly oblong: fls. lilac, about ¾ in. across, corolla little exceeding calyx. Mont. to E. Ida.

lanceolàta. Shrub to 2 ft.: lvs. few, lanceolate to ovate, thick, glandular: fls. few, lilac. N. Ore. to Wash.

longiflòra: *P. maculata*.

longifòlia. Per., with woody base, sts. to 1 ft., ascending: lvs. linear, 2–3 in. long: fls. lilac to white, corolla about ¾ in. across, in corymbs. N. W. U. S.

maculàta (*P. longiflora*). Per. to 5 ft., with purple-spotted st.: lvs. lanceolate, to 5 in. long: fls. pink or purple, rarely pink or white, ½ in. across, in elongated panicles in summer. Conn. to N. C. and Ia.—Rarely cult., the plant so named usually being a form of *P. suffruticosa*.

missouliénsis: a large-lvd. form of *P. Douglasii*, from Missoula, Mont.

multiflòra. Per. forming mats to 4 in. high: lvs. linear, to 1 in. long, nearly glabrous: fls. lilac to white, ¾ in. across, solitary on numerous branchlets. Mont. to Colo.

muscoìdes. Canescent moss-like prostrate per., 1 in. high: fls. solitary, small, white. Wyo. and adjacent states.

nàna. Per. to 1 ft.: lvs. linear, to 2 in. long, viscid: fls. rose to white, 1½ in. across, in few-fld. corymbs. Tex. to New Mex. and Mex.

nivàlis. Trailing P. One of the subulate phloxes: hairy per. to 6 in.: lvs. awl-shaped, ¾ in. long: fls. pink or white, nearly 1 in. across, in spring; corolla-lobes entire or erose, or only shallowly notched if at all. Va. to Fla. Var. **álba** has white fls. Var. **sylvéstris** is listed as having rose-pink fls. to 1¼ in. across. Var. **elegantíssima** is listed.—Has been confused with *P. subulata*, and comprises several supposed vars. of that species as *Hentzii* and *setacea*.

occidentàlis: *P. speciosa*.

ovàta. Per. to 2 ft.: lvs. ovate to oblong-lanceolate, to 2 in. long: fls. purple or sometimes pink, 1 in. across, in small clusters, in summer. Pa. to Ala. Var. **púlchra** is listed as having pastel-pink fls.

paniculàta. Summer Perennial P. Per. to 4 ft.: lvs. oblong-lanceolate to oval, thin and veiny, to 5 in. long: fls. pink-purple but varying into many colors as white, salmon, scarlet, lilac, purple, 1 in. across, in large panicles in summer and early autumn. N. Y. to Ga. and Ark. Var. **Sièboldii,** orange-scarlet.—In many hort. forms it constitutes the common per. summer-blooming phlox of gardens.

pátula. Shrubby, sts. spreading, to 10 in. long: lvs. linear, to 1½ in. long and ⅛ in. wide: fls. to ¾ in. across, few or solitary, calyx subglabrous, to ½ in. long, deeply cleft. Mont. to Colo.

pilòsa (*P. argillacea*). Hairy per. to 1½ ft.: lvs. linear to lanceolate, to 3 in. long: fls. purple, varying to pink, violet and white, to ¾ in. across, in small clusters, in spring and early summer. Ont. to Fla. and Tex. Var. **álba,** fls. white. Var. **spléndens,** fls. lilac-rose, in masses.

planitiàrum: same as *P. andicola*.

procúmbens (*P. verna*). Supposed hybrid between *P. stolonifera* and *P. subulata*, often grown as *P. amœna:* per. to 1 ft., decumbent at base: lvs. oblong to spatulate, to 2 in. long: fls. bright purple, to ¾ in. across, in spring.

Var. **cærùlea,** described as having soft blue fls. is *P. stolonifera* var. *violacea.* Var. **ròsea,** said to have rose-pink fls. Var. **variegàta** is listed.

Radowítzii: hort. name for an improved strain of *P. Drummondii.*

réptans: *P. stolonifera.*

rígida. Differs from *P. Douglasii* in having narrower sharp-pointed lvs. with revolute margins. W. Mont. to Wash.

scleranthifòlia. Sts. depressed: lvs. filiform to subulate, to ½ in. long, spine-tipped, glabrous: fls. white, subsessile. S. D. to Ida.

setàcea: see *P. nivalis.*

speciòsa (*P. occidentalis*). Shrub with herbaceous flowering shoots, 2 (rarely 4) ft.: lvs. linear to lanceolate, to 2½ in. long: fls. rose to lilac, to 1 in. across, in corymbs, spring. Calif. to W. Mont. and B. C.

Stánsburyi. Small per. with woody base, 4 in.–1 ft. high, glandular: lvs. very narrow, thick: fls. pink or rose, calyx-teeth subulate, corolla-tube about 1 in. long. E. Calif. to S. New Mex.

Stellària. Per. to 8 in.: lvs. linear or linear-lanceolate, to 2 in. long: fls. pale violet-blue or nearly white, ¾ in. across. Var. **lilácina** is listed as a color form.—The plant cult. under this name is apparently a hybrid between *P. bifida* and *P. subulata.*

stellàris: *P. Drummondii* var.

stolonífera (*P. reptans*). Hairy per. to 1 ft., with long creeping sterile shoots: lvs. obovate to lanceolate, to 3 in. long: fls. purple or violet, 1 in. across, in cymes, in spring and early summer. Pa. to Ga. Var. **violàcea,** fls. violet.

subulàta. Ground- or Moss-Pink. Per. forming mats, to 6 in.: lvs. crowded, awl-shaped, ½ in. long, evergreen: fls. bright purple, varying to pink and white, ¾ in. across, in spring; corolla-lobes shallowly notched. N. Y. to N. C. Var. **Bríttonii** (*P. Brittonii*). Fls. lavender-white. Appalachians, Potomac Valley. Var. **Nélsonii** has white fls. with rose centers and is of compact habit. Hort. names listed as subordinate to *P. subulata* are vars. **álba, atrolilácina, atropurpùrea, atroviolàcea, austràlis, cærùlea, cæruléscens, frondòsa, lilácina, màjor, Mòerheimii, ròsea, rùbra, violàcea, Wílsonii.**—Some of the hort. kinds named under this species belong to *P. nivalis.*

suffruticòsa. Phloxes bearing this name are early-blooming phases of *P. carolina,* which is the tenable name.

sylvéstris: hort. name, probably for plant listed as *P. nivalis* var.

vérna: *P. procumbens.*

víscida. Tufted per. 6–8 in., viscid-glandular throughout: lvs. linear, about 1½ in. long: fls. few, about ¾ in. across, lilac. E. Ore.

PHLOX, NIGHT-: *Zaluzianskya capensis.* Prickly: *Gilia californica.*

PHŒBE. *Lauraceæ.* Trop. trees and shrubs with alternate leathery lvs., small fls. and fr. a berry; one species rarely cult. in S. Calif.

Nánmu (*Persea Nanmu*). Tree: lvs. oblanceolate, to 6 in. long and 2 in. wide: fls. in terminal corymbs about length of lvs., the perianth silky-pubescent. China.

PHŒNICOPHORIUM: *Stevensonia.*

PHŒNIX. *Palmaceæ.* Perhaps a dozen species of diœcious feather-palms in Afr. and Asia, unarmed except for the stiff spine-like basal pinnæ on the lvs., often sprouting or suckering at the base: trunk, if evident, covered with the bases of old petioles, at least toward the top: pinnæ induplicate in vernation, narrow, long-pointed, without midrib but with a nerve either side the sharp fold or ridge, sometimes fascicled on the rachis: spadices among the lvs.; spathe 1- or 2-valved, narrow and relatively small, more or less persistent, the peduncle of the pistillate spadix often greatly elongating; fls. small, yellowish, borne on the angles or curves of many slender often long branches; stamens 6: fr. an oblong or nearly globular drupe with a single grooved seed.—It is very difficult to make out the identity of many of the planted trees of phœnix, for some of the surest characters of separation are in staminate fls. and frs. which are usually not to be had together; as these palms are diœcious, one may have only the male or female tree; the conditions seem to be favorable for hybridization although this subject has received little careful attention.

All the species are native in the eastern hemisphere and it is not known how or when the stock of the ornamental kinds reached this country, or what its particular origin may have been. There is also much natural variation in some of the species. Because of the confusion in the cult. phœnices it has seemed advisable to place rather full descriptions here as aids in identification. For cult. see *Date* and *Palm.*

acaùlis. Apparently stemless, the trunk represented by an ovoid bulbiform caudex 1 ft. or less in diam. that rises little above the ground: lvs. to 6 ft., somewhat glaucous; pinnæ rather limp, to 20 in. long, with strong marginal nerves, nearly opposite and interruptedly fascicled; petiole with many stout spines: spadix 1 ft. or less long, peduncle very short or none, the 1-valved spathe that splits down the side arising at surface of ground or beneath; fruiting peduncle remaining very short, often not evident: fr. elliptic-oblong, about ½ in. long, red to blue-black, edible, the clusters sometimes half in the ground. N. and Cent. Bengal.—It is a question whether this species is in cult. with us; not all acaulescent phœnices belong here.

canariénsis (*P. Jubæ. P. tenuis*). Strong tree to 50 and 60 ft. over all and more, with solitary straight trunk, the upper crown of foliage and the entire top in young plants strongly ascending but the lower lvs. hanging with age, the top becoming very large and broad, petioles and spines yellowish: lvs. 15–20 ft. long; pinnæ very many, light green, long-pointed, standing in different planes, the lower ones of which are long stout spines and those at the base fascicled or irregularly placed as well sometimes as some of those above the spines: peduncle of fruiting clusters elongating often to several ft. and drooping: fr. ellipsoid or globose-ovoid, 1 in. or less long, with a pulpy exterior, yellow and varying to reddish. Canary Isls., and now widely spread as a cult. plant; variable.—Trees grown in this country as *P. cycadifolia, P. leonensis* and *P. leonensis speciosa* belong here, although the *leonensis* of old hort. literature is supposed to be *P. reclinata,* and *cycadifolia* is accounted a form of *P. dactylifera.* One of the hardiest palms, thriving in Cent. Calif., middle and N. Fla., and upper Gulf Coast, making striking massive specimens on fertile moist soils.

cycadifòlia: see *P. canariensis;* a name apparently applied to different palms.

dactylífera. Date. Tree to 100 ft. and more with slender trunk for the greater heights, suckering at base, upper part of crown with erect-ascending foliage and lower part with down-curving or declined foliage: lvs. grayish-glaucous, sometimes bluish; pinnæ 18 in. or less long, narrow and stiff, sharp-pointed, distichous: fr. cylindrical or long-oblong, 1–3 in. long, with thick very sweet flesh much prized for food; fruiting peduncle very much developed and elongated, flattened, yellowish or reddish, drooping or hanging with weight of fr.—Long domesticated, in various forms, probably native in W. Asia and N. Afr. but origin undetermined; commercially cult. for fr. in Calif. and Ariz., and widely planted in warm-temp. parts for ornament and interest.

farinífera: *P. pusilla.*

Hanceàna: *P. humilis* var.

hùmilis (*P. Ouseleyana. P. pedunculata*). Small plant more or less soboliferous the trunk attaining 6–10 or 12 ft.: lvs. somewhat glaucous; pinnæ scattered and interruptedly fascicled, usually rather limp or flaccid, the marginal nerves faint: fruiting peduncle becoming much elongated: fr. small, ovoid, about ½ in. long, the pulp edible. India to Cent. China; variable. Var. **Hanceàna** (*P. Hanceana*) is a hardy form with trunk 3 or 4 ft., and grayish-green foliage.

hýbrida: a hort. name.

Jùbæ: *P. canariensis.*

leonénsis: see *P. canariensis.*

Loureìri: see under *P. Roebelenii.*

natalénsis: *P. reclinata.*

Ouseleyàna: *P. humilis.*

paludòsa (*P. siamensis*). Small tree or tree-like shrub, forming dense clumps with several erect or inclined trunks to 25 ft., ringed at base: lvs. 6–10 ft., spreading and curving and forming an attractive mass; petiole scurfy, bearing slender spines; pinnæ 1–2 ft. long, both opposite and alternate and 2-ranked, ¾ in. or less broad, not stiff, lighter colored or mealy underneath, striate: fruiting spadix 3–4 ft. long: fr. ovoid, about ½ in., mucronate, red becoming black-purple; seed with basal embryo and in this respect differing from other phœnices. Bengal to Cochin-China.

pedunculàta: *P. humilis.*

pùmila: see *P. reclinata.*

pusílla (*P. farinifera*). Shrubby stoloniferous palm with very short trunk that is entirely covered with sheaths and does not elevate the top high: lvs. pale green, bearing one or more pairs of spines; pinnæ nearly opposite, in 4 rows or planes, rigid and prominently pointed: spadix 8–12 in. long, much branched and erect, the branches widely spreading: fr. ½ in. long, dull purple-black. S. India and Ceylon, near the sea.—Some of the stock known as *P. farinifera* may be *P. reclinata.*

reclinàta (*P. natalensis. P. senegalensis. P. spinosa* and *spinifera*). Soboliferous producing several or many sts. in a close clump to 20 ft. or more high but making a single slender trunk to 40 ft. if suckers are removed, the trunks bearing lf.-scars: lvs. floccose underneath when young, particularly on the ribs, bearing scattered or paired spines below, reclinate or curved downward at the apex; pinnæ subopposite or alternate or in groups of 2 or 3, 1 ft. long more or less, firm or subrigid in texture, with sharp stiffish points: staminate fls. narrow and acute in bud and thereby differing from other phœnices: fr. ¾ in. or less long, ovoid-ellipsoid, brown or reddish. Trop. Afr. and south to Natal.—The best known African palm if the date is counted out and the most widespread. Variable; a popular and attractive palm, distinguished from *P. rupicola* by the stiffish appearance of the foliage and the tufted habit. The plant known in cult. as *P. pumila* probably belongs here.

Roebelénii. Dwarf fine-lvd. palm now planted in the open in the warm parts of the country and prized also as a pot-plant. A plant was shipped probably from Singapore by Mr. Roebeleni, and described and named by James O'Brien in Gardeners' Chronicle in 1889. It is referred to *P. humilis* by some writers; probably it is the same as *P. Loureiri* (an older name) of Cochin-China (*P. humilis* var. *Loureiri* of Beccari); sts. usually several, 2–5 or 6 ft., sometimes swollen at base, erect or somewhat flexuose, covered at least toward top with lf.-bases: lvs. many, shiny green and somewhat glaucous, rather soft, gracefully curving and drooping, bearing numerous narrow long-attenuate opposite or subopposite pinnæ, with slender weak spines on petiole: fr. oblong, about ½ in. long, borne in a many-branched small spadix on a peduncle about 1 ft. long.

rupícola. Trunk slender and solitary, to 20 ft., naked of lf.-bases or becoming so, the crown with declined or drooping lower lvs., the foliage with a soft (or not stiff) appearance: lvs. bright green; pinnæ limp or flaccid, decurved, not conspicuously long-attenuate to sharp points, 2-ranked in one plane and not fascicled, represented by spines on the petiole: fr. oblong, ¾ in. long, shining yellow. India; usually growing among rocks.—A very graceful plant either for the open in the warmest parts of the country or for pots.

senegalénsis: *P. reclinata.*

siaménsis: *P. paludosa.*

spinòsa (spinifera): *P. reclinata.*

sylvéstris. Wild Date. Trunk stout and solitary, to 50 ft., covered with bases of old lf.-stalks, bearing a large rounded very thick crown, lower lvs. decurved and drooping: lvs. long, grayish-green or glaucous-green; pinnæ very many, fascicled and in 2–4 planes, glaucous, rigid and long-acuminate into stiff points, the petiole spines 2–4 in. long: fr. olive-form or oblong-elliptic, about 1 in. long, orange-yellow, scattered on long drooping branches of the spadix, pulp very astringent. India, wild and also cult. for the making of sugar from the sap.—Frequently planted for ornament and interest in the warm parts of the U. S., being about as hardy as *P. canariensis;* fast-growing useful tree.

ténuis: *P. canariensis* in the literature, but the plants cult. under this name may belong to other species.

vinífera: a hort. name.

zeylánica. Ceylon Date. Trunk solitary, to 20 ft., bearing old lf.-bases: lvs. relatively short, but with very many rigid pinnæ 1 ft. or less long standing at right angles in about 4 rows or planes and bright green with sharp points: fr. obovoid-oblong and apiculate at apex, about ½ in. long, red ripening to violet-blue or dark purple; pulp sweet, eaten in its native country. Ceylon, in woods.

PHŒNIX-TREE: *Firmiana simplex.*

PHOLIDÒTA. *Orchidaceæ.* Epiphytic orchids with creeping rootstocks, 1- or 2-lvd. pseudobulbs, and small fls. in slender terminal racemes, the sepals and petals similar, lip sac-like at the base. Grown in a warm greenhouse; for cult., see *Orchids.*

articulàta. Pseudobulbs oblong-cylindric, superimposed forming an elongate axis, each with 2 lvs. to 5½ in. long: racemes pendulous, densely 7- to many-fld.; fls. about ½ in. across, pinkish-, brownish- or creamy-white. May–Oct. Himalayas, Indo-China, China, Malaya.

conchoídea: *P. imbricata.*

imbricàta (*P. conchoidea*). Pseudobulbs with 1 lf. to about 20 in. long: infl. to about 21 in. long, above densely many-fld.; fls. about ⅛ in. across, pale brown or whitish, lateral sepals with a sharp keel. Feb.–Nov. Himalayas, India, Indo-China, China, Malaya, Philippines.

PHOLÍSTOMA. *Hydrophyllaceæ.* Ann. becoming much branched and vine-like, differing from Nemophila in the succulent texture, prickly sts., spiny caps. and sculptured globose seeds. One species, **P. aurìtum** (*Nemophila aurita*), Fiesta-Flower, is grown. Climbing or scrambling to 6 ft.: petioles broadly winged and clasping; lvs. oblong to ovate-lanceolate, to 6 in. long, pinnately lobed, segms. 7-13, oblong or lanceolate, entire or toothed, often hispidulous: fls. lavender to blue or violet and paler outside with darker markings in throat, to 1¼ in. across, solitary or in cymes of 2–6. Calif.—For cult. see *Nemophila.*

PHORADENDRON: see *Loranthaceæ.*

PHÓRMIUM. *Liliaceæ.* Large per. herbs native of New Zeal., probably 2 species, grown in warm climates as foliage clumps and sometimes in greenhouses, furnishing a strong fiber where native. Propagated by seeds sown in Feb. out-of-doors or in pots of rich compost; also by division.

Colensòi (*P. Cookianum*). To 7 ft.: lvs. to 5 ft. long and 2½ in. broad, less rigid than in *P. tenax:* fls. yellow, to 1½ in. long.

Cookiànum: *P. Colensoi.*

tènax. New Zealand Flax. To 15 ft.: lvs. basal, to 9 ft. long and 5 in. broad, stiff, tough and leathery, splitting at apex, margined with red or orange line: fls. dull red, to 2 in. long, numerous on long scape. Var. **atropurpùreum** has lvs. reddish-purple, var. **aùreum** lvs. with broad yellow stripes, var. **rùbrum** lvs. red, var. **variegàtum** lvs. striped with creamy-yellow and white, and var. **Veitchiànum** has broad creamy-white stripes.

PHOTÍNIA. *Rosaceæ.* Shrubs and trees in Asia with alternate toothed lvs., white fls. in corymbs or short panicles, and fr. a small red berry-like pome.

The deciduous species are mostly hardy North and succeed in sunny positions. Propagated by seeds, by cuttings of young wood under glass, by layers, and by grafting on hawthorn or quince.

arbutifòlia: *Heteromeles arbutifolia.*

argùta: *P. villosa* var. *lævis.*

Beauverdiàna. Deciduous shrub or tree to 20 ft., not hardy N.: lvs. oblong, to 4 in. long: infl. 2 in. across. China.

crenàto-serràta: *Pyracantha crenato-serrata.*

Dàvidsoniæ. Evergreen tree to 45 ft., grown in S. U. S.: lvs. oblong, to 5½ in. long, shining above, paler beneath: infl. to 5 in. across. China.

dentàta: name of uncertain application.

glàbra. Evergreen shrub to 10 ft., to be grown far S.: lvs. obovate, to 3 in. long: infl. 4 in. across. Japan.

japónica: *Eriobotrya japonica.*

parvifòlia (*P. subumbellata*). Deciduous shrub to 10 ft.: lvs. ovate, to 2¼ in. long, pale beneath, very short-petioled: infl. 2–8-fld., nearly umbellate. China.

serrulàta (*Cratægus glabra*). Evergreen shrub or tree to 40 ft., adapted to southern parts: lvs. oblong, to 8 in. long, dark and shining above, yellowish-green beneath: infl. to 6 in. across. China, where it is much planted.

subumbellàta: *P. parvifolia.*

villòsa. Deciduous shrub or tree to 15 ft., hardy N.: lvs. obovate, to 3 in. long, hairy beneath: infl. to 2 in. across. Japan, Korea, China. Var. **lævis** (*Porthiæa arguta*) has smaller glabrous lvs.

PHRAGMIPÈDIUM (incorrectly spelled *Phragmopedilum*). Lady-Slipper. *Orchidaceæ.* Trop. American terrestrial or epiphytic orchids without pseudobulbs: lvs. leathery, conduplicate: fls. in racemes or panicles, lateral sepals united, lip sac-like and ovary 3-celled. See *Orchids* for cult. See comment under *Paphiopedilum.*

Àinsworthii (*P. Brownii. P. calurum*). Hybrid between *P. longifolium* and *P. Sedenii.*

albopurpùreum. Hybrid between *P. Schlimii* and *P. Dominianum.*

Browǹii: *P. Ainsworthii.*

calùrum: *P. Ainsworthii.*

cardinàle. Hybrid between *P. Sedenii* and *P. Schlimii* var. *albiflorum.*

carícinum. Lvs. narrow, to about 20 in. long and ½ in. wide: racemes loosely 3-7-fld.; fls. medium-sized, pale greenish or whitish with green veins; petals tinted with rose at tips; lip yellow-green with deeper green veins. Mar.–Oct. Peru, Bolivia, Brazil.

caudàtum. Lvs. to 20½ in. long and 1½ in. wide: racemes loosely 1–4-fld., to almost 3 ft. high; fls. large; sepals yellowish or whitish with green veins; petals linear, to over 30 in. long, dull brownish-crimson; lip bronzy-green. Apr.–June. Peru, Ecuador, Colombia, Costa Rica.

conchíferum. Hybrid between *P. caricinum* and *P. longifolium* var. *Roezlii.*

Dominiànum. Hybrid between *P. caricinum* and *P. caudatum.*

Èastonii. Hybrid between *P. longifolium* and *P. Lindleyanum.*

gránde. Hybrid between *P. longifolium* var. *Roezlii* and *P. caudatum.*

gránde atràtum. Hybrid between *P. caudatum* and *P. longifolium* var. *Hartwegii.*

leucorrhòdum: form of the hybrid *P. Sedenii.*

Lindleyànum. Lvs. to 25 in. long and 2½ in. wide: infl. a loose raceme, 3–7-fld.; fls. to 3 in. across, light green with red-brown veins. Autumn and winter. British Guiana.

longifòlium. Lvs. to 24 in. long and 1¼ in. wide: infl. a raceme up to 10-fld.; fls. to 7 in. across; dorsal sepal pale green with rose veins; lower sepal pale green with darker veins; petals pale yellow-green with rose margins; lip yellow-green tinged with brown and rose. Costa Rica, Panama. Var. **Roézlii** (*P. Roezlii*) has broader lvs. and petals margined with red. Colombia.

macrochìlum gigantèum. Hybrid between *P. caudatum* and *P. grande.*

magniflòrum: a var. of *P. longifolium* with white-margined petals.

nitidíssimum. Hybrid between *P. caudatum* and *P. conchiferum.*

Roézlii: *P. longifolium* var.

Sargentiànum. Lvs. oblong-lanceolate, to 8 in. long: fls. about 3½ in. across, in 2–4-fld. loose racemes; sepals pale yellow with red veins; petals whitish streaked with red; lip yellowish with red veins and infolded side lobes speckled with red. Nov.–June. Brazil.

Schlímii. Lvs. to 12 in. long and nearly 1 in. wide: fls. up to 7, in racemes (or panicles); dorsal sepal greenish-white stained with pale rose; lower sepal whitish with green veins; petals whitish stained with rose near base; lip rose-carmine and whitish. Nov.–Apr. Colombia.

Schròederæ. Hybrid between *P. caudatum* and *P. Sedenii.*

Sèdenii (*P. tenellum*). Hybrid between *P. Schlimii* and *P. longifolium.*

tenéllum: *P. Sedenii.*

Titànum. Hybrid between *P. Lindleyanum* and *P. longifolium.*

Urgándiæ. Hybrid between *P. Lindleyanum* and *P. longifolium.*

PHRAGMÌTES. *Gramineæ.* Tall per. grasses with broad lvs. and soft hairy spikelets borne in large panicles; native in swamps and wet areas in north temp. zone and S. Amer. and one planted for ornament. The name is pronounced in three syllables. See *Grasses.*

commùnis: *P. maxima.*

máxima (*P. communis. Arundo maxima*). Common Reed-Grass. To 15 ft.: lvs. to 1 ft. or more long and 2 in. wide: panicles to 1 ft. long. Swamps N. Amer., Eu., Asia. Var. **variegàta** has variegated lvs.

PHRYNIUM: *Calathea, Ctenanthe.*

PHYGÈLIUS. *Scrophulariaceæ.* Small shrubs or stout herbs grown in conservatories or in the open in sheltered situations as far north as Philadelphia, and as pot subjects under glass, for the terminal panicles of scarlet drooping tubular fls. having 5 nearly equal lobes: lvs. opposite: 2 species in S. Afr.

Propagated from seed or from cuttings taken from the late autumn shoots of outdoor plants. The plant is now infrequent in cultivation.

æquàlis. Differs from *P. capensis* in denser infl. with fls. on short pedicels, calyx-segms. lanceolate and corolla-tube nearly straight.

capénsis. Cape Fuchsia. To 3 ft., sts. 4-angled or narrow-winged: lvs. ovate or ovate-lanceolate, to 5 in. long, toothed: fls. to 2 in. long, somewhat curved, purple-scarlet, in panicles to 1½ ft. long. Var. **coccíneus** is listed.

PHÝLICA. *Rhamnaceæ.* Small evergreen shrubs in S. Afr. of many species, one of which is grown sometimes under glass for ornament and probably in Calif. in the open: lvs. alternate and crowded, small and simple: fls. small, largely in close heads or spikes, petals often wanting or bristle-like, stamens 5: fr. a small caps.

ericoìdes. To 3 ft., with slender erect tomentose branches: lvs. small and linear or subulate, heath-like, tomentose underneath, margins revolute: fls. very small, in little terminal involucrate heads.

PHYLLÁGATHIS. *Melastomaceæ.* Subshrubs with short thick sts., large simple lvs., rose fls. in a head, and capsular fr.; greenhouse subjects.

From March to September these plants require high temperatures and plenty of water at the roots. Propagated by cuttings of half-ripened wood or leaf-cuttings in February or March over heat.

rotundifòlia. To 2 ft.: lvs. roundish, 6 in. long, plaited and glossy green above tinted with metallic blue and purple, coppery-red beneath with prominent veins: fls. ½ in. across. Sumatra.

PHYLLÁNTHUS. *Euphorbiaceæ.* Monœcious herbs, shrubs or trees with alternate simple lvs. which are often arranged in two ranks on lateral branches so as to resemble pinnate lvs. (distichous), fls. without petals, and fr. a berry or caps.

Two species are grown in warm climates for the edible fruits which are made into preserves and a few others under glass. Propagated by seeds, greenwood cuttings and *P. Emblica* by layers.

ácidus (*P. distichus. Cicca disticha*). Otaheite-Gooseberry. Gooseberry-Tree. Tree to 20 ft.: lvs. ovate, to 3 in. long, distichously arranged: fls. very small, reddish, in many-fld. panicles: frs. angled, to ¾ in. across. S. Asia; nat. in S. Fla. and W. Indies.

álbus: *Glochidion album.*

angustifòlius: *Xylophylla angustifolia.*

atropurpùreus: *Breynia nivosa* var.

calýcinus. Shrub to 2 ft., glabrous: lvs. oblong, to ¾ in. long, very obtuse: fls. small, pink edged with white. Australia.

dístichus: *P. acidus.*

Émblica. Emblic. Myrobalan. Shrub or tree to 30 ft.: lvs. linear-oblong, to ¾ in. long, distichously arranged: fls. small, yellow, clustered in the axils of the lvs.: fr. somewhat lobed, to 1 in. across. Trop. Asia.

latifòlius: *Xylophylla speciosa.*

mimosæfòlius of cult. with us is *P. mimosoides.*

mimosoìdes. Shrub with rusty-scaly branches and abundant fine and ornamental foliage: lvs. oblong and mucronate, about ¼–⅓ in. long on two sides of slender branchlets like pinnate foliage, whitish underneath: fls. very small, axillary, slender-pedicelled. Farther W. Indies. —Sometimes grown under glass.

nivòsus: *Breynia nivosa.*

speciòsus: *Xylophylla speciosa.*

PHYLLAUREA: *Codiæum.*

PHYLLÌTIS. *Polypodiaceæ.* Small group of mostly temp. region ferns with simple strap-shaped fronds and long sori at right angles to midrib, one of them known in cult. in the open. See *Ferns.*

Scolopéndrium (*Scolopendrium vulgare*). Harts-tongue-Fern. Hardy: fronds straight or curved, to 1½ ft. long and 3 in. wide, entire or sometimes wavy-margined. Eu.; native in a few scattered localities in E. N. Amer.—There are many cristate, divided, crisped and dwarf forms known to fanciers, grown in the open; they are of simple cultural requirements.

PHYLLOCÁCTUS. *Cactaceæ.* The proper name for this genus is Epiphyllum (which see), and the plant formerly known as Epiphyllum (Crab or Christmas cactus) is Zygocactus. The plant in cult. as *P. latifrons* is *Epiphyllum oxypetalum*, and *P. biformis* is *Disocactus biformis.*

PHYLLOCÁRPUS. *Leguminosæ.* Unarmed trees of western hemisphere tropics with abruptly 1-pinnate lvs. and fls. in short racemes in advance of full foliage: pod 1- or 2-seeded, winged on one side, indehiscent. One species, **P. septentrionàlis,** of Guatemala, is planted in S. Fla.: to 60 ft. or more: lfts. in 4–6 pairs, obovate or oblong, 2 in. or less long, entire, becoming shining: fls. scarlet, fragrant: pod 6 in. or more long.

PHYLLÓCLADUS. *Podocarpaceæ.* A few species of evergreen trees and shrubs in the southern hemisphere: true lvs. reduced to scales, the branchlets flattened in leathery leaf-like bodies or cladodes which are toothed or lobed: male fls. in clusters at tips of branches, female borne on cladodes. For cult. see *Conifers*; grown in Calif.

rhomboidàlis. Tree to 60 ft. or shrub: cladodes triangular or rhomboid. Tasmania.

trichomanoìdes. Tree to 70 ft.: cladodes triangular, lobed or pinnately cut. New Zeal.

PHYLLODIUM: expanded leaf-like petiole and no blade, as in some acacias and other plants; young plants and shoots often show leaflets on such phyllodia.

PHYLLÓDOCE. *Ericaceæ.* Very low evergreen heath-like shrublets with prostrate or ascending branches, small linear lvs., bell-shaped or urn-shaped nodding fls. in terminal umbels, and capsular frs.; suitable for the rock-garden where they thrive in moist peaty soil. Propagated by seeds, cuttings or layers.

aleùtica. Per. to 10 in. or more: lvs. linear, crowded, scabrous: fls. whitish, subglobose, corolla and filaments glabrous. Aleutian Isls., Alaska.

Brèweri (*Bryanthus Breweri*). To 1 ft.: fls. rose-purple, ⅓ in. long, in terminal racemes, corolla divided to middle, bell-shaped, stamens exserted. Mts. of Calif.

cærùlea (*P. taxifolia. Andromeda cærulea*). To 6 in. high, with ascending branchlets: fls. pink or purple, about ⅓ in. long, corolla urn-shaped, glabrous, stamens included. Circumpolar; south to Me., N. H. and Alta.

empetrifórmis. To 6 in., ascending: fls. rosy-purple, ⅓ in. long, corolla bell-shaped, stamens included, sepals obtuse. B. C. to Calif. Var. **amábilis** is *P. nipponica* var. Var. **nàna** is listed.—Some of the material cult. under this name has urn-shaped corollas and may be *P. intermedia.*

glanduliflòra. To 1 ft.: fls. sulfur-yellow, ⅓ in. long, urn-shaped, pubescent without. Alaska to Mont. and Ore.

intermèdia. Hybrid between *P. empetriformis* and *P. glanduliflora:* fls. pink, urn-shaped, sepals acute.

nippónica. To 6 in.: lvs. linear, serrulate: fls. white, bell-shaped, stamens not exserted, sepals acute. Japan. Var. **amábilis** has smaller whitish or pinkish fls.

taxifòlia: *P. cærulea.*

PHYLLOPÒDIUM. *Scrophulariaceæ.* Ann. or per. S. African herbs or subshrubs, usually sticky-hairy, with lower lvs. opposite becoming alternate above: fls. small, subcylindrical, with limb spreading and the 5 lobes rounded and nearly equal, usually in terminal spikes, with small leafy bracts fused to calyx: fr. a septicidal caps. with bifid valves.

capitàtum. Ann. to 7 in., erect or spreading, becoming woody at base, white-pubescent: lvs. lanceolate-elliptic to oblanceolate, to 1 in. long, dentate: fls. orange-yellow, to nearly ¼ in. long, many in dense spikes: caps. about 1/12 in. long.

PHYLLÓSTACHYS. *Gramineæ.* Tall woody grasses with sts. flattened on one side, deciduous lf.-sheaths, tessellated lvs. and spikelets borne in terminal panicles, stamens 3; native in Asia. See *Bamboo.*

aûrea (*Bambusa aurea*). Golden Bamboo. To 15 ft., sts. yellow: lvs. to 5 in. long and ¾ in. wide, long-pointed, glabrous, glaucous beneath, sheaths bristly at apex. China, Japan.

bambusoìdes (*P. reticulata. P. Quilioi*). To 45 ft., sts. bright green, st.-sheaths mottled purple: lvs. to 6 in. long and 1 in. wide, glaucous beneath. China. Var. **Castillòni** (*P.* and *Bambusa Castilloni*) has yellow sts. striped green and lvs. striped with yellow. Var. **marliàcea** (*P. marliacea*) has wrinkled sts. and dark green st.-sheaths.

Boryàna: *P. niger* var.

Castillòni: *P. bambusoides* var.

edûlis (*P. pubescens*). To 100 ft., sts. bright green: lvs. to 4 in. long and ⅓ in. wide, toothed. China.—The young turions are said to be edible.

fastuòsa: *Semiarundinaria fastuosa.*

flexuòsa (*Bambusa flexuosa*). To 18 ft., sts. becoming nearly black, branches flexuose: lvs. to 4 in. long and ½ in. across, glaucous beneath. China.

Henònis: *P. niger* var.

Hénryi. Lvs. glabrous, sheath to ¾ in. long, blade to 2½ in. long and ½ in. across, ligule short and truncate: fls. in dense solitary panicles at ends of short leafy branches. China.

kumasáca: *Shibatæa kumasaca.*

marliàcea: *P. bambusoides* var.

mìtis: *P. sulphurea.*

Névinii. Sts. pale green: lvs. linear-oblong, shining above, rough on edges. China.

nìger (*P. puberula* var. *nigra. Bambusa nigra*). Black-joint Bamboo. To 25 ft., sts. becoming black, nodes with lower edge white: lvs. to 4 in. long and ½ in. wide, glaucous beneath. China, Japan. Var. **Boryàna** (*P. Boryana*) has yellow sts. spotted with purplish-brown. Var. **Henònis** (*P.* and *Bambusa Henonis. P. puberula*). To 60 ft., sts. greenish becoming yellowish, st.-sheaths not spotted.

pubérula: *P. niger* var. *Henonis.*

pubéscens: *P. edulis.*

Quiliòi: *P. bambusoides.*

reticulàta: *P. bambusoides*, as far as known cult. material is concerned.

ruscifòlia: *Shibatæa kumasaca.*

sulphùrea (*Bambusa sulphurea, striata* and *mitis. P. mitis*). Moso Bamboo. To 25 ft., sts. yellow: lvs. to 5 in. long and ¾ in. wide, glaucous beneath, lf.-sheaths with bristles at apex. China, Japan.

viminàlis: *Shibatæa kumasaca.*

violéscens (*Bambusa violescens*). To 12 ft., sts. turning from violet to yellowish-brown, st.-sheaths violet: lvs. to 6 in. long and 1½ in. wide, toothed, glaucous beneath, petiole purple. China.

víridi-glaucéscens (*Bambusa viridi-glaucescens*). To 25 ft., sts. yellowish-green, st.-sheaths striped purple: lvs. to 4 in. long and ¾ in. wide, glaucous beneath, lf.-sheaths purplish with bristly tips. China.

PHYLLOTÆNIUM: *Xanthosoma Lindenii.*

PHYMATODES: *Polypodium.*

PHYMOSIA: *Sphæralcea.*

PHÝSALIS. Husk-Tomato. Ground-Cherry. *Solanaceæ.* Herbaceous annuals and perennials, sometimes slightly woody at base, straggling, diffuse or creeping: lvs. alternate, often 2 together: fls. usually axillary, blue, yellowish or whitish, not showy, the calyx becoming large and bladder-like and inclosing the globular yellow or greenish 2-celled berry, the corolla wheel- or bell-shaped; grown for ornament and some of them for the edible frs. used in preserves and pickles.

Most cultivated species of physalis need a warm sunny exposure. Since they are long-season plants and the high colors of the calyx in the ornamental species do not develop until the fruit is ripe, the seed should be sown early in the spring indoors or in a hotbed. The perennials may be propagated by division of the rhizomes or by soft cuttings.

Alkekéngi (*P. Bunyardii. P. Franchetii*). Alkekengi. Winter-Cherry. Chinese Lantern-Plant. Per. but often grown as ann., to 2 ft., with long creeping underground sts.: lvs. ovate, to 3 in. long, ciliate: fls. whitish: fr. with blood-red inflated calyx about 2 in. long. S. E. Eu. to Japan. Vars. **gigantèa** and **monstròsa** are listed as large forms.—Grown for ornament.

Búnyardii: *P. Alkekengii.*

edùlis: the plant listed may be either *P. ixocarpa* or *P. peruviana.*

Franchètii: *P. Alkekengii.*

ixocárpa. Tomatillo. Ann. to 4 ft.: lvs. ovate, to 3 in. long, toothed or notched: fls. ¾ in. across, bright yellow, the throat with 5 black-brown spots: fr. with inflated purple-veined calyx, 1 in. or more long, entirely filled by the round sticky purplish berry. Mex.; intro. N.

lobàta: *Quincula lobata.*

peruviàna. Cape-Gooseberry. Partially erect, to 3 ft.: lvs. evenly cordate-ovate, soft-pubescent, often not toothed: fls. ½ in. long, light yellow marked inside with purple, anthers purple: fr. with inflated long-pointed calyx inclosing the yellow edible berry. Tropics.

philadélphica: probably *P. subglabrata.*

pruinòsa. Strawberry-Tomato. Dwarf Cape-Gooseberry. Stout ann. with angled sts., more or less erect but becoming diffuse, gray-pubescent: lvs. ovate, subcordate but oblique at base, to 4 in. long, coarsely obtuse-toothed to the base: fls. buff-yellow, anthers sometimes tinged purple: fr. yellow or nearly so, edible, in a large pubescent calyx. Mass. to Fla. and west.—Apparently the common husk-tomato of gardens.

pubéscens. Differs from preceding in being more slender and less erect, less pubescent or nearly glabrous, lvs. not toothed to base and mostly narrower and usually nearly entire. Pa. to Calif. and tropics.—The common husk-tomato of gardens was formerly considered to be of this species but how much if any of it belongs here is yet to be determined.

subglabràta. Per. to 5 ft.: lvs. ovate or ovate-lanceolate, to 4 in. long, oblique at base, entire or wavy: fls. yellow with purplish throat, to 1 in. across, anthers purplish: fr. with inflated calyx inclosing the red or purple berry. Ont. to Ga. and Colo.

PHYSALODES: *Nicandra.*

PHYSÀRIA. *Cruciferæ.* Tufted stellate-pubescent perennials from N. W. Amer. with mostly entire lvs. and yellow fls. having spatulate petals: fr. a somewhat inflated didymous pod (silicle) seemingly lobed at apex with style emerging from sinus. Propagated by seed, cuttings or division and adapted to rock-gardens in well-drained soil.

alpéstris. To 4 in. tall, white-pubescent, sts. ascending, to 6 in. long, unbranched: lvs. spatulate, basal ones petioled: fls. to nearly ½ in. long: pods often tinged purplish, laterally flattened. Arctic regions of N. W. Amer.

didymocárpa. Sts. erect to decumbent, to 6 in. long, short-pubescent: lvs. broadly obovate, to 3 in. long, entire or sinuately toothed: fls. ½ in. long: pods deeply cordate at base. Utah to Colo. north to Sask. and Alta.

floribúnda. To 10 in., sts. nearly erect: basal lvs. oblanceolate to spatulate, more erect than in above, sinuately toothed: fls. to ⅓ in. long: pods not strongly cordate at base. Colo.

Geỳeri. To 5 in., sts. ascending or decumbent, to 6 in. long: basal lvs. obovate to orbicular, to 2 in. long, petiole winged: fls. to ½ in. long: pods not much inflated, the upper sinus shallow. Wyo., Mont. to Wash.

PHYSIANTHUS ALBENS: *Araujia sericofera.*

PHYSIC, INDIAN: *Gillenia trifoliata.* **-Nut:** *Jatropha Curcas.*

PHYSOCÁRPUS (*Opulaster*). Ninebark. *Rosaceæ.* Deciduous spirea-like shrubs, hardy N., with alternate toothed or lobed lvs., white or pinkish fls. in umbel-like clusters, and fr. an inflated pod or follicle; native in N. Amer. and N. E. Asia. Hardy in the N. and of easy cult. Propagated by seeds and cuttings of young or old wood.

amurénsis. Similar to *P. opulifolius* from which it differs in lvs. to 4 in. long and fls. about ⅝ in. across. Manchuria, Korea.

bracteàtus. To 6 ft.: lvs. broad-ovate, to 3 in. long: infl. many-fld.: pods 2, united half their length, pubescent. Colo.

capitàtus (*Spiræa capitata*). Branches partially climbing, to 20 ft. long: lvs. broad-ovate, to 2½ in. long, 3–5-lobed: infl. dense: pods usually 5, glabrous. B. C. to Calif.

intermèdius (*P. Ramaleyi. P. missouriensis*). To 5 ft.: lvs. ovate, to 2½ in. long: infl. many-fld.: pods 3–4, united at base, pubescent. Ont. to Colo. Var. **parvifòlius** has smaller lvs. and fls.

malvàceus (*P. pauciflorus*). To 7 ft., sts. quite erect: lvs. orbicular or nearly so, to 2½ in. long, lobes 3–5, doubly crenate-serrate: fls. white, to ½ in. across, in few-fld. umbels: pods usually 2, stellate-pubescent with erect beaks. Wyo. to Utah, Ore. and B. C.

missouriénsis: *P. intermedius.*

monógynus. To 3½ ft.: lvs. broadly ovate to kidney-shaped, to 1½ in. long, lobes 3–5 and rounded incisely-serrate, glabrous: fls. pinkish to white, to ½ in. across, in few-fld. umbels: pods usually 2, densely stellate-pubescent with spreading beaks. Wyo. to S. D., Tex. and New Mex.

opulifòlius (*Spiræa opulifolia*). To 10 ft.: lvs. ovate, to 3 in. long: infl. many-fld., to 2 in. across, fls. to ¼ in. across: pods usually 5, glabrous. Que. to Va. and Tenn. Var. **lùteus** (var. *aureus*) has bright yellow lvs. becoming bronzy. Var. **nànus** is dwarf with smaller lvs.

pauciflòrus: *P. malvaceus.*

Ramàleyi: *P. intermedius.*

tibética: presumably *Neillia thibetica.*

PHYSOSÌPHON. *Orchidaceæ.* Epiphytes of trop. Amer., with commonly clustered 1-lvd. sts. bearing racemes of small to minute fls. of which the sepals are united into a bell-shaped tube inclosing the minute petals and lip. Grown in the cool greenhouse; for cult. see *Orchids.*

Lóddigesii: *P. tubatus.*

tubàtus (*P. Loddigesii*). To about 1½ ft. tall: lf. to 5½ in. long: racemes many-fld.; fls. to ¾ in. long, green, green and orange, yellow, or orange-red. Nov.–Aug. Mex., Guatemala.

PHYSOSTÈGIA. False Dragonhead. *Labiatæ.* Per. herbs with slender often wand-like sts. and panicled spikes of gaping fls. in purple, rose or white, whorls 2-fld.; corolla-tube inflated toward the top.

These ornamentals are useful in borders and in wild-gardens and easily cultivated. Propagated usually by division of strong clumps, also grown from seed.

Digitàlis. Very similar to *P. virginiana* from which it differs chiefly in having bluntly-toothed lvs. Ark. to Tex. and Mo.

formòsior. To 3½ ft., sts. very leafy: lvs. oblong-lanceolate to ovate-lanceolate, to 4 in. long and 1 in. wide, serrate to denticulate, mostly acuminate, glaucous beneath, rather succulent: fls. deep pink, to ¾ in. long, in dense spikes to 6 in. long. N. D.—Differs from *P. virginiana* in its wider and more bluntly toothed lvs. which are not green beneath, in the shorter fls. and in the fr.-calyx globose not oblong.

grandiflòra: *P. virginiana* var.

speciòsa: *P. virginiana* var.

virginiàna (*P. virginica. Dracocephalum virginianum*). To 4 ft.: lvs. oblong or lanceolate, to 5 in. long, sharply toothed: fls. purplish-red to rose-pink or lilac, to 1 in. long, in spikes to 8 in. long, summer. Que. to Fla. and Tex. Var. **álba,** fls. white; **gigantèa,** to 7 ft.; **grandiflòra,** fls. bright pink; **speciòsa,** spikes densely panicled. Other listed vars. are **nàna, ròsea, rùbra, spléndens, supérba.**

PHYTÉLEPHAS. *Palmaceæ.* Acaulescent or short-trunked feather-lvd. diœcious unarmed palms of several species in northwestern S. Amer.: spadices from lf.-axils and mostly near the ground; staminate spadix a long catkin, the prominent stamens numerous; pistillate spadix comprising a more or less dense head of large fls., the ovary with several cells: fr. a syncarp of several united berry-like parts. See *Palm.*

macrocárpa. Ivory-Nut Palm. Trunk to 2 ft. long, often or mostly declined or prostrate (or becoming so) and rooting: lvs. very long, erect-curving, to 20 ft. or more; pinnæ about 80 pairs, main ones 2–3 ft. long and 2 in. or less broad, strongly many-nerved, rather stiff: fr.-heads sometimes weigh 25 lbs., and supply "vegetable ivory." Colombia, Ecuador; has been planted in S. Fla.

PHYTEÙMA. Horned Rampion. *Campanulaceæ.* Many per. herbs with alternate and radical simple lvs., 5-parted blue, purplish or white fls. in terminal heads or spikes, and capsular frs.; fl.-buds mostly long curved and horn-like and fls. not opening widely, with little look of a bell-flower; native in Eu. and Asia. Some of the Phyteumas have been referred to the genus Asyneuma.

Phyteumas are grown mostly in rock-gardens where they succeed in any good soil, and the larger ones in borders. Propagated by seeds or by division in spring.

betonicæfòlium. To 1½ ft.: lvs. cordate-lanceolate, lower long-stalked: fls. blue, in spikes. Eu.

canéscens. To 3 ft., gray-pubescent and rough: lvs. ovate to lanceolate, toothed: fls. blue, in loose spikes. E. Eu., W. Asia.

Charmélii. To 1 ft.: lvs. oval to lanceolate, toothed: fls. dark blue, in globular heads. Alps.

comòsum. To 6 in. decumbent: lvs. cordate-ovate to lanceolate, coarsely toothed: fls. dark purple, lilac below, the corolla-lobes united into tube above around the long-exserted style, borne in umbels. Alps.

Hálleri. To 2½ ft.: lvs. ovate or orbicular, coarsely toothed: fls. dark violet or white, in dense oblong spikes subtended by 2 long drooping bracts. Eu.

hemisphǽricum. To 6 in., tufted: lvs. linear or linear-lanceolate, entire: fls. blue or sometimes whitish, in 12–15-fld. oval heads. Alps.

hùmile. Dwarf, 2–5 in. high, erect: lvs. linear, lower ones nearly or quite reaching the fl.-head which is dense and about ¾ in. across and subtended by long linear bracts: fls. dark violet. Alps.

limonifòlium. To 2 ft., erect: lvs. lanceolate or narrower, somewhat dentate or entire: fls. blue, in long open spikes, placed singly or in 2's or 3's. Mts., S. E. Eu., S. W. Asia.

lobelioìdes. To 2 ft.: lvs. narrow-lanceolate, wavy-toothed: fls. in loose spike-like racemes. Asia Minor.

Michélii. To 2 ft.: lvs. lanceolate to linear, lower long-stalked: fls. violet, rarely white, in dense oblong heads. S. Eu.

nìgrum. To 1 ft.: basal lvs. heart-shaped, toothed, long-stalked, st.-lvs. linear: fls. dark blue, in oblong dense heads. Eu.

orbiculàre. To 2 ft.: lvs. ovate to linear, toothed: fls. purple, in many-fld. globose heads. Eu.

Scheùchzeri. To 1½ ft.: lvs. oblong to lanceolate, toothed: fls. violet-blue, in dense globose heads 1 in. across subtended by long narrow bracts. S. Eu.

serràtum. To 6 in.: lvs. lanceolate, toothed: fls. blue, in globose many-fld. heads to ¾ in. across. Mts., Eu.

Sièberi. To 6 in.: lvs. ovate to lanceolate, toothed: fls. deep blue, in 12–15-fld. globose heads. S. Eu.

spicàtum. To 4 ft.: lvs. ovate to linear, toothed, the basal long-stalked: fls. white with greenish tips, in dense oblong spikes. Eu. Var. **nìgrum** is *P. nigrum.*

Vágneri. Lvs. irregularly toothed, lower long-petioled and cordate at base, upper sessile, linear or linear-lanceolate: fls. dark violet, in globose spikes becoming elongated. Hungary.

PHYTOLÁCCA. Pokeweed. Pokeberry. *Phytolaccaceæ.* Herbs, shrubs or tree-like plants with alternate simple lvs., small fls. in terminal racemes, and fr. a fleshy berry with staining juice; grown for ornament and *P. esculenta* as a pot-herb in some countries. Of easy cult. Propagated by seeds.

americàna (*P. decandra*). Poke. Scoke. Herb to 12 ft., strong-smelling: lvs. oblong- or ovate-lanceolate: fls. bisexual, white or purplish. Me. to Fla. and Mex.

decándra: *P. americana.*

dioìca (*Pircunia dioica*). Evergreen soft-wooded tree to 60 ft. and more with thick trunk: lvs. elliptic or ovate: fls. diœcious, white. S Amer.

esculénta (*P. Kaempferi*). Herb to 3 ft. or more, slightly woody at base: lvs. ovate, edible: fls. bisexual, white. China, Japan.

heterotépala. Shrub: lvs. ovate-elliptic: fls. bisexual, green. Cent. Amer., Mex.

Kaémpferi: *P. esculenta.*

octándra. Woody herb to 2 ft.: lvs. ovate-lanceolate: fls. bisexual, pinkish-white. Cent. Amer. to Colombia.

PHYTOLACCÀCEÆ. Pokeweed Family. About 22 American and African genera of herbs, shrubs and trees with alternate entire lvs., regular bisexual or unisexual fls. having no petals, 4–5-parted calyx, 4–5 stamens, superior ovary and fr. a berry, caps. or samara. Agdestis, Ercilla, Petiveria, Phytolacca and Rivina are cult.

PIARÁNTHUS. *Asclepiadaceæ.* Leafless S. African herbs of the Ceropegia relationship, very dwarf and succulent, with 5-lobed fls. in pairs or clusters having a simple crown.

cornùtus. Sts. procumbent or ascending, to 1½ in. long, globose or oblong, remotely 4-angled, 3–5 tubercled teeth along each angle: fls. white or pale yellow with purplish-crimson dots, to 1¼ in. across, no distinct tube.

fœ́tidus. Sts. tufted, to 2½ in. long and ⅜ in. thick, obtusely 4–5-angled, often mottled with purple: fls. rotate, yellow spotted and lined with purple, ¾ in. across; crown orange-yellow marked with purple-brown.

Nebrowǹii: hort. name; possibly referable to *Caralluma Nebrownii.*

PIAROPUS: *Eichhornia.*

PÌCEA. Spruce. *Pinaceæ.* Evergreen coniferous trees of pyramidal habit and continuing axis, native in cooler parts of northern hemisphere and hardy in cult., with linear 4-angled or compressed lvs. having white bands, catkin-like fls. and drooping cones with persistent scales, in these characters differing from the firs (Abies). For cult. see *Conifers.*

Àbies (*P. excelsa*) Norway S. Branchlets usually drooping: lvs. 4-angled, to ¾ in. long, dark green and shiny: cones to 7 in. long. Eu.; one of the commonest planted evergreens in N. Amer. Some of the hort. vars. are: **argéntea,** lvs. variegated with white; **argénteo-spìca,** tips of young branchlets white; **aùrea,** lvs. golden-yellow; **auréscens,** foliage golden-yellow when young, becoming yellowish-green; **Bárryi,** conical form with thick branches; **capitàta,** shoots close together at ends of branches, forming heads; **chlorocárpa,** cones green when young; **cincinnàta,** lvs. long and spirally twisted; **Clanbrasiliàna,** compact bush to 7 ft. with whitish branchlets; **columnàris,** of columnar habit with very short branches; **compácta,** dense nearly globose form; **cónica,** of conical pyramidal habit; **Cóstickii,** listed as of dwarf upright habit; **cupréssina,** of broad columnar form; **diffùsa,** dense and wide spreading, foliage light yellowish-green; **dumòsa,** prostrate; **echinæfórmis,** dwarf and slow-growing, lvs. long and prickly, resembling a hedge-hog; **élegans,** of slender conical habit; **Ellwangeriàna,** of broad pyramidal form with crowded branchlets; **erythrocárpa,** cones violet-purple when young; **finedonénsis,** lvs. pale yellow becoming bronzy, then green; **Gregoryàna,** dwarf to 2 ft., with crowded pale branchlets; **highlándia,** low and dome-like, foliage shining dark green; **hùmilis,** very dwarf, foliage small, dark green; **invérsa,** branches drooping, densely branched; **Máxwellii,** dwarf form to 2 ft. with very short thick branchlets; **Mérkii,** low form with thin grass-green lvs.; **microspérma,** of dense bushy habit; **monstròsa,** without branches, only a single st. clothed with stiff lvs.; **mucronàta,** shrub with crowded red-yellow branchlets; **nàna,** dwarf with short orange-yellow branchlets; **nidifórmis,** low form with very dense head, having a nest-like mass of branchlets; **nìgra,** of pyramidal densely branched habit; **Òhlendorffii,** compact and globular, foliage pale yellowish-green; **Pársonsii,** straggling dwarf form with drooping branchlets; **parvifórmis,** of broad pyramidal habit; **péndula,** branches drooping; **procúmbens,** prostrate, with horizontal bright yellow branchlets; **pseùdo-Máxwellii,** cushion-like, with branches in horizontal layers; **pùmila,** dense dwarf form with lvs. bluish-green in **glaùca;** **pygmæ̀a,** dense and small; **pyramidàlis grácilis,** dwarf, nearly globose, foliage bright green; **pyramidàta** (*P. excelsa* var. *erecta*), of slender pyramidal habit; **Remóntii,** dense pyramidal form with crowded yellow branchlets; **rèpens,** low, branches procumbent or arching, lvs. crowded; **tabulifórmis,** prostrate, with horizontal branches; **Veìtchii,** dwarf conical form; **viminàlis,** branches nearly horizontal, with long slender branchlets; **virgàta,** branches elongated and without branchlets. Other listed varietal names are: *borealis, erimata, robusta, Smithii* and *tenuifolia.*

ajanénsis: *P. jezoensis.*

álba: *P. glauca.*

albertiàna: *P. glauca* var.

Alcockiàna: *P. bicolor.*

ascéndens: see *P. brachytyla.*

asperàta. Lvs. 4-angled, to ⅜ in. long, dark green: cones to 4 in. long. W. China; hardy N. Var. **heterólepis** (*P. heterolepis*) has hairy twigs, blue-green glaucescent lvs. and lower cone-scales deeply emarginate. Var. **notábilis** has longer lvs. and cones. Var. **ponderòsa** has thicker bark and larger cones.

aurantìaca. Branchlets orange: lvs. 4-angled, to ¾ in. long, sharp-pointed: cones to 5 in. long. W. China; hardy N.

Balfourìana. Lvs. 4-angled, to ⅗ in. long, with 2 white bands above: cones to 3½ in. long. W. China; hardy N. but likely to remain small.

bícolor (*P. Alcockiana*). ALCOCK S. Lvs. 4-angled, to ¾ in. long, with 2 white bands above: cones to 4 in. long. Japan; hardy N. Var. **aciculàris** and var. **refléxa** have curved lvs. and entire cone-scales.

bifòlia: *Abies lasiocarpa.*

boreàlis: a form known as the Finnish spruce but not separated botanically from *P. Abies.*

brachýtyla (*P. Sargentiana*). Branchlets orange-yellow: lvs. flattened, to 1 in. long, white above: cones to 5 in. long. Cent. China; to be tried in north-central regions.—A somewhat more hardy form known as **rhombisquàmea** (*P. ascendens*) has lvs. to ¾ in. long and cones to 4 in. long, the scales emarginate or erose. Var. **complanàta** (*P. complanata*). has lvs. to 1 in. long, acute and cones to 6½ in. long with scales truncate or rounded at apex. W. China; hardy N.

Breweriàna. Branchlets drooping and whip-like: lvs. flattened, to 1 in. long, with white bands above: cones to 5 in. long. S. Ore., N. Calif.—A form *pygmæa* is listed.

canadénsis: *P. glauca.*

complanàta: *P. brachytyla* var.

cornùta: a listed name.

Doúglasii: *Pseudotsuga taxifolia.*

Éngelmannii. Lvs. 4-angled or slightly flattened, to 1 in. long. bluish-green: cones to 3 in. long. B. C. to New Mex.; one of the hardiest. Var. **argéntea** has silvery-gray lvs. and var. **glaùca** steel-blue. Var. **Féndleri** has drooping branchlets and longer lvs.

excélsa: *P. Abies.*

glaùca (*P. canadensis. P. alba*). WHITE S. Branchlets commonly drooping: lvs. 4-angled, to ¾ in. long, bluish-green: cones to 2 in. long. Across Canada and in N. U. S. Var. **albertiàna** (*P. albertiana*) ALBERTA S., lvs. more crowded, cones to 1½ in. long and nearly as broad; B. C. to Mont.; plants grown under this name may be var. *densata.* Var. **aùrea,** lvs. golden-yellow. Var. **cærùlea,** lvs. glaucous. Var. **cónica,** dwarf narrowly conical form. Var. **densàta,** BLACK HILLS S., a very hardy form from the Black Hills of S. D., slow-growing and of compact dense symmetrical habit; sometimes grown as var. *albertiana.* Var. **nàna,** dwarf and dense. Var. **párva** (var. *tabuliformis*), dwarf and flat-topped with horizontal layered branches; **tabulifórmis** is var. *parva.* A var. **gloriòsa** is listed.

Gléhnii. SAGHALIN S. Lvs. 4-angled, to ½ in. long, deep green: cones to 3 in. long. Japan, Saghalin; very hardy.

heterólepis: *P. asperata* var.

hondoénsis: *P. jezoensis* var.

hudsònia: *Abies Fraseri.*

Húrstii: unidentified catalogue name.

jezoénsis (*P.* and *Abies ajanensis*). YEDDO S. Lvs. flattened, to ¾ in. long, silvery-white above, glossy dark green below: cones to 3½ in. long. N. Asia, Japan; hardy N. Var. **hondoénsis** (*P. hondoensis*) has shorter lvs. dull green below.

Kosteriàna: *P. pungens* var.

Koyamài. Lvs. 4-angled, to ½ in. long, with 2 white bands above: cones to 4 in. long. Japan; hardy N.

likiangénsis. Branchlets pale yellow: lvs. 4–angled, with white bands above: cones to 3½ in. long. W. China.

mariàna (*P. nigra*). BLACK S. Lvs. 4-angled, to ¾ in. long, dull or bluish-green: cones to 1½ in. long. Alaska and northern states to mts. of Va. Some of the hort. vars., are: **Beìssneri,** pyramidal form with light bluish-green lvs.; **Doumétii,** of dense pyramidal habit; **ericoìdes,** slow-growing conical form with very thin lvs.; **fastigiàta,** of columnar habit; **nàna,** dwarf form.

Maximowíczii. JAPANESE BUSH S. Lvs. 4-angled, spreading radially, to ½ in. long, dark green and stiff: cones to 2½ in. long. Japan, hardy N.

Meỳeri. Lvs. 4-angled, to ¾ in. long, bluish-green: cones to 3 in. long. N. China; hardy N.

Mòerheimii: *P. pungens* var.

montígena. Lvs. 4-angled, to ½ in. long, with 2 white bands above: cones to 4 in. long. W. China; hardy N.

Moríinda: *P. Smithiana.*

morrisonícola. Lvs. 4-angled, to ¾ in. long, dark green: cones to 2½ in. long. Formosa.

Mòseri. Hybrid between *P. jezoensis* and *P. mariana.*

nìgra: *P. mariana.*

obovàta (*Abies obovata*). SIBERIAN S. Branchlets slightly drooping: lvs. 4-angled, to ¾ in. long, dull or bluish-green: cones to 2½ in. long. N. Eu., N. Asia; very hardy. Var. **alpéstris,** slow-growing form with larger cones. Var. **fénnica,** lvs. dark green.

Omórika (*Abies Omorika*). SERVIAN S. Lvs. flattened, to ½ in. long, with 2 white bands above and glossy dark green below: cones to 2½ in. long. S. Eu.; hardy N., but requires shelter from winter winds to be at its best. Var. **péndula** is listed.

orientàlis. Branchlets slightly drooping: lvs. 4-angled, to ½ in. long, crowded, glossy dark green: cones to 3½ in. long. Caucasus, Asia Minor; hardy in Cent. New England but does best in sheltered positions. Var. **aùrea,** lvs. bronzy-golden. Var. **aùreo-spicàta,** lvs. yellow when young. Var. **nàna** (var. *compacta*), low with wide-spreading branches.

Parryàna: synonym of *P. pungens.*

polìta. TIGERTAIL S. Lvs. 4-angled, to 1 in. long, spreading radially, stiff, glossy dark green: cones to 5 in. long. Japan; hardy N.

púngens. COLORADO S. Lvs. 4-angled, to 1¼ in. long, spreading radially, stiff and spiny-pointed, usually bluish-green: cones to 4 in. long. Colo., Wyo., Utah, New Mex.; very hardy. Hort. vars. are: **argéntea,** lvs. silvery-white; **aùrea,** lvs. golden-yellow; **Bàkeri,** deeper blue and with longer needles than var. *argentea*; **cærùlea,** lvs. bluish-white; **compácta,** dwarf and compact; **glaùca,** lvs. bluish. **Hoòpsii,** very silvery; **Hunnewelliàna,** dense dwarf form; **Kosteriàna** (var. *glauca pendula*), branchlets drooping, lvs. bluish; **Mòerheimii,** compact, foliage blue; **Spéckii,** foliage bluish-white; **víridis,** lvs. green.

purpùrea. Branchlets orange-yellow: lvs. 4-angled, to ½ in. long, with 2 white bands above and green below: cones to 2½ in. long, purple. W. China; hardy N. in special locations.

retrofléxa. Branchlets bright yellow: lvs. 4-angled, to 1 in. long: cones to 5 in. long. W. China.

rùbens (*P. rubra. Abies rubra*). RED S. Lvs. 4-angled, ½ in. long, dark or bright green: cones to 2 in. long. N. S. to mts. of N. C. Var. **monstròsa** is listed; var. **virgàta** has long slender branches without branchlets.

rùbra: *P. rubens.*

Sargentiàna: *P. brachytyla.*

Schrenkiàna. Branchlets drooping: lvs. 4-angled, to 1½ in. long, radially spreading, dull green: cones to 4 in. long. Cent. Asia; hardy in S. New England. There is a var. **glaùca.**

sitchénsis. SITKA S. Lvs. flattened, to 1 in. long, spiny-pointed, silvery-white above, glossy green below: cones to 4 in. long. Alaska to Calif., can be grown in central states and S. New England, best in long dry summers. Var. **speciòsa** is more compact and slower-growing.

Smithiàna (*P. Morinda*). HIMALAYAN S. Branchlets drooping: lvs. 4-angled, to 2 in. long, spreading radially, bright or dark green: cones to 7 in. long. Himalayas; can be grown in north central Atlantic states and in S. New England in sheltered positions.

spinulòsa. Branchlets drooping: lvs. slightly flattened, to 1½ in. long, with 2 glaucous bands above: cones to 4 in. long. Himalayas; to be planted far S.

Watsoniàna: *P. Wilsonii.*

Wílsonii (*P. Watsoniana*). Lvs. 4-angled, ½ in. long, sharp-pointed, dark green: cones to 2½ in. long. Cent. China; hardy N.

PICKEREL-WEED: *Pontederia cordata.*

PICKERÍNGIA. CHAPARRAL - PEA. *Leguminosæ.* One spiny evergreen shrub, **P. montàna,** allied to Lupinus but differing in stamens all distinct. To 7 ft., much branched: lvs. palmately 1–3-foliolate, to ½ in. long, nearly sessile, lfts. obovate to oblanceolate, glabrous to tomentose, stipules absent: fls. purple, to ¾ in. long, almost sessile: pod flattened, straight and linear. Calif.

PICOTEE: *Dianthus Caryophyllus.*

PICRÁSMA. *Simarubaceæ.* A small genus of subtrop. trees and shrubs occurring in Asia, W. Indies and Brazil, having large unequally pinnate lvs. and small fls. in axillary panicles: fr. of 1–5 fleshy or leathery drupes.

quassioìdes. Shrub to 8 ft. or more, irregularly branched with sts. often decumbent, bark very bitter: lvs. to 15 in. long, lfts. 9–15, obovate, acuminate, serrate, lowest pair small and stipule-like: fls. green: fr. of 3–5 membranous drupes, each about ¼ in. diam. and 1-seeded. Himalayas.

PICRIDIUM VULGARE: *Reichardia picroides.*

PÍCRIS. *Compositæ.* Hairy ann. or per. herbs native in temp. regions of the Old World, with alternate toothed lvs. and heads of yellow ligulate fls. borne in corymbs; pappus of white bristles. Sometimes seen in the flower-garden.

echioìdes. Ann. to 2 ft., with appearance of Sonchus: lvs. oblong-lanceolate, wavy-toothed, covered with bristly hairs: heads ½ in. long. Eu., N. Afr.

PICROTHAMNUS: see *Artemisia spinescens.*

PIE-PLANT: *Rheum Rhaponticum.*

PÌERIS. *Ericaceæ.* Evergreen shrubs or small trees in N. Amer. and Asia with mostly alternate toothed lvs., white urn-shaped fls. in terminal panicles, and dry capsular frs.

Pierises require moist peaty or sandy soil and partial shade. They are sometimes forced under glass. Propagated by seeds, by layers, and cuttings of ripe wood under glass which root slowly. The following (except the last two) are hardy North.

floribúnda (*Andromeda floribunda*). To 6 ft., the branches hairy: lvs. ciliate: fls. ¼ in. long, in erect panicles to 5 in. long. Apr.–May. Va. to Ga.

formòsa. Small shrubby tree to 20 ft.: lvs. elliptic-oblong to lanceolate, to 6 in. long, acuminate, margins finely toothed: fls. white, often tinged pink, panicles drooping, to 6 in. long. E. Himalayas.

japónica (*Andromeda japonica*). To 10 ft. or more, the branches glabrous: fls. ⅓ in. long, in drooping panicles to 6 in. long. Apr.–May. Japan. Var. **variegàta** (var. *albomarginata*), lvs. with whitish margins.

lùcida: *Lyonia lucida.*

mariàna: *Lyonia mariana.*

nàna (*Arcterica nana*). Prostrate shrub with puberulous sts.: lvs. elliptic to elliptic-oblong, to ½ in. long, entire, mucronulate, usually in whorls of 3: fls. to ⅙ in. long, in terminal 3's or short racemes. N. E. Asia.—Not hardy north of Va.

nítida: *Lyonia lucida.*

taiwanénsis. Branches glabrous: fls. ¼ in. long, nodding, in dense panicled racemes to 2½ in. long. Formosa.

PIGEON-BERRY: *Duranta repens.*

PIGNUT: *Carya glabra.*

PIGWEED: *Chenopodium.*

PÌLEA (*Adicea*). *Urticaceæ.* Small herbs with opposite lvs. and small unisexual fls. in axillary clusters; grown as pot-plants or for edgings in greenhouses or out-of-doors in the S. for the compact habit and small foliage; native in warm and tropical countries. Of easy cult. but require abundant moisture. Propagated by cuttings.

callitrichoìdes: *P. microphylla.*

microphýlla (*P. callitrichoides. P. muscosa*). ARTILLERY PLANT. Ann. or bien., the fleshy sts. suberect to 1 ft. high: lvs. oblong to ovate with cuneate base, of unequal size, to ¼ in. long, entire, petiole much shorter than blade, cystoliths (minute calcium secretions) on lower lf. surface very faint and absent above: fls. in sessile or subsessile cymes, staminate fls. discharging pollen forcibly when dry. Trop. Amer., S. Fla.—A very variable species, growing as a slender impoverished plant in crevices among rocks or as a robust plant in the border. Requires protection in the N. Much grown in greenhouses.

muscòsa: *P. microphylla.*

nummulariæfòlia. CREEPING CHARLEY. Per. with creeping sts. rooting at nodes: lvs. orbicular, to ¾ in. across, crenate. W. Indies.

serpyllàcea. Similar to *P. microphylla* in general habit and appearance, differing in its orbicular lvs. rounded at base, and fls. in pedunculate cymes, the peduncles usually longer than the lvs. Trop. Amer.

serpyllifòlia. Material listed in the trade under this name is probably *P. microphylla*, as the true *P. serpyllifolia* is not known to be cult.

PILEOSTÈGIA. *Saxifragaceæ.* A monotypic shrubby E. Indian genus. **P. viburnoìdes.** Viburnum-like shrub: lvs. opposite, petioled, ovate-lanceolate to oblong, 3–5 in. long, entire, persistent, leathery: fls. small, in terminal panicles; petals 4–5, falling off in a cap; stamens 8–10; ovary inferior, 4–6-celled.

PILOCÈREUS. *Cactaceæ.* The older and accepted name for this genus is Cephalocereus, which see. The following names under Pilocereus are referable to other genera; some are insufficiently described and are here placed provisionally under their original name. Certain cactus writers retain the genus Pilocereus.

acránthus: see *Haageocereus acranthus.*

albispìnus (*Cereus albispinus*). Columnar, usually simple; ribs 8–12, woolly at top; radial spines 8–13, white tipped with red. W. Indies. Var. **Wéberi** has weak branches and shorter spines.

arrábidæ: *Cephalocereus arrabidæ.*

àtro-víridis. To 3 ft., branches to 8 in. thick and tipped with white hairs; ribs about 8 and wavy; radial spines 8; central spines 3 and ¾ in. long, white. Colombia.

Báckebergii (*Cereus Backebergii*). Tree-like, to 15 ft., light bluish-green; ribs 9–15 with areoles having silky white wool; radial spines 10–12 and ½ in. long; central to 2 in. long: fls. yellowish-green, whitish inside. Venezuela.

brasiliénsis: *Cephalocereus brasiliensis.*

Celsiànus: *Oreocereus Celsianus.*

chrysacánthus: *Cephalocereus chrysacanthus.*

Cóllinsii: *Cephalocereus Collinsii.*

colombiànus: *Cephalocereus colombianus.*

Dautwítzii: *Espostoa lanata.*

erythrocéphalus: *Denmoza rhodacantha.*

euphorbioìdes: *Cephalocereus euphorbioides.*

fossulàtus: *Oreocereus Celsianus* var. *foveolatus.*

Frìcii (*Cereus Fricii*). Tree-like, little branched; ribs 4–5, areoles woolly; radial spines 7, to 1 in. long; central usually 1, to 2 in. long: fls. white, greenish outside. Venezuela.

gigantèus: *Carnegiea gigantea.*

Gounéllei: *Cephalocereus Gounellei.*

Haàgei: *Espostoa lanata.*

Hóppenstedtii: *Cephalocereus Hoppenstedtii.*

Houllétii: *Cephalocereus Palmeri.*

lanuginòsus: *Cephalocereus lanuginosus.*

leucostèle: *Cephalocereus leucostele.*

Llànosii. Similar to *Cereus peruvianus.* S. Amer.

macrocéphalus: *Cephalocereus macrocephalus.*

Moritziànus: *Cephalocereus Moritzianus.*

nóbilis: *Cephalocereus nobilis.*

pentædróphorus: *Cephalocereus pentædrophorus*

Púrpusii: *Cephalocereus Purpusii.*

remolinénsis (*Cereus remolinensis*). Much branched, 30–40 ft., shining green; ribs 6–7, the areoles densely woolly when young; radial spines 7–13 and to ½ in. long; central to 1 in. long: fls. creamy-white tipped with lilac-rose, to 2½ in. long. Colombia.

Russeliànus: *Cephalocereus Russelianus.*

Sartoriànus: *Cephalocereus Sartorianus.*

senìlis: *Cephalocereus senilis.*

sericàtus: see *Espostoa lanata.*

setòsus: *Cephalocereus Gounellei.*

Smithiànus: *Cephalocereus Smithianus.*

Straùssii: *Cleistocactus Straussii.*

Tetétzo: *Pachycereus Tetetzo.*

Tróllii: *Oreocereus Trollii.*

PILOGYNE: *Melothria punctata.*

PIMÈLEA (*Banksia* of some writers). RICE-FLOWER. *Thymelæaceæ.* Shrubs native in Australia and New Zeal., with simple entire lvs., white, pink or reddish fls. in terminal heads, bisexual or diœcious, fr. a drupe.

Pimeleas are grown out-of-doors in warm climates and in the greenhouse. Propagated in early spring by cuttings of half-ripened shoots under glass in a temperature of 55–60°.

coárctica: listed name of dwarf plant reputed to have glaucous lvs., abundant minute white fls. and white fr.—The name is not botanically known.

decussàta: *P. ferruginea.*

ferrugínea (*P. decussata*). To 3 ft.: lvs. opposite and crowded, ovate or oblong, to ½ in. long, margins revolute: fls. rose, in round heads which are subtended by pink or red involucral lvs. or sometimes only tinged. W. Australia.

graciliflòra. To 2½ ft.: lvs. opposite, lanceolate, to ¾ in. long, dotted above: fls. white, in globular heads. W. Australia.

ligustrìna. To 6 ft.: lvs. opposite, ovate or oblong, to 1½ in. or more long: fls. white, in globular heads. Australia, Tasmania.

spectábilis. To 4 ft.: lvs. opposite and crowded, linear-oblong to lanceolate, to 1½ in. long: fls. white or pinkish, in large globular heads subtended by involucral lvs. tinged on margins. W. Australia.

PIMÉNTA. *Myrtaceæ.* Aromatic trees of trop. Amer. with opposite simple leathery lvs., small fls. in cymes, and drupaceous fr.; one species furnishes allspice and another grown for the oil which is used in the preparation of bay-rum. Adapted to trop. climates.

àcris (*Amomis caryophyllata*). Bay-Rum-Tree. To 45 ft.: lvs. elliptic to obovate, to 6 in. long: fls. white; calyx 5-lobed: fr. about ⅓ in. long. W. Indies, S.

officinàlis. Allspice. Pimento. To 40 ft.: lvs. oblong, to 7 in. long: fls. white; calyx 4-lobed: fr. dark brown, ¼ in. long. W. Indies, Cent. Amer.

PIMENTO: from Spanish *pimiento*, pepper; in U. S. applied as a general term to Capsicum, and sometimes to a specific cult. variety.

PIMPERNEL: *Anagallis.*

PIMPINÉLLA. *Umbelliferæ.* Herbs with pinnately compound lvs., small white or yellow fls. in compound umbels, and ovate frs.; anise is cult. for its use in medicine and cookery. Propagated by seeds sown where plants are to stand.

Anìsum. Anise. Ann. to 2 ft.: basal lvs. simple or ternate, st.-lvs. 1–2-pinnate or ternate, entire or toothed. Greece to Egypt.

mágna. To 2½ ft., stout: lf.-segms. usually undivided, ovate to lanceolate, to 1½ in. long, teeth or lobes very pointed: fls. white or in var. **ròsea** pink, in large terminal umbels of 10–15 rays. Eu.

PINACEÆ. Pine Family. About a dozen genera of resinous trees and shrubs of wide distribution, having linear needle-like lvs., fls. in cones, and fr. a hard woody cone. The family was established by Lindley in 1847 and until recently included the Taxodiaceæ and Cupressaceæ, two groups here treated as separate families. Pinaceæ is technically distinguished by the cones, formed of distinct scales and bracts, the former with 2 usually winged seeds. See *Conifers.* The family contains many valuable timber trees and numerous ornamental subjects, as Abies, Cedrus, Keteleeria, Larix, Picea, Pinus, Pseudolarix, Pseudotsuga, Tsuga.

PINÁNGA. *Palmaceæ.* Bamboo-like unarmed ringed monœcious feather-palms of the Indo-Malayan region, 60 or more species: trunks solitary or plant gregarious or colonizing: pinnæ mostly short, often broad, sometimes truncate and toothed at apex, upper ones mostly confluent: spadices among the lvs., short, commonly with few or several strands from the base; fls. in 3's, the middle one pistillate; stamens 6 or more: fr. small, ovoid or ellipsoidal. Sometimes grown under glass and to be expected in S. Fla. See *Palm.*

decòra. St. tall: lvs. arching and graceful; pinnæ of mature lvs. apparently 2 pairs, broadly lanceolate and gradually acuminate, strongly several-nerved. Borneo.—Described from juvenile plants and character doubtful; perhaps two palms have passed under this name.

Kùhlii. Attractive plant because of the neat tufted habit and coral-red refracted spadices: sts. several, to 30 ft., many-ringed: lvs. 3–4 ft. long, pliable; pinnæ 3–6 pairs, 1–2 ft. long and to 3 in. broad, strongly several-ribbed, the upper ones truncate and toothed, the lower sharply acuminate; spadix 1 ft. long, of several branches: fr. nearly ½ in. long. S. Andaman Isls., Sumatra, Java.

pátula. Plant colonizing: st. solitary, 6 ft. or more, ringed and smooth: lvs. 4–5 ft. long; pinnæ strongly several-nerved, 16–36, the lower and middle ones 6–12 in. long and long-acuminate and 1–2 in. broad, the upper ones broader and confluent and truncate and toothed at apex: spadices on the trunk below the lvs., short-peduncled, with several rather stout branches: fr. ellipsoid, orange-red, ⅔ in. long. Sumatra.

PINCUSHION, BLUE: *Brunonia australis.* **-Flower:** *Scabiosa.*

PINE: *Pinus.* **Australian-:** *Casuarina.* **-Barren Beauty:** *Pyxidanthera barbulata.* **Cypress-:** *Callitris.* **Dammar-:** *Agathis.* **Ground-:** *Lycopodium obscurum.* **Hoop-:** *Araucaria Cunninghamii.* **Huon-:** *Dacrydium Franklinii.* **Kauri-:** *Agathis.* **New-Caledonian-:** *Araucaria columnaris.* **Norfolk-Island-:** *Araucaria excelsa.* **Running-:** *Lycopodium clavatum.* **Screw-:** *Pandanus.* **Umbrella-:** *Sciadopitys verticillata.*

PINEAPPLE. A composite body representing the fruiting inflorescence of *Ananas comosus;* see *Ananas.*

Some years ago, along the east coast of Florida, the pineapple was raised on a very considerable scale in the open and under slat sheds as far north as 27.5°. In other parts of that state, as in Lee, Orange and Pinellas counties it was grown to some extent under lath sheds. At one time the crop was in excess of a half million crates annually, but now the pineapple, as a commercial fruit, has almost disappeared from Florida. This was brought about by a combination of circumstances, among which may be mentioned diseases (in particular, a wilt caused by a virus spread by mealy-bugs), a succession of cold winters, high freight rates, and the development of its culture elsewhere, particularly in Cuba, Puerto Rico and Hawaii. At present most of the fresh fruit entering the markets of the eastern United States comes from Cuba and Puerto Rico. The western states are supplied with fresh fruit from Hawaii and the canned fruit trade is furnished almost entirely with large quantities from the Hawaiian fields. The largest areas are in Hawaii where 75 per cent of the world's crop is produced. Most of the product is canned.

Commercial propagation of pineapple is by means of (1) ratoons, or suckers, that come from the base of the old fruiting stem, (2) stem slips developed along the trunk or stem of matured plants, and (3) fruit slips, produced around the base of the fruit. The crown, or leafy part on top of the fruit, will also produce a plant, but it is slow in coming into fruit and it is not usually employed in commercial plantings. Plants will also develop from old stems if they are cut up and partially buried in the earth.

The exact nature or character of the soil is not important. It may vary from light sand to heavy clay. It is important, however, that it be thoroughly well drained, for although the pineapple requires abundant water for its development, it will not grow where the drainage is poor and water stagnates. In some localities excess lime and manganese have caused trouble. The difficulties due to the presence of manganese are caused by its effect on the availability of iron and have been overcome by using iron sulfate spray.

Pineapples are planted in beds of three or more rows. In Hawaii the three-row system is largely used in planting Smooth Cayenne, while beds with a larger number of rows are preferred in the West Indies for smaller-fruited varieties. The number of slips to the acre will vary from 7,500 to 15,000 depending on the distance apart they are set and the number of rows to each bed. The usual distances apart for the plants vary from 18–24 inches. Slips are set just deep enough to keep them in an upright position. On light soils it is usual to drop a small amount of cottonseed-meal into the centers of the plants. This forms a cake and prevents their being filled with sand.

Tillage must be shallow (an inch or so) inasmuch as pineapple roots are near the surface. The favorite tool is the scuffle hoe with which shallow cultivation and weed destruction are readily accomplished. Old plantations are not cultivated. In Hawaii mulching with special paper has come into considerable use.

The extent to which fertilizers are used will depend on the nature of the soil, the number of plants set to an acre, and the age of the plantation. On light sandy soils fertilizers are applied in large quantities, a ton or more to the acre being not unusual. Applications are usually made in October, February and June. Tankage and dried blood are good sources of nitrogen, potash may be furnished from high or low grade sulfate of potash, and phosphoric acid from ground bone, raw or steamed. In Hawaii high analysis fertilizers with ammonium sulfate as a nitrogen source are used.

Yields vary with intensity of culture. The first and heaviest crop in Hawaii may be 30 tons to the acre. Three crops are usually harvested before replanting which may total 50–60 tons to the acre.

If intended for shipment to distant points pineapples are commonly picked a week or so before reaching full maturity. If intended for local consumption or for canning at nearby establishments they may be allowed to become much riper, thereby developing their full delicious flavor. There is perhaps no more luscious fruit than a well-grown field-ripened pineapple. For shipment, fruits are wrapped in paper and packed in crates, in rows, the crowns and bases alternating. The superior varieties are packed in cases with excelsior.

Insect and disease control presents a serious problem. The wilt is caused by a virus spread by mealy-bugs. Another virus is spread by thrips. Spraying with contact insecticides, particularly oil emulsions, controls these insects and thus checks the spread of the diseases. Nematodes are often troublesome. They are best handled by rotating the crop, and planting crotalaria or Natal-grass to starve them out. Several soil and fertilizer troubles may arise, but these can usually be overcome without much difficulty.

Varieties of pineapples in commercial plantings have never been great in number when compared with other fruits. In Hawaii the favorite is Smooth Cayenne and this has been the most important fancy variety in other parts of the world. In Florida in years past, and in the West Indies now, the most important variety by far is Red Spanish. Here and there other varieties, Porto Rico for example, a very large kind, and Abbaka a small fruit of very high quality, are seen. Into commercial plantings today only two varieties, Smooth Cayenne and Red Spanish, enter to any extent.

PINEAPPLE-FLOWER: *Eucomis comosa.*

PINEWEED: *Hypericum gentianoides.*

PINGUÍCULA. Butterwort. *Lentibulariaceæ.* Small herbs with basal entire lvs. usually covered above with a sticky secretion on which insects adhere, white, purple or yellow fls. solitary on a scape, the corolla 2-lipped and spurred at base, and capsular frs.; of wide distribution in moist ground.

Butterworts are grown mostly on rocks or in moist rock-gardens. Propagated by seeds and offsets when produced.

austràlis: *P. elatior.*

elàtior (*P. australis*). To 1 ft.: lvs. to 1½ in. long: fls. purple varying to white, 1 in. across, the lobes 2-parted. N. C. to Fla.

grandiflòra. To 8 in.: lvs. oval: fls. violet, 1 in. long and ¾ in. across, the lobes wavy. W. Eu.

lùtea. To 1 ft.: lvs. ovate, to 2½ in. long: fls. golden-yellow, to 1½ in. long and broad, with nearly regular corolla-limb. N. C. to Fla. and La.

Reùteri. Per. to 6 in., glandular-pubescent: lvs. ovate-oblong: fls. lilac-blue, to ¾ in. long, upper lobes subacute. Swiss Alps.

vulgàris. To 6 in.: lvs. ovate, to 1½ in. long: fls. violet or purple, ½ in. long and broad. N. N. Amer., Eu., Asia.

PINGUIN: *Bromelia Pinguin.*

PINK: *Dianthus.* **Cushion:** *Silene acaulis.* **Fire:** *Silene virginica.* **Ground-:** *Phlox subulata, Gilia dianthoides.* **Indian:** *Silene laciniata, Lobelia cardinalis.* **Moss-:** *Phlox subulata.* **Mullein-:** *Lychnis coronaria.* **-Root:** *Spigelia marilandica.* **Sea-:** *Armeria.* **-Shower:** *Cassia grandis.* **Swamp-:** *Helonias bullata.* **-Vine:** *Antigonon leptopus.* **Wild:** *Silene caroliniana.*

PINNA: a primary division or leaflet of a pinnate leaf.

PINNATE: feather-formed; with the leaflets of a compound leaf placed on either side of the continuing rachis.

PINNATIFID: cleft or parted in a pinnate (rather than palmate) way.

PINNATISECT: cut down to the midrib in a pinnate way.

PINNULE: a secondary pinna or leaflet in a pinnately decompound leaf.

PIÑON, PINYON: *Pinus cembroides.*

PÌNUS. Pine. *Pinaceæ.* Commanding evergreen trees having two kinds of lvs., the scale-like ones deciduous, the permanent lvs. linear and borne in clusters usually of 2–5, staminate fls. in catkins, and cylindric or nearly globose pistillate cones with woody scales; native in the northern hemisphere, and furnishing many valuable timber and ornamental trees, most of them adapted to large areas and extended grounds but a few dwarf and compact forms. For cult. see *Conifers.*

albicaùlis. Whitebark P. Lvs. in clusters of 5, to 2½ in. long, stiff, dark green: cones ovoid, to 3 in. long. B. C. to Calif.; very hardy.

aristàta. Hickory P. Bristle-Cone P. Sometimes shrubby: lvs. in clusters of 5, to 1½ in. long, dark green with whitish exudations of resin: cones cylindric-ovoid, to 3½ in. long. Calif. to Colo.; stands in S. New England but grows very slowly.

arizónica: *P. ponderosa* var.

Ármandii. Lvs. in clusters of 5, to 6 in. long, bright green and thin: cones oblong-conical, 6 in. and more long. China, Formosa, Korea; hardy N.

attenuàta (*P. tuberculata*). Knob-Cone P. Lvs. in clusters of 3 or rarely 2, to 5 in. and more long, pale yellowish or bluish-green: cones conic-oblong, to 6 in. long. Ore. to Calif.

austrìaca: *P. nigra.*

Ayacahùite. Mexican White P. Lvs. in clusters of 5, to 6 in. long, bluish-green: cones cylindric-conical, to 15 in. long. Mex. to Guatemala. Var. **brachýptera** has larger seeds. Var. **Veìtchii** has longer cones.

Balfouriàna. Foxtail P. Lvs. in clusters of 5, to 1½ in.

long, stiff, dark green: cones cylindric, to 5 in. long, drooping. Calif.

Banksiàna (*P. divaricata*). JACK P. Lvs. in clusters of 2, 1 in. long, stiff and twisted, bright or dark green: cones conic-oblong, to 2 in. long. N. S. to N. Y. and Minn.

brùtia: *P. halepensis* var.

Bungeàna. LACEBARK P. Lvs. in clusters of 3, to 4 in. long, stiff, light green: cones conic-ovate, to 3 in. long. N. W. China; hardy N. but may remain bushy.

canariénsis. Lvs. in clusters of 3, to 12 in. long, glossy light green, drooping: cones cylindric-ovoid, to 8 in. long. Canary Isls.

caribæa. SLASH P. Lvs. in clusters of 3 or 2, to 12 in. long, glossy dark green: cones conic-oblong, to 6½ in. long. S. U. S., Cent. Amer.

Cémbra. SWISS STONE P. Lvs. in clusters of 5, to 5 in. long, dark green: cones ovoid, to 3½ in. long. Eu., N. Asia; hardy N., but very slow growing. Var. **aùrea**, foliage yellowish. Var. **columnàris** is of columnar habit. Var. **sibírica** has shorter lvs. and larger cones.

cembroìdes. MEXICAN STONE P. PIÑON or PINYON. Lvs. in 3 or 2, to 2 in. long, dark green: cones nearly globose, to 2 in. long. Ariz. to Mex.; to be planted far S. Var. **edùlis** (*P. edulis*). NUT P. Lvs. stiff, dark green. Wyo. to New Mex.; apparently hardier. Var. **monophýlla** (*P. monophylla. P. Fremontiana*). Lvs. usually solitary, stiff and spiny-pointed. Calif. to Colo. Var. **Parryàna** (*P. Parryana. P. quadrifolia*). Lvs. in clusters of 3–5, stiff, pale glaucous-green. Calif.

claùsa. SAND P. Lvs. in clusters of 2, to 3 in. long, dark green: cones conic-ovoid, to 3½ in. long. Fla., Ala.

contórta. SHORE P. Lvs. in clusters of 2, to 2 in. long, stiff and twisted, dark green: cones conic-ovoid, to 2 in. long. Alaska to Calif.; not hardy in northeastern states. Var. **latifòlia** (*P. Murrayana*). LODGE-POLE P. Lvs. longer, lighter green. Rocky Mts.; hardy E.

Còulteri. Lvs. in clusters of 3, to 12 in. long, dark bluish-green: cones cylindric-ovoid, to 14 in. long, drooping. Calif.; can be grown in sheltered places in S. New England.

densiflòra. JAPANESE RED P. Lvs. in clusters of 2, to 5 in. long, bright bluish-green: cones conic-ovoid to oblong, 2 in. long. Japan; hardy N., but sometimes suffers in severe winters. Hort. vars. are: **álbo-terminàta**, tips of lvs. yellowish-white; **aùrea**, lvs. yellow; **globòsa**, dwarf globose form; **òculus-dracònis**, lvs. with 2 yellow bands; **péndula**, branches drooping or prostrate; **umbraculífera**, TANYOSHO, JAPANESE UMBRELLA P., dwarf form with umbrella-like head.

divaricàta: *P. Banksiana.*

echinàta (*P. mitis*). SHORTLEAF P. Lvs. in clusters of 2, to 5 in. long, dark bluish-green: cones conic-oblong, to 2 in. long. N. Y. to Fla. and Tex.

edùlis: *P. cembroides* var.

excélsa: *P. nepalensis.*

fléxilis. LIMBER P. Lvs. in clusters of 5, to 3 in. long, stiff, dark green: cones ovoid, to 6 in. long. Alta. to Calif. and Tex.; hardy N. Var. **refléxa**, taller, with longer lvs. and cones. Ariz.

Fremontiàna: *P. cembroides* var. *monophylla.*

Gerardiàna. Lvs. in clusters of 3, to 4 in. long, bluish-green: cones to 9 in. long. Himalayas.

glàbra. CEDAR P. Lvs. in clusters of 2, to 3 in. long, soft: cones ovoid, to 2½ in. long. S. C. to Fla. and La.

halepénsis. ALEPPO P. Lvs. in clusters of 2 or rarely 3, to 4 in. long, light green: cones conic-ovoid, to 3½ in. long. Medit. region; to be planted in mild climates. Var. **brùtia** (*P. brutia. P. pyrenaica*). Lvs. longer, stiffer, darker green.

Heldreìchii. GRAYBARK P. Lvs. in clusters of 2, to 2½ in. long, stiff, bright green: cones ovoid, 3 in. long. Balkan Peninsula; hardy N. Var. **leucodérmis** (*P. leucodermis*) has more whitish bark and grayish-white smooth twigs.

horizontàlis: *P. nigra* var. *cebennensis.*

insígnis: *P. radiata.*

insulàris. BENGUET P. Lvs. in clusters of 3, or rarely 2, to 10 in. long, pliable, bright green: cones ovate-conic, to 4 in. long. Philippines, Burma.

Jéffreyi. Lvs. in clusters of 3, to 8 in. long, pale bluish-green: cones conic-ovoid, to 12 in. long. Ore. to Calif.; hardy N.

koraiénsis (*P. mandshurica*). KOREAN P. Lvs. in clusters of 5, to 4 in. long, dark green: cones conic-oblong, to 6 in. long. Japan, Korea; hardy N., but grows slowly in northern climates and should be planted in sheltered positions. Var. **glaùca** has bluish-green foliage.

Lambertiàna. SUGAR P. Lvs. in clusters of 5, to 4 in. long, sharp-pointed, with white lines on back: cones cylindric, to 20 in. long. Ore. to Lower Calif.; hardy N., needs protection from winter winds.

Larício: *P. nigra.*

leiophýlla. Lvs. in clusters of 3, to 4 in. long, lf.-sheaths deciduous: cones to 2 in. long. New Mex., Ariz., N. Mex.

leucodérmis: *P. Heldreichii* var.

longifòlia: *P. Roxburghii.*

luchuénsis. Lvs. in clusters of 2, 6 in. long: cones ovate-conic, 2 in. long. Lu-Chu Isls. south of Japan.

mandshùrica: *P. koraiensis.*

marítima: *P. Pinaster.*

Massoniàna. Lvs. in clusters of 2, to 8 in. long, thin, light green: cones ovoid, to 3 in. long. China; probably not hardy N.—The material usually cult. under this name is *P. densiflora.*

Merkùsii. TENASSERIM P. Differs from *P. insularis* in lvs. in clusters of 2 and narrow-cylindrical cones to 3 in. long. Philippines.

mitis: *P. echinata.*

mongólica of the trade is probably *P. tabulæformis.*

monophýlla: *P. cembroides* var.

monspeliénsis: *P. nigra* var. *cebennensis.*

montàna: *P. Mugo.*

Montezùmæ. Lvs. usually in clusters of 5, to 12 in. long, often bluish-green: cones conical, to 12 in. long. Mex. to Guatemala. Var. **Hártwegii** has shorter lvs. and smaller cones.

montícola. WESTERN WHITE P. Lvs. in clusters of 5, to 4 in. long, stiff, bluish-green: cones cylindric, to 11 in. long. B. C. to Calif.; hardy N.

Mùgo (*P. montana*). SWISS MOUNTAIN P. Lvs. in clusters of 2, to 2 in. long, crowded, bright green: cones ovoid, to 2¼ in. long. Eu.; hardy N. Var. **compácta**, dense globose form. Var. **gállica** is listed. Var. **Mùghus** (var. *prostrata*). Commonly a prostrate shrub with shorter cones. Var. **Pumílio** (*P. Pumilio*). Usually shrubby. Var. **rostràta** (*P. montana* var. *uncinata. P. uncinata*). Tree to 80 ft.: cone-scale apices pyramidal and with deflexed hook-like processes. France, Spain. Var. **rotundàta.** Tree to 30 ft. with several sts. Var. **Slàvinii.** Low, compact and spreading with erect branchlets, foliage bluish-green.

muricàta. BISHOP P. Lvs. in clusters of 2, to 7 in. long, stiff, usually twisted, dark green: cones oblong-ovoid, to 3½ in. long. Calif.

Murrayàna: *P. contorta* var. *latifolia.*

Nélsonii. Lvs. in clusters of 3, to 3½ in. long, grayish-green: cones cylindric. Mex.

nepalénsis (*P. excelsa*). HIMALAYAN WHITE P. BLUE P. Lvs. in clusters of 5, to 8 in. long, drooping, grayish-green: cones cylindric, to 10 in. long. Himalayas. Var. **zebrìna**, lvs. with yellow areas, appearing as if zoned.

nìgra (*P. austriaca. P. Laricio. P. nigra* var. *austriaca*). AUSTRIAN P. Lvs. in fascicles of 2, to 6½ in. long, stiff, dark green: cones ovoid, to 3½ in. long. Eu., Asia Minor; hardy and good. Var. **calábrica** is var. *Poiretiana.* Var. **caramánica** (var. *Pallasiana*). CRIMEAN P. Tree with broad pyramidal head and glossy lvs. W. Asia. Var. **cebennénsis** (*P. monspeliensis. P. horizontalis*). Lvs. slender, cones smaller. S. France, Pyrenees. Var. **globòsa** is very dense. Var. **Hornibrookiàna.** Low and spreading, lvs. stiff and crowded, to 2½ in. long. Var. **monstròsa.** Of columnar habit, the branchlets irregular and contorted. Var. **péndula** has drooping branches. Var. **Poiretiàna** (var. *calabrica*). CORSICAN P. Tree with narrower head and lighter twisted green lvs. S. Eu. Var. **prostràta** has prostrate branches, var. **pygmæa** is dwarf, and var. **pyramidàlis** is narrow with ascending curved branches.

oocárpa. Tree to 50 ft.: lvs. in fascicles of 3, 4 or 5, erect, to 12 in. long, bright green: cones ovoid, to 3½ in. long, persistent, hanging from elongated usually curved peduncle. Mex. and Cent. Amer.—Doubtfully in cult. although listed.

palústris. LONGLEAF P. Lvs. in clusters of 3, forming tufts at ends of branchlets, to 18 in. long, dark green: cones cylindric, to 10 in. long. Va. to Fla. and Miss.; adaptable in the S.

Parryàna: *P. cembroides* var.

parviflòra. JAPANESE WHITE P. Lvs. in clusters of 5, forming tufts at ends of branchlets, to 1½ in. long, bluish-green: cones ovoid, to 3 in. long. Japan; hardy N. Var. **glaùca** has glaucous lvs. Var. **nàna** is less vigorous and has shorter lvs. Var. **pentaphýlla** (*P. pentaphylla*) is the wild form.

pátula. Lvs. usually in clusters of 3, to 12 in. long, drooping, grass-green: cones conic-ovoid, to 4½ in. long. Mex.

pentaphýlla: *P. parviflora* var.

Peùce. MACEDONIAN P. Lvs. in clusters of 5, to 4 in. long, bluish-green: cones cylindric, to 6 in. long. Balkan Mts.; very hardy.

Pináster (*P. maritima*). CLUSTER P. Lvs. in clusters of 2, to 9 in. long, stiff, glossy green: cones conic-ovoid, to 7 in.

long. Medit. region; will stand only S. and in Calif., although it may be grown in favored positions in S. New England if protected. Var. **Hámiltonii** has shorter lvs. and larger cones.

Pinceàna. Lvs. in clusters of 3, to 6 in. long: cones cylindric, to 3½ in. long. Mex.

Pìnea. Italian Stone P. Lvs. in clusters of 2, to 8 in. long, stiff, bright green: cones ovoid, to 5½ in. long. Medit. region.

Poiretiàna: *P. nigra* var.

ponderòsa. Western Yellow P. Lvs. usually in clusters of 3, to 11 in. long, dark green: cones ovoid-oblong, to 6 in. long. B. C. to Mex. and Tex.; hardy N. Var. **arizónica** has shorter lvs. and cones. Ariz., New Mex. Var. **péndula** has drooping branches. Var. **scopulòrum** (*P. scopulorum*), Rocky Mt. Yellow P., is smaller.

pùmila. Dwarf Stone P. Shrub with prostrate branches: lvs in clusters of 5, to 3 in. long: cones ovoid, to 1¾ in. long. N. Asia.

Pumílio: *P. Mugo* var.

púngens. Table Mountain P. Lvs. in clusters of 2 or 3, to 2½ in. long, stiff and twisted, dark green: cones conic-ovoid, to 3½ in. long. N. J. to Ga.

pyrenàica: *P. halepensis* var. *brutia*.

quadrifòlia: *P. cembroides* var. *Parryana*.

radiàta (*P. insignis*). Monterey P. Lvs. in clusters of 3, to 6 in. long, bright green: cones conic-ovoid, to 7 in. long. S. to Lower Calif. Var. **binàta.** Lvs. in clusters of 2, stouter. Santa Rosa and Guadalupe Isls.

resinòsa. Red P. Lvs. in clusters of 2, to 6 in. long, flexible, glossy: cones conic-ovoid, to 2½ in. long. Newf. to Pa. and Minn.; a good species for ornament. Var. **globòsa** is a dwarf globose form.

rhaética. Hybrid between *P. Mugo* and *P. sylvestris*.

rígida. Pitch P. Lvs. in clusters of 3, to 5 in. long, stiff and spreading, dark green: cones ovoid, to 4 in. long. N. B. to Ga. and Ky. Var. **serótina** (*P. serotina*), Pond P., is a round-topped tree with longer lvs. and shorter cones.

Róxburghii (*P. longifolia*). Chir P. Lvs. in clusters of 3, to 1 ft. long, drooping, light green: cones conic-ovoid, to 7 in. long. Himalayas.

Sabiniàna. Digger P. Lvs. in clusters of 3, to 12 in. long, pale bluish-green· cones ovoid, to 10 in. long. Calif.

scopulòrum: *P. ponderosa* var.

serótina: *P. rigida* var.

sinénsis: *P. tabulæformis*.

Stròbus (*Strobus Strobus*). White P. Lvs. in clusters of 5, to 5 in. long, soft, bluish-green: cones cylindric, to 4 in. long. E. N. Amer. Hort. vars. are: **aùrea,** foliage yellowish, at least when young; **contórta** branches twisted, bearing tufts of lvs.; **Dawsoniàna,** listed as dwarf and spreading; **dénsa** is var. *nana*; **fastigiàta,** with narrow pyramidal head; **glaùca,** lvs. bright bluish-green; **nàna,** dwarf bush form; **nívea,** lvs. silvery-white beneath; **prostràta,** dwarf with trailing branches; **umbraculífera,** dwarf umbrella-shaped form.

sylvéstris. Scots P. Lvs. in clusters of 2, to 3 in. long, stiff and twisted, bluish-green: cones conic-oblong, to 2½ in. long. Eu., Asia; one of the hardiest. Hort. vars. are: **argéntea,** lvs. silvery; **aùrea,** lvs. golden-yellow when young; **engadinénsis,** slow-growing, lvs. shorter, Tyrol; **fastigiàta,** with narrow-pyramidal head; **lappónica,** lvs. broader and shorter, N. Eu.; **nàna,** low dense bush; **péndula,** branches drooping; **pùmila,** dwarf globose bush; **rigénsis,** bark very red; **scótica,** bark very red, lvs. shorter; **Wátereri,** columnar, lvs. steel-blue.

tabulæfórmis (*P. sinensis*). Chinese P. Lvs. in clusters of 2 or 3, to 4 in. long, stiff: cones ovoid, to 2½ in. long. China; hardy N. Var. **densàta** has 2 lvs.

Tæda. Loblolly P. Lvs. in clusters of 3, to 9 in. long, bright green: cones conic-oblong, to 5 in. long. N. J. to Tex.

taiwanénsis. Formosa P. Lvs. in clusters of 2, 3½ in. long, near ends of branches: cones conic-oblong, 2 in. long. Formosa.

Tanyòsho is listed; this is the common name of *P. densiflora* var. *umbraculifera*.

Teocòte. Lvs. in clusters of 3, to 8 in. long, stiff: cones cylindric-ovoid, 2½ in. long. Mex.

Thúnbergii. Japanese Black P. Lvs. in clusters of 2, to 4½ in. long, sharp-pointed, bright green: cones conic-ovoid, to 3 in. long. Japan; hardy N. In var. **óculus-dracònis** the lvs. have 2 yellow bands.

Torreyàna. Torrey P. Lvs. in clusters of 5, to 13 in. long, stiff, dark green: cones ovoid, to 6 in. long. S. Calif.

tuberculàta: *P. attenuata*.

umbraculífera: *P. densiflora* var.

uncinàta: *P. Mugo* var. *rostrata*.

virginiàna. Scrub P. Lvs. in clusters of 2, to 3 in. long, stiff and twisted: cones conic-ovoid, to 2½ in. long. N. Y. to Ga. and Ala.

Wátereri: *P. sylvestris* var.

yunnanénsis (*P. sinensis* var. *yunnanensis*). Lvs. usually in clusters of 3, to 8 in. long: cones ovoid, to 3½ in. long. W. China.

PINXTER-FLOWER: *Rhododendron nudiflorum*.

PINYON: *Pinus cembroides*.

PÌPER. Pepper. *Piperaceæ*. Many species of herbaceous and woody plants over the world, various in habit and appearance, having alternate lvs. and minute fls. borne in catkin-like mostly slender spikes; a few are grown in collections of economic plants and sometimes as foliage subjects; erect bushes or root-climbers. Of easy cult. Propagated by cuttings under glass, or by seed when available.

aurìtum. Lvs. broadly ovate, to 20 in. long and 7 in. wide, cordate, petiole slender, to 2 in. long, usually pubescent: fl.-spikes to 10 in. long, on short peduncles. Mex.

Cubèba. Cubeb. Climbing or tree-like: lvs. oval or narrower: berries brownish, used for medicinal purposes. E. Indies.

magníficum is listed, but is of unknown botanical standing.

metállicum: hort. name for a form with thick metallic-green lvs.

nìgrum. Pepper. Climbing: lvs. ovate to nearly orbicular: berries yellowish-red, furnishing when dried commercial black pepper, or white pepper when the pericarp is removed. Old World tropics and now widely dispersed.—For the pepper of vegetable-gardens see *Pepper* and *Capsicum*.

ornàtum. Climbing: lvs. ovate-orbicular, peltate, spotted pink above when young and white when old. Celebes.

PIPERÀCEÆ. Pepper Family. About 9 genera comprise this widely distributed and populous family: herbs or woody plants with entire lvs., very small fls. without perianth borne in dense spikes or racemes, having mostly 2–6 stamens, superior 1-celled ovary and fr. a berry. Macropiper, Peperomia and Piper grown for foliage or the last for economic products.

PIPERIA MICHAELII: *Habenaria elegans*.

PIPEWORT: *Eriocaulon*.

PIPSISSEWA: *Chimaphila*.

PIPTADÈNIA. *Leguminosæ*. Trop. shrubs or trees with bipinnate lvs. and small white fls. in heads or spikes; one species furnishes a gum and the tree may be planted for ornament in warm countries.

rígida. Tree or shrub: lfts. linear, oblique, ⅛ in. long, shining: fls. in axillary spikes to 1½ in. long: pods linear, to 5 in. long. Brazil.

PIPTANTHOCEREUS: *Cereus*.

PIPTÁNTHUS. *Leguminosæ*. Shrubs, deciduous or partially evergreen, with lvs. of 3 entire sessile lfts., yellow papilionaceous fls. in terminal racemes, and linear flattened pods; native in Himalayas and China and adapted to S. U. S.

cóncolor. To 6 ft.: lfts. ovate-lanceolate, to 4½ in. long: pods to 4½ in. long, glabrous. China.

laburnifòlius (*P. nepalensis*). To 10 ft.: lfts. lanceolate, to 5½ in. long, glaucous beneath: pods to 4½ in. long, slightly pubescent. Himalayas.

nepalénsis: *P. laburnifolius*.

tomentòsus. To 7 ft.: lfts. ovate to ovate-lanceolate, tomentose beneath: pods to 3 in. long, tomentose. China.

PIQUÈRIA. *Compositæ*. Shrubs or herbs with opposite entire or toothed lvs. and clustered small heads of white or whitish disk-fls.: pappus none or of scales: trop. America.

Under the name Stevia, florists grow one species of Piqueria for the profuse small winter bloom, and it is also adapted to bedding-out. It is propagated by cuttings and division as well as by means of seeds.

trinérvia (*Stevia serrata* of hort.). Per.: lvs. lanceolate to oblong-lanceolate, toothed: heads 3–5-fld., white, fragrant, borne in small panicled corymbs. Mex., Cent. Amer. and Haiti. Var. **variegàta** has lvs. edged or splashed with white; often grown as a pot-plant.

PIRCUNIA: *Phytolacca dioica.*

PISÒNIA. *Nyctaginaceæ.* Trees and shrubs of trop. and subtrop. regions, with simple lvs. and small unisexual or bisexual fls. borne in panicles; intro. in Calif.

Brunoniàna. To 20 ft. or more, glabrous: lvs. oblong, to 15 in. long: fls. greenish, ⅓ in. long: fr. linear, to 1¼ in. long, with very sticky ribs. S. Sea Isls., New Zeal., Australia.

PISTACHE: *Pistacia.*

PISTACHIO: *Pistacia vera.*

PISTÀCIA. Pistache. *Anacardiaceæ.* Trees and shrubs, deciduous or evergreen, bearing compound lvs., small diœcious fls. without petals, 5 stamens, 1-celled ovary and dry drupaceous fr.; about 20 species in the Medit. region to Asia, 1 in Canary Isls. and 1 in Mex. and Calif.; one grown for its nut or kernel which is used in confectionery, and others yielding gums and oils; not hardy in northern states.

The pistaches may be grown in any climate suitable to the olive. Trees may be planted 25 feet apart, about one male to every six females to insure pollination. Propagated by budding and grafting, also by seeds.

atlántica. Deciduous tree to 60 ft.: lfts. 7–11, petiole winged: fr. dark blue, ⅓ in. long. Algeria.

chinénsis. Deciduous tree to 60 ft.: lvs. of 5–6 pairs of lfts.: fr. scarlet turning purple. China.

Lentíscus. Evergreen tree to 15 ft.: lvs. of 3–5 pairs of leathery lfts., petioles winged: fr. reddish turning to black. Medit. region.

mùtica. Lvs. deciduous, lfts. of 2–4 pairs, oblong to ovate, obtuse, puberulent, petiole winged: fls. in stiff straight panicles: fr. obovate, apiculate. Asia Minor.

Simarùba (*Elaphrium Simaruba*). Deciduous tree to 70 ft., bark flaking off: lvs. pinnate, to 8 in. long, lfts. 3–7, ovate to elliptic, acute or acuminate, entire: fls. in racemes: fr. 3-angled, glabrous. S. Fla., W. Indies, E. and Cent. Mex.

Terebínthus. Small deciduous tree: lfts. 9–13, petiole somewhat winged: fr. dark purple and wrinkled. Medit. region.

texàna. Tree to 30 ft.: lvs. partially or wholly persistent, with winged petiole and 4–9 pairs of oblong-spatulate lfts.: fr. oval, brown, about ¼ in. long. Tex., Mex.

vèra. Pistachio. Spreading deciduous tree to 30 ft.: lvs. of 1–5 pairs of lfts.: fr. reddish and wrinkled, containing the green or yellow seed or kernel of commerce. Medit. region and Orient.—Grown for its comestible nut; much esteemed in Medit. countries. The pistachio thrives in regions to which the olive is adapted. It may be budded or grafted on other species of the genus. There are several hort. vars.

PÍSTIA. *Araceæ.* Free-floating per. native in trop. Amer. and southernmost U. S., grown in aquaria and ponds in warm regions. The summer temperature of the water should be between 70–80° and the plants should be shaded from direct sunlight in the middle of the day for best result. **P. Stratiòtes.** Water-Lettuce. Stoloniferous and having long feathery hanging roots, the rosettes of lvs. about 6 in. across: lvs. obovate or round, very obtuse, to 5 in. long, bright green and velvety-scurfy: spathes very small.

PISTIL: the ovule-bearing body (becoming the seed-bearing organ), with style and stigma.

PISTILLATE: having pistils and no stamens; female.

PÌSUM. Pea. *Leguminosæ.* Herbs with pinnate lvs., the terminal lft. represented by a branched tendril, papilionaceous fls. solitary or few in the axils, and flattened pods; widely grown for the edible seeds and pods and some forms for forage. For cult. see *Pea.*

arvénse: *P. sativum* var.

satìvum. Garden P. Ann., climbing to 6 ft.: lfts. oval to oblong: fls. white, 1–3 together: pods to 4 in. long. Eu. and Asia. Var. **arvénse** (*P. arvense*), Field P., has pinkish fls. with purple wings and greenish keel, and is grown for forage. Var. **hùmile,** Early Dwarf P., is a low form with small pods. Var. **macrocárpon,** Edible-podded P., has soft pods to 6 in. long.

PITANGA: *Eugenia uniflora.*

PITCÁIRNIA. *Bromeliaceæ.* Herbs or somewhat woody at base, mostly terrestrial, native in trop. Amer., with narrow lvs. in rosettes and red, yellow or nearly white fls. in spikes or racemes; sometimes seen in choice greenhouse collections. For cult. see *Bromeliaceæ*

aphelandræflòra. Lvs. narrow, erect or recurved, pale green with brown spine at apex, margins minutely spinulose: fls. to 2½ in. long, on short pedicels. Brazil.

corállina. Lvs. about 3 ft. long and 4 in. wide, the petioles with brown spines: fls. coral-red, in racemes about 1 ft. long on red stalks to 1 ft. long. Colombia.

punícea. Lvs. to 10 in. long and ½ in. wide, slightly spiny, white-scaly on the back: fls. scarlet, in racemes to 9 in. long on very short stalks. Mex.

Whìtei: listed name of unknown botanical standing.

PITCHER-PLANT: *Nepenthes, Sarracenia.* **California:** *Darlingtonia californica.*

PITHECELLÒBIUM (*Pithecolobium*). *Leguminosæ.* Broad trees and shrubs with 2-pinnate lvs., small fls. in heads or spikes, and flattened usually twisted and contorted pods; grown for ornament in trop. and semi-trop. regions. Some species yield tannin and the wood is useful for minor building purposes.

dúlce (*Inga dulcis*). Guaymochil. Huamuchil. Opiuma. Manila Tamarind. Tree to 50 ft., spiny: fls. white, in dense sessile heads, pubescent: pods spirally twisted, to 5 in. long, red. Trop. Amer., Philippines, E. Indies.

flexicaùle: *Ebenopsis flexicaulis.*

guadelupénse. Differs from *P. Unguis-cati* in being usually without spines, petioles shorter than petiolules and ovary pubescent. S. Fla. to N. S. Amer.

Junghuhniànum. Tree with orange-yellow fls. in brush-like axillary long-peduncled heads 1 in. or so across: lfts. 3 or 4 pairs, oblong, entire, glossy, 1½–2 in. long. Java.—Planted in S. Fla.

lanceolàtum. Tree to 40 ft., spiny: fls. white, in dense spikes to 5 in. long: pods nearly straight or curved, to 5 in. long Mex., Cent. Amer., N. S. Amer.

Sàman: *Samanea Saman.*

Únguis-càti. Cats-Claw. Black-Bead. Shrub or tree to 15 ft., spiny: lvs. with petioles longer than petiolules: fls. greenish-yellow, in stalked heads, ovary glabrous: pods spirally twisted, to 4 in. long, red. Fla., W. Indies, N. S. Amer.

PITHECOCTÈNIUM. *Bignoniaceæ.* Woody evergreen vines with lvs. of 2–3 lfts. and 3–parted thread-like tendrils, bell-shaped fls. in terminal racemes or panicles, and large prickly capsular frs.; native from Mex. to Argentina and hardy only in warm climates. Propagated by cuttings.

clematídeum: *P. cynanchoides.*

cynanchoìdes (*P. clematideum*). Lfts. ovate, to 2 in. long: fls. white, to 2 in. long: fr. 2½ in. long, covered with yellowish spines. Argentina, Uruguay.

echinàtum (*P. muricatum. Bignonia siderafolia*). Lfts. ovate, to 4 in. long: fls. white turning yellow, to 2 in. long: fr. to 8 in. long, covered with sharp tubercles. Mex. to Brazil.

muricàtum: *P. echinatum.*

PITHECOLOBIUM: *Pithecellobium.*

PITTOSPORÀCEÆ. Pittosporum Family. Trees and shrubs, sometimes climbing, with alternate simple lvs., bisexual polypetalous fls.

having 5 sepals and 5 petals, 5 stamens, superior ovary, and fr. a dehiscent caps. or indehiscent and berry-like; native mostly in Australia, but Pittosporum is widely distributed in Old World tropics. Billardiera, Bursaria, Hymenosporum, Pittosporum and Sollya are grown for ornament in the warmer parts of the country and sometimes under glass.

PITTÓSPORUM. *Pittosporaceæ.* Evergreen trees and shrubs with simple lvs., fls. solitary or in panicles, and fr. a caps. with leathery valves; native in tropics and subtropics of Old World; of good habit, attractive in foliage, flower and fruit.

Pittosporums are cultivated in southern California and southern states for ornament and hedges, and *P. Tobira* is sometimes seen under glass. Propagated by seeds sown in a cool greenhouse, by cuttings of half-ripened wood, or by grafting, principally on *P. undulatum.*

bícolor. Small tree: lvs. oblong-lanceolate, tomentose beneath, margins usually recurved: fls. purple and yellow, about ⅓ in. long, solitary or few: fr. tomentose, New S. Wales.

Buchánanii. Shrub or tree to 20 ft.: lvs. oblong, to 5 in. long, acute: fls. dark purple, solitary: fr. about ⅓ in. diam. New Zeal.

Colensòi. Small tree: lvs. oblong, to 4 in. long, acute, leathery: fls. dark purple, usually solitary: fr. about ½ in. across. New Zeal.

crassifòlium. Karo. Shrub or tree to 30 ft.: lvs. obovate, to 3 in. long, obtuse, leathery, shining above, white-tomentose beneath, margins revolute: fls. red or purple, to ½ in. long, in terminal clusters: fr. to 1¼ in. long, tomentose. New Zeal.

eriolòma. Shrub to 12 ft.: lvs. obovate, to 3 in. long, leathery, margins revolute: fls. yellowish, ½ in. long, in terminal clusters: fr. to ¾ in. across. Lord Howes Isl.

eugenioìdes. Tarata. Tree to 40 ft.: lvs. elliptic, to 4 in. long, acute, margins usually undulate: fls. yellowish, fragrant, to ¼ in. long, in terminal compound umbels: fr. ¼ in. long. New Zeal. Var. **variegàtum** has variegated foliage.

Fàirchildii. Shrub to 15 ft.: lvs. obovate, to 3 in. long, obtuse or acute, leathery: fls. purple, solitary or in 2–4-fld. terminal clusters: fr. to 1 in. across. New Zeal.

ferrugíneum. Tree to 60 ft.: lvs. ovate to lanceolate, to 4 in. long, rusty-tomentose when young, long-petioled: fls. greenish-white, ¼ in. long, in terminal clusters: fr. ⅓ in. across. Malaya to Australia.

floribúndum. Small tree: lvs. lanceolate, to 8 in. long, leathery and shining, margins undulate: fls. yellow, small, in terminal compound corymbs. Himalayas.

grandiflòrum: hort. name.

heterophýllum. Spreading shrub to 10 ft.: lvs. of various shapes, small, glabrous: fls. pale yellow, very fragrant, small, few together. Rocky places, China.

Hósmeri. Tree to 25 ft.: lvs. oblong, to 10 in. long, brown-tomentose beneath, margins revolute: fls. cream-colored, about ½ in. long, in corymbs: fr. to 2 in. across, becoming orange-yellow. Hawaiian Isls. Var. **longifòlium** has lvs. to 16 in. long and 3½ in. wide.

Kírkii. Shrub to 12 ft.: lvs. linear-obovate, to 5 in. long, very leathery, margins thickened: fls. yellow, in terminal umbels: fr. 1½ in. long. New Zeal.

Màyii: hort. name.

nígricans: *P. tenuifolium.*

phillyræoìdes. Narrow-leaved or Willow P. Tree to 20 ft., the branchlets drooping: lvs. linear-lanceolate, to 4 in. long: fls. yellow, ⅓ in. long, solitary or in axillary clusters: fr. ½ in. long, deep yellow. Australia.

Rálphii. Differs from *P. crassifolium* in the lvs. not revolute and the fr. only ⅔ in. long. New Zeal.

revolùtum. Tall shrub: lvs. elliptic, to 4 in. long, rusty-tomentose beneath: fls. pale yellow, ½ in. long, in terminal clusters: fr. to ¾ in. long. Australia.

rhombifòlium. Queensland P. Tree to 80 ft.: lvs. rhomboid-oval, to 4 in. long, coarsely toothed above middle: fls. white, ¼ in. long, in terminal compound corymbs: fr. ¼ in. long, becoming orange-yellow. Australia.

tenuifòlium (*P. nigricans*). Tawhiwhi. Kohuhu. Tree to 30 ft.: lvs. oblong, to 2½ in. long, margins undulate: fls. dark purple, to ½ in. long, solitary or in axillary clusters: fr. ½ in. across. New Zeal.—There is a variegated form.

Tobìra. Japanese P. Shrub to 10 ft., useful as a hedge plant in southernmost states: lvs. obovate, to 4 in. long, obtuse, very thick and leathery, margins revolute: fls. white or greenish, fragrant, to ½ in. long, in terminal clusters: fr. to ½ in. long, tomentose. China, Japan. Var. **variegàta** has lvs. variegated with white.

umbellàtum. Tree to 25 ft.: lvs. oblong, to 4 in. long, pale below, leathery: fls. in many-fld. terminal umbels: fr. ½ in. across. New Zeal.

undulàtum. Victorian Box. Tree to 40 ft.: lvs. oblong to lanceolate, to 6 in. long, acuminate, shining, margins usually undulate: fls. white, fragrant, to ½ in. long, in terminal clusters: fr. to ½ in. across. Australia.

viridiflòrum. Cape P. Shrub to 25 ft.: lvs. obovate, to 3 in. long, acute or obtuse, leathery and shining, margins often revolute: fls. yellowish-green, to ¼ in. long, in dense terminal clusters: fr. ¼ in. long. S. Afr.

PITYROGRÁMMA (*Ceropteris*). Gold- and Silver-Ferns. *Polypodiaceæ.* Conservatory ferns and grown in the open in warm countries, sometimes known as Ceropteris and Gymnogramma, with mostly 2-pinnate tufted fronds interesting for the white or bright yellow powder on the under surface; sori linear, borne along veins on back of segms.; native mostly in trop. Amer. They are plants of simple requirements, readily grown in an intermediate temperature in pots and pans. See *Ferns.*

calomélanos (*Gymnogramma calomelanos*). Silver-F. Fronds to 3 ft. long and 10 in. wide, powdery white beneath, segms. toothed or cut, stipes as long as blades. Trop. Amer., trop. Afr. Var. **aùreo-flàva** (*Gymnogramma chrysophyllum, P. chrysophylla*). Gold-F., has gold-colored powder.

chrysophýlla: *P. calomelanos* var. *aureo-flava.*

Lauchèana: hort. form or hybrid related to *P. calomelanos* var. *aureo-flava.*

sulphùrea (*Gymnogramma sulphurea*). Jamaica Gold-F. Fronds to 1 ft. long and 5 in. wide, powder sulfur-yellow, segms. cut, stipes much shorter than blades. W. Indies.

tartàrea (*Gymnogramma tartarea*). Fronds to 2½ ft. long and 1 ft. wide, white powdery beneath, segms. entire or cut, stipes as long as blades. Trop. Amer.

triangulàris (*Gymnogramma triangularis*). California Gold-F. Fronds to 7 in. long and 6 in. wide, on stipes to 1 ft. long, deep golden-yellow beneath, sometimes white. Calif. to Alaska.

PITYROSPERMA ACERINUM: *Cimicifuga japonica.*

PLAGIÁNTHUS. *Malvaceæ.* Trees and shrubs, seldom herbaceous, native in Australia and New Zeal., with alternate simple lvs., small bisexual or unisexual fls. and frs. of 1 or several carpels; sometimes grown in S. Calif.

betulìnus. Tree to 60 ft.: lvs. ovate to ovate-lanceolate, to 3 in. long, coarsely toothed: fls. small and not showy, in panicles to 9 in. long. New Zeal.

divaricàtus. Shrub to 8 ft., branches much interlaced, slender: lvs. linear-oblong, to 1 in. long, obtuse, entire, leathery: fls. small, solitary or fascicled, axillary. New Zeal.

Lỳallii: *Gaya Lyallii.*

pulchéllus. Shrub: lvs. lanceolate, to 3 in. long, coarsely toothed: fls. small, in axillary racemes. Australia.

PLANÈRA. *Ulmaceæ.* Decidous elm-like tree to 40 ft., native from S. Ill. to Fla. and Tex., not hardy far N. **P. aquática.** Water-Elm. Lvs. alternate, ovate, to 2½ in. long, toothed: fls. small, unisexual or bisexual, in clusters: fr. a small drupe with crested ribs.—Propagated by seeds sown in spring, by layers, and by grafting on the elm. For other Planera names, see *Zelkova.*

PLANE-TREE: *Platanus.*

PLANTAGINÀCEÆ. Plantain Family. Three genera of herbs and subshrubs of wide distribution, with basal lvs. and sometimes alternate or opposite ones on the st., mostly bisexual small not showy fls. in heads or spikes, having 4-lobed scarious corolla, 4-parted calyx, 4 exserted stamens, superior ovary, and fr. a caps. or nutlet inclosed by the calyx. A few plantagos are sometimes planted for interest, although they are weedy subjects, and some of the species are true weeds about dwellings and in lawns.

PLANTÀGO. Plantain. *Plantaginaceæ.* Herbs or rarely shrubs mostly of temp. regions, some of them rarely grown in the garden but mostly weedy plants. Propagated by seeds.

asiática. Per. to 1½ ft.: lvs. forming rosette, mostly ovate, to 10 in. long, petioles often as long as blades: fls. inconspicuous, in long dense spikes: caps. circumscissile below the middle. Alaska to Calif. and Colo.

Cỳnops. Subshrub to 1½ ft.: lvs. linear, to 3 in. long: fls. whitish, in heads ½ in. long. S. Eu.

macrocárpa. Per. to 15 in.: lvs. lanceolate, to 15 in. long, petioles long and somewhat winged: fls. whitish, in spikes to 2 in. long on scapes often longer than lvs.: caps. ¼ in. long. Wash. to Alaska.—Advertised as a rock-garden plant.

màjor var. **asiática:** *P. asiatica.*

marítima. Ann., bien. or per., acaulescent: lvs. linear, to 10 in. long: fls. in dense spikes to 5 in. long. Seashores and salt marshes, N. Amer., Eu., Asia.

patagónica. Ann. to 1 ft.: lvs. linear to oblanceolate: fls. in dense cylindrical or oblong spikes. Mex., S. Amer.

Psýllium. Ann. to 8 in.: lvs. linear or linear-lanceolate, to 1½ in. long: fls. in ovoid spikes ½ in. long. S. Eu. to India.

Púrshii. Ann. to 15 in., woolly: lvs. linear, to 3 in. long: fls. in dense cylindrical spikes to 5 in. long. Ind. to B. C. and N. Tex.

PLANTAIN: *Musa paradisiaca, Plantago.* **Poor Robins:** *Erigeron pulchellus.* **Rattlesnake:** *Goodyera.* **Water-:** *Alisma.* **Wild:** *Heliconia Bihai.*

PLATANTHERA: *Habenaria.*

PLÁTANUS. Plane-Tree. The only genus of *Platanaceæ.* Deciduous monœcious large trees with pale bark shedding in plates, large alternate palmately-lobed lvs., and unisexual fls. in dense globular drooping heads in spring; native in N. Amer., S. Eu. to India. Sometimes known as sycamore, but this name belongs to *Ficus Sycamorus.*

Plane-trees thrive best on rich moist soil and withstand transplanting well. The species herein are hardy North with the exception of *P. racemosa* which will thrive only in the southern states. They are useful as street trees and for extensive lawns, and bear heavy pruning; sometimes in confined formal areas they are sheared to dense small heads. Propagated by seeds, by cuttings under glass, by layers, and varieties sometimes by grafting.

acerifòlia. London P. Hybrid between *P. occidentalis* and *P. orientalis:* to 120 ft.: lvs. with 3–5 triangular lobes about ⅓ length of blade: fr.-heads 2 or sometimes more to a st., bristly. Common tree often passing as *P. orientalis.* Var. **Kelseyàna,** lvs. variegated yellow. Var. **Súttneri** has lvs. blotched with creamy-white.

americàna: listed name of no botanical standing.

califórnica: *P. racemosa.*

occidentàlis. Buttonwood. To 150 ft.: lvs. with 3–5 shallow triangular lobes: fr.-heads usually solitary, smooth. Me. to Fla. and Tex.

orientàlis. Oriental P. To 100 ft.: lvs. with 5–7 narrow lobes about ½ length of blade: fr.-heads 2–6 to a st., bristly. S. E. Eu., W. Asia.—Not often seen in this country, at least not in the N.: see *P. acerifolia.*

racemòsa (*P. californica*). To 90 ft.: lvs. thick, with 3–5 deep entire lobes, tomentose beneath: fr.-heads 2–7 to a st., bristly. S. Calif., Lower Calif.

PLATYCÀRYA. *Juglandaceæ.* Chinese deciduous monœcious shrub or tree to 40 ft., **P. strobilàcea.** Lvs. of 7–15 ovate- to oblong-lanceolate lfts. to 4 in. long: fls. without perianth, the staminate in slender catkins to 5 in. long, the pistillate in cone-like catkins to 2 in. long that bear small winged nutlets under the scales.—A sumach-like bush, not hardy N. Propagated by seeds and layers.

PLATYCÈRIUM (*Alcicornium*). Staghorn-Fern. *Polypodiaceæ.* Large epiphytic ferns with two types of fronds, the sterile flat, rounded, shield-shaped, entire, parchment-like, clasping the tree or support on which they grow, the fertile fronds erect, spreading or drooping, with antler-like segms. bearing naked sori beneath; trop. Afr. and Asia to temp. Australia.

The staghorn-ferns are striking plants when old and well-grown. *P. bifurcatum* does well in a cool temperature but the others are tropical. Most of them produce suckers, by which (as well as by spores) they may be propagated. They thrive on pieces of tree-fern trunks or even on boards if provided with a chunk of peat and moss for foothold, which may contain a little charcoal; a little bone-meal may be added now and then if needed. They may be checked a little in winter.

æthiòpicum: *P. Stemaria.*

alcicórne: *P. bifurcatum.*

angolénse. Fertile fronds not lobed, to 1½ ft. long, rusty-tomentose beneath. W. Afr.

bifórme. Sterile fronds lobed above; fertile fronds much forked, to 5 ft. long; spores borne on 2 kidney-shaped appendages. Java.

bifurcàtum (*P. alcicorne*). Common S. Grayish-green, pubescent; sterile fronds wavy-margined; fertile fronds clustered, drooping, to 3 ft. long, forked into narrow segms., sori extending to tips. Australia, Polynesia. Var. **màjus** is larger, greener, more leathery.

gránde. Nearly glabrous: both sterile and fertile fronds stag-like, to 6 ft. long, the sori borne in patch at base of first fork. Australia.

Híllii. Deep green: fertile fronds erect, 1½ ft. or more long, repeatedly forked, sori not extending to tips. Australia. Var. **màjor** is listed.

Stemària (*P. æthiopicum*). Triangle S. Fertile fronds twice forked, drooping, to 3 ft. long, white-tomentose beneath, sori extending part way down forks. W. trop. Afr.

Veìtchii. Sterile fronds brownish; fertile fronds to 2 ft. long, narrow at base, becoming 4 in. wide where branches into 6–8 lobes, white-hairy beneath. Australia.

Wállichii. Similar to *P. grande* but yellowish-tomentose. Malaya.

Wíllinckii. Java S. Fertile fronds in 3's, drooping, forked into long narrow segms. bearing sori nearly to tips. Java.

PLATYCLINIS: *Dendrochilum.*

PLATYCÒDON. Balloon-Flower. *Campanulaceæ.* One showy per. herb native in E. Asia and differing from Campanula chiefly in the opening of the caps. at the top: fls. wide-open to almost rotate, blue-purple but varying to other colors in cult. The flower-buds are swollen and balloon-like just before opening.

Plants thrive in open or loamy soils in full sun and are hardy in the North. Propagated readily by seeds, blooming the second year, and by division in spring; handsome subjects.

grandiflòrum (*Campanula grandiflora*). To 2½ ft.: lvs. ovate to ovate-lanceolate, to 3 in. long, sharp-toothed, glaucous beneath: fls. deep purple-blue, open-bell-shaped, to 3 in. across, solitary on ends of branches. June–Aug. Var. **álbum,** white. Var. **autumnàle** flowers later. Vars. **azùreum, cærùleum,** blue. Var. **japónicum** has a 10-lobed star-like corolla. Var. **Marièsii** grows to 1½ ft. and has large fls. Var. **micránthum,** small-fld. Dwarf forms are listed as **nànum** and **pùmilum** and partially double forms as **semi-dùplex** and **semi-plènum.** Early-blooming kinds are var. **prǽcox,** sometimes listed as *præcox giganteum.* The name *P. glaucum* probably designates *P. grandiflorum* itself.

Marièsii: *P. grandiflorum* var.

PLATYLOMA: *Pellæa falcata.*

PLATYMÍSCIUM. *Leguminosæ.* Trop. American trees or shrubs with opposite pinnate lvs., yellow papilionaceous fls. in racemes, and flattened pods; intro. in Calif.

polystàchyum. Roble. Tree to 90 ft.: lfts. shining: fls. orange, ½ in. across, in partially drooping racemes on old wood: pods 2½ in. long and 1 in. wide, 1-seeded. Trinidad, N. S. Amer., Panama.

PLATYSTÈMON. *Papaveraceæ.* Californian ann. suitable for the flower-garden. Propagated by seeds. **P. califórnicus.** Cream-Cups. To

1 ft.: lvs. linear-oblong, entire: fls. cream-yellow, 1 in. across, solitary on long stalks: fr. of many linear carpels distinct or partially united. Var. **crinìtus** is more hairy, the yellow fls. often tipped with pink or green.—In Calif. it covers great areas of open country in spring.

PLECTRÁNTHUS. *Labiatæ.* Trop. and subtrop. herbs and subshrubs of the Old World, comprising nearly 100 species closely allied to Coleus, differing in stamen filaments all free and not basally fused.

glaucócalyx. Erect per. to 3 ft.: lvs. narrowly ovate, to 2½ in. long, coarsely serrate, hispid above and pubescent beneath: fls. bluish, many in cymose panicles. E. China.

PLECTRÌTIS. *Valerianaceæ.* Ann. herbs, mostly of the Pacific northwest, by some authors merged with Valerianella but differing in sts. usually simple or monopodially branched, cymes congested, ovary 1-carpelled, and frs. winged laterally.

congésta (*Valerianella congesta*). To 2 ft., sts. sometimes branched: lvs. opposite, entire: fls. rose-pink, to ⅓ in. long, limb bilabiate, spurred, in head-like clusters: fr. broadly winged. B. C. to Calif.

PLEÈA. Rush-Featherling. *Liliaceæ.* A monotypic genus represented by a rush-like herb of pine land coastal swamps from N. C. to Fla.: lvs. few, erect, striate, slender: fls. in slender terminal racemes; sepals longer than petals; stamens 9–12, anthers 2-celled, introrsely dehiscent and versatile; styles 3: fr. a septicidal caps. **P. tenuifòlia.** Per. 1–2½ ft. high: lvs. 6–9 in. long: fls. 1 in. across, greenish outside, white within, 3–9 on erect pedicels in erect racemes.

PLEIOBLÁSTUS. *Gramineæ.* Shrubs with tufted or creeping rootstocks and erect or arching sts., differing from Arundinaria in each node having 3–7 buds or branches and bristles of the apex of persistent lf.-sheaths smooth and flexuous. See *Bamboo.*

Chìno (*Arundinaria Maximowiczii. A. Simonii* var. *Chino. Bambusa Laydeckeri*). To 6 ft.: lvs. 2–10 in. long and to ¾ in. wide, 3–7-veined and green beneath. Japan.

dístichus (*Bambusa* and *Sasa disticha. B. angustifolia. B. Vilmorinii*). To 2½ ft.: lvs. to 2½ in. long and ⅓ in. wide, finely toothed, bright green, arranged in two ranks. Japan.

Hìndsii (*Arundinaria* and *Thamnocalamus Hindsii. A. erecta. Bambusa gracilis*). To 12 ft., sts. dark olive-green: lvs. to 8 in. long and ¾ in. wide and gradually narrowed at base, glaucous beneath, glabrous. China, Japan.

hùmilis (*Arundinaria* and *Sasa humilis. A. gracilis*). To 3 ft., st.-sheaths not ringed with hairs at base: lvs. to 6 in. long and ¾ in. wide, pale green, nearly glabrous, lf.-sheaths bristly at apex. Japan.

pùmilus (*Arundinaria* and *Sasa pumila*). To 2 ft., sts. covered with a waxy bloom, st.-sheaths tessellate around the base: lvs. to 6 in. long and ¾ in. wide, toothed, hairy. Japan.

Sìmonii (*Bambusa* and *Arundinaria Simonii*). To 25 ft.: lvs. to 1 ft. long and 1 in. wide, rounded or broadly wedge-shaped at base. China. Var. **Chino** is *P. Chino.* Var. **variegàtus** (var. *striatus*), lvs. striped white.

variegàtus (*Arundinaria* and *Sasa variegata. A. Fortunei*). To 3 ft.: lvs. to 6 in. long and ¾ in. wide, toothed, hairy on both sides, striped with white. Japan. Var. **pygmæus** is *P. viridi-striatus* var. *vagans.*

víridi-striàtus (*Sasa* and *Arundinaria auricoma. Bambusa Fortunei aurea*). To 4 ft., sts. purplish-green: lvs. to 8 in. long and 1 in. wide, finely toothed, pubescent beneath and nearly glabrous above, striped green and yellow. Japan. Var. **vàgans** (*Sasa* and *Arundinaria pygmæa. S. variegata* var. *pygmæa*). To 2 ft., with hairy lvs. entirely green, rootstocks creeping and spreading forming dense clumps.—The plants grown as *Sasa aureo-striata* and *S. argenteo-striata* may belong here, the latter perhaps a silver-striped form.

PLEIOGÝNIUM. *Anacardiaceæ.* Diœcious tree from Queensland, Australia, with compound lvs., fls. in axillary racemes, 10 stamens, 5–12-celled ovary and somewhat compressed drupaceous fr. **P. Solándri** (*Spondias Solandri*). Burdekin-Plum. Evergreen to 60 ft.: lvs. of 7–9 ovate to oblong entire lfts. to 4 in. long: fls. greenish, densely clustered: fr. 1½ in. across, used for jellies and jams. Cult. in Calif. and Fla.

PLEIONE. *Orchidaceæ.* Old World terrestrials with ann. pseudobulbs bearing 1 or 2 deciduous lvs. and 1- to several-fld. scapes: fls. showy; sepals and petals similar; lip much broader, often with fringed keel. Grown in cool greenhouse; see *Orchids.*

lagenària. Lvs. to 10 in. long: scape 1-fld.; fl. large, to 3 in. across; sepals and petals rose-lilac; lip yellow with marginal portion blotched with purple and white, traversed by 5 longitudinal fringed lines. Oct.–Nov. Burma.

maculàta. Lvs. to 9 in. long: scape 1-fld.; fl. to 2 in. across; sepals and petals white; lip yellow with marginal purple streaks, white side lobes and 5 fringed longitudinal keels. Oct.–Nov. Himalayas, Burma.

præcox (*P. Wallichiana*). Lvs. to 12 in. long: scapes 1–2-fld.; fls. about 3 in. across; sepals and petals light rose-purple; lip rose with yellow disk and 5 denticulate keels. Nov.–Dec. Himalayas, Burma.

Wallichiàna: *P. præcox.*

PLEIOSPÌLOS. *Aizoaceæ.* Stemless plants without internodes separated from Mesembryanthemum, bearing 1 or 2 pairs of short thick ovate lvs. and large showy terminal fls. in the foliage; stigmas 9–14. S. Afr.

Árcheri. Differs from *P. Hilmari* in flatter lvs., tube of lvs. and bracts longer, and inner petals shorter.

Bòlusii (*M. Bolusii*). Lvs. 2, thick, stone-like, connate, 2 in. long and broad, at maturity with shrivelled ones underneath: fls. sessile, golden-yellow, to 3 in. across, with numerous very narrow petals.

cànus (*Punctillaria cana*). Lvs. with whitish bloom: fls. loosely arranged; petals spreading, becoming recurved and lasting for several days.

compáctus: *P. nobilis.*

Dekenàhii (*Punctillaria Dekenahii*). Lvs. to 3 in. long, 1 in. wide, ½ in. thick at base and 1 in. at apex, grayish-green dotted with dark green: fls. yellow with metallic sheen, to 3 in. across.

dimidiàtus. Lvs. 2, to 2 in. long and 1 in. wide, glaucous with green dots: fls. with many petals in 3–4 series.

Férgusoniæ. Distinguished from *P. magnipunctatus* by the peduncled fls. which have 5 sepals and acuminate petals.

Hílmari. Lvs. 2, turgid and nearly cylindric, to 1 in. long and ½ in. wide and thick, glaucous and reddish, dotted: fls. yellow, 1½ in. across.

longibracteàtus. Lvs. 2, to 1¼ in. long and ½ in. wide: fls. yellow, whitish at base, bracts exceeding the sepals, 1 in. long.

magnipunctàtus (*M. magnipunctatum. Punctillaria magnipunctata*). Lvs. to 3 in. long, ½ in. wide and ¾ in. thick, covered with dots: fls. bright yellow, 2¼ in. across.

Nélii. Similar to *P. Bolusii* but more compact, with short-stalked fls.

nóbilis (*P. compactus. M. nobile* and *compactum. Punctillaria compacta*). Branching: lvs. to 3 in. long, ¾ in. wide and ½ in. thick, covered with dark green dots: fls. bright yellow, pale at base, to 2½ in. across.

optàtus (*M. optatum. Punctillaria optata*). Lvs. to 2 in. long, ½ in. wide and thick, glaucous, dotted with dark green: fls. bright yellow, whitish at base, to 1½ in. across.

Púrpusii (*Punctillaria Purpusii*). Differs from *P. magnipunctatus* in lvs. more acute and less stout, and sessile fls.

prismáticus (*P., M.* and *Punctillaria Roodiæ*). Lvs. to 2¼ in. long, 1 in. wide and ¾ in. thick, united for about ½ in. at base, covered with inconspicuous dots: fls. yellow, 2 in. across.

Roòdiæ: *P. prismaticus.*

símulans (*M. simulans*). Lvs. to 3 in. long, 2 in. wide and ¾ in. thick near apex, gray-green dotted with dark green: fls. yellow varying to white, to 3 in. across.

willowmorénsis. Distinguished from *P. nobilis* by its broader obtuse sepals and shorter broader bracts.

PLEROMA: *Tibouchina.*

PLEURISY-ROOT: *Asclepias tuberosa.*

PLEUROTHÁLLIS. *Orchidaceæ.* Epiphytes of trop. Amer., cespitose or repent in habit, with 1-lvd. sts. and small fls. in racemes or solitary from the axil of lf.; petals usually smaller than sepals; lip simple or 3-lobed. Grown mostly as Cattleyas, in shallow pans near glass; see *Orchids*.

Roézlii. St. to 6 in. high: lf. oblong-lanceolate, to about 9 in. long, erect-spreading: infl. longer than lf., nodding, about 5–9-fld.; fls. deep wine-purple, 1¼ in. long. Feb.–Mar. Colombia.

tridentàta. Lvs. lanceolate or oblong-lanceolate, to about 2½ in. long and ¾ in. wide, minutely 3-toothed at apex: fls. very small, axillary, several, yellow or greenish, sometimes tinged with purple. Venezuela.

velaticaùlis. To nearly 2 ft. high: lvs. elliptic to oblong-lanceolate, up to 9 in. long and 3½ in. wide: racemes densely many-fld., shorter than or surpassing lf., inclosed at base by a leathery spathe; fls. yellowish. Cent. Amer., W. Indies, Venezuela, Ecuador.

PLÙCHEA. Marsh-Fleabane. *Compositæ.* Ann. or per. herbs or shrubs of semi-trop. and temp. regions of New World, having hairy camphor-scented alternate lvs. and many-fld. small pink or rose-colored heads in corymb-like or glomerate cymes: involucral bracts lanceolate, outermost shorter than inner, marginal fls. pistillate and inner ones perfect, pappus consisting of one row of capillary bristles.

camphoràta. Ann. to 5 ft.: lvs. elliptic to lanceolate, to 6 in. long, on terete sts., margins usually toothed: involucres about ⅓ in. long, densely pubescent, outer bracts elliptic, inner ones long-acuminate. Salt marshes, Mass. to Fla. west to Tex.

PLUM. The group of fruits comprising the plums is assembled of several natural species of widely different nativities. An understanding of these sources is essential to a clear analysis of plum culture.

(A) The Domesticas, *Prunus domestica*, probably originally from southwestern Asia. Here are included the common plums and prunes long grown in Europe and the eastern states and on the Pacific coast. Such varieties as Bavay (Green Gage), Bradshaw, Lombard, Agen, Egg plums, Reine Claude, Grand Duke, Washington, belong here. The Damson plums are *P. domestica* var. *insititia*. To be associated with these kinds are the myrobalan and cherry plums, *Prunus cerasifera*, probably of similar nativity. This latter species is much employed as a stock on which to work the Domesticas, and it yields a few minor varieties of pomological fruits as De Caradeuc, Golden Cherry.

(B) The Japanese plums, *P. salicina* (*P. triflora*) represented by Abundance, Santa Rosa, Formosa, Red June, Burbank, Satsuma, Kelsey, and others. The Japanese kinds thrive over a wider extent of territory than the Domesticas.

(C) The American plums, products in recent time of several native species as of *P. americana*, *P. nigra*, *P. hortulana*, *P. Munsoniana*, *P. angustifolia*. Varieties of this native group are Wild Goose, Golden Beauty, Cheney, Hawkeye, De Soto, Forest Garden, Newman, Miner, Wolf, Weaver, Wayland, and many others. These plums thrive over a wide range in the interior country and the South.

These more than half a dozen species contribute, by their diverse climatic requirements, to the growing of plums over practically the whole of the United States and far north into Canada. The European plum is of the greatest importance, being largely grown in the fruit regions of New England, the Great Lakes states and provinces, and particularly on the Pacific coast where it furnishes the varieties raised for prunes. The Japanese plum is grown over much the same region and in addition somewhat farther south along the Atlantic coast and in the Mississippi Valley. The Damson plums extend the range of these two species somewhat farther north. The native species are valuable in extending plum culture into the far north and, by their resistance to heat and disease, into the lower Mississippi Valley and the Gulf states.

Soil requirements are various, although any well-drained agricultural land is suitable for some varieties of plum. In general, the European varieties grow best on the heavier loams whereas the Japanese and American types thrive on the lighter lands. Adaptation to diverse soil types is possible by the use of suitable stocks.

Propagation is by budding, rarely grafting, on many different seedling stocks, the method being that described for the apple. Myrobalan stock is the most widely employed in both the East and West. Japanese varieties are sometimes worked on peach stocks especially for growth on light soils and in the South. Where hardiness is wanted, some of the American species are used as stocks. Rooted cuttings of the Marianna stock (supposed to be a cerasifera hybrid) find occasional use in the South.

Planting distance for plums of practically every sort is 20 by 20 feet on the square. Small-growing Damsons may succeed with less space and some rank-growing Japanese varieties may profit by a few feet more. Either one- or two-year-old nursery trees are set, usually in early spring.

Tillage and fertilizer, together with cover-cropping, are the same as described for the peach. The plum will endure more neglect than the peach and in home plantings will yield fair crops under sod conditions. Mulching with manure or the application of nitrate of soda, 1 or 2 pounds to the tree in the early spring, will benefit trees in sod. Under thorough cultivation and on good land plum trees rarely show any noticeable response to fertilizers.

Pruning at planting time is essentially that indicated for the apple. After the scaffold limbs are started, little pruning is advisable until the trees come into bearing. The mature trees may be thinned out by removing crowding or crossing limbs and in case the trees are not making vigorous growth or are becoming taller than is desirable the limbs may be headed back, usually cutting to side branches. With some Japanese varieties renewal pruning such as is given the peach but less severe is a good practice. Pruning may be undertaken at any time when the trees are dormant, preferably in late winter or early spring in the East.

Harvesting and marketing of plums are not peculiar. In the fresh state the fruits are carefully hand-picked, usually into small baskets, while the fruit is mature but still firm. For the cannery and jam factory it may be more nearly ripe and for prune making the fruit is allowed to ripen fully and fall from the tree. Tree-ripened fruit is the best for home use. In the East, the standard package for fresh plums is the climax basket in several sizes. Fresh prunes may be marketed in round half-bushels. The California product is shipped in small wooden baskets, four baskets to a crate. The bulk of the Pacific coast crop is made into prunes.

Yields vary with the variety and care. In the eastern states from 1 bushel to 3 or 4 may be expected from the mature tree under good conditions. On the Pacific coast larger yields are frequent. Although by careful cold storage at 32° F. plums can be held for a month or more in firm condition, such storage is a doubtful practice as usually the flavor is lost. Plums in good condition for marketing are highly perishable and are usually rushed to market under refrigeration. Fresh prunes keep longer than most other plums.

Varieties of plums are many, and one should know to what class or group they belong. Where the European and Japanese kinds can be grown to advantage, it is questionable whether other sorts are worth planting. Many varieties of plums, especially the Japanese and native kinds, do not fruit without other varieties nearby as pollenizers. Varieties are listed in order of ripening. Commerical varieties are starred.

Varieties adapted to the fruit sections of New England, the Hudson Valley and the Great Lakes: Abundance (Japanese), Santa Rosa (Japanese), *Burbank (Japanese), Pearl, *Bradshaw, Washington, *Italian Prune, Stanley, *Grand Duke, Imperial Epineuse, *French Damson, Gold Drop, Jefferson, *Reine Claude.

Hardy native varieties for northern planting: Bixby, Mankato, Opata, Omaha, Cheney, Waneta, Emerald, Brackett, Stoddard.

Varieties for southern Florida and the Gulf coast: Excelsior, Terrell, McRea.

Japanese varieties for southern planting: Red June, Bartlett, Santa Rosa, Abundance, Climax, Burbank, Chabot, Satsuma, Kelsey.

Native varieties for southern planting: Munson, Clifford, Wild Goose, Wilder, Forest Garden, Miner, Wayland.

Varieties for the Pacific coast, Japanese varieties: *Beauty, *Burbank, *Climax, *Duarte, *Formosa, *Kelsey, *Santa Rosa. European varieties: *Agen, Golden Drop, Giant, *Grand Duke, Imperial Epineuse, *Italian Prune, Jefferson, *Pond, *Reine Claude, Tragedy.

Pests and diseases are a serious problem with the plum as well as with the peach, particularly curculio and brown-rot. They can be controlled with dry-mix lime-sulfur and lead arsenate as described for the peach. A second or third application may be necessary at intervals of two or three weeks after the first spray. Black-knot, a fungous disease which causes black warty excrescences on the twigs and limbs, may cause serious damage. Control is to cut out and destroy the affected parts as soon as the disease appears. Spraying the trees as the buds are breaking with lime-sulfur 1–8 or bordeaux-oil emulsion 6–12–100 with 3 per cent oil has given good results with severe infestations.

PLUM, BATOKO-: *Flacourtia indica.* **Burdekin-:** *Pleiogynium Solandri.* **Coco-:** *Chrysobalanus Icaco.* **Date-:** *Diospyros Lotus.* **Governors-:** *Flacourtia indica.* **Hog-:** *Spondias Mombin.* **Jambolan-:** *Syzygium Cuminii.* **Japan-:** *Eriobotrya japonica.* **Kafir-:** *Harpephyllum caffrum.* **Marmalade-:** *Achras Zapota.* **Natal-:** *Carissa grandiflora.* **Pigeon-:** *Coccolobis floridana.* **Spanish-:** *Spondias purpurea.*

PLUMBAGINÀCEÆ. PLUMBAGO OR LEADWORT FAMILY. Herbs and small shrubs of about 10 widely distributed genera, mostly in the Medit. region and eastward, having certain medicinal uses but mostly grown as ornamental subjects. The family, which is allied to Primulaceæ, is characterized by bisexual regular gamopetalous fls. having 5-toothed calyx which is often ribbed and membranaceous, 5-lobed or -parted corolla, 5 stamens, superior 1-celled ovary, and fr. inclosed by the calyx. Acantholimon, Armeria, Ceratostigma, Limonium, Plumbago are herein treated.

PLUMBÀGO. LEADWORT. *Plumbaginaceæ.* Herbs and small shrubs with alternate entire lvs. and blue, red, or white salver-shaped fls. in terminal spikes; grown out-doors in subtrop. countries and under glass in intermediate temperatures. Propagated by cuttings of nearly mature wood, by division and seeds.

capénsis. Partially climbing or upright and straggling: lvs. oblong, to 2 in. long: fls. azure-blue, corolla-tube 1½ in. long, limb to 1 in. or more across. S. Afr.—Common in greenhouses and in the open in warm countries. Var. **álba** has white fls., also common.

coccínea: *P. indica* var.

índica (*P. rosea*). Partially climbing: lvs. ovate-elliptic, to 4 in. long: fls. purplish-red, corolla-tube 1 in. long. S. Asia. Var. **coccínea** has larger scarlet fls.

Lárpentiæ: *Ceratostigma plumbaginoides.*

ròsea: *P. indica.*

scándens. Climbing or trailing: lvs. ovate- or oblong-lanceolate, to 5 in. long: fls. white, corolla-tube to ¾ in. long, limb of corolla ½ in. or less across. Trop. Amer.

Willmóttiæ: *Ceratostigma Willmottianum.*

PLUMÈRIA. FRANGIPANI. *Apocynaceæ.* Deciduous trees and shrubs with thick soft branches and very milky sap and alternate long pinnately-veined lvs., large funnelform fls. in terminal cymes, and fr. of 2 leathery follicles; about 50 species in trop. Amer., some of them grown for ornament in warm countries, and for the perfume. Propagated by cuttings in early spring. Fls. mostly appear when trees are leafless.

acuminàta: *P. rubra.*

acutifòlia: *P. rubra* var.

álba. To 35 ft.: lvs. very narrow, to 10 in. long and ½ in. wide, white-pubescent beneath: fls. white, fragrant. W. Indies.

emarginàta. Small tree: lvs. to 7 in. long and 3 in. broad, more or less pubescent underneath, shallowly emarginate at apex. the veins at nearly right angles to the midrib and in this respect differing from the closely related Cuban *P. obtusa* in which the veins are strongly ascending: fls. white, with rounded lobes 1 in. or more long (in *P. obtusa* lobes shorter, not known to be in U. S.). Cuba; planted in Fla.

rùbra (*P. acuminata*). To 15 ft.: lvs. to 16 in. long and 4 in. wide, glabrous: fls. pink, red or purple, very fragrant. Mex. to Venezuela; nat. in W. Indies. Var. **acutifòlia** (*P. acutifolia*) has corolla white usually with yellow center and sometimes flushed rose.

PLUMOSE: plumy; feather-like; with fine long hairs along the side as the pappus of some composites.

PÒA. *Gramineæ.* Small sod-forming ann. and per. grasses employed for lawns and in pastures and meadows, having flat or convolute lvs. and spikelets in open or narrow panicles; of wide distribution in temp. and cold countries. See *Grasses, Lawns.*

alpìna. MOUNTAIN SPEAR-GRASS. Per. to 1½ ft.: lvs. to 3 in. long and ⅙ in. wide: panicles to 3 in. long, branches spreading. Eu., Asia, N. N. Amer.

amábilis: *Eragrostis amabilis.*

ánnua. DWARF MEADOW-GRASS. Ann. to 1 ft.: lvs. to 4 in. long and 1/12 in. wide: panicles to 4 in. long, branches spreading. Eu., Asia, N. Amer.

bulbòsa. Tufted per. to 16 in., sts. bulbously thickened at base: lvs. to 3 in. long and ⅙ in. wide: panicles to 2 in. long. Eu., Asia.

compréssa. CANADA BLUE-GRASS. WIRE-GRASS. Per. to 2 ft., decumbent at base with creeping rootstocks, bluish-green: lvs. to 4 in. long and 1/12 in. wide: panicles to 3 in. long, branches erect or ascending. Eu., Asia; nat. in N. Amer.

nemoràlis. WOOD MEADOW-GRASS. Per. to 3 ft.: lvs. to 5 in. long and 1/12 in. wide: panicles open, branches erect or spreading. Eu., Asia.

palústris. FOWL MEADOW-GRASS. Tufted per. to 5 ft.:

lvs. to 6 in. long and ⅙ in. wide, soft: panicles open, to 1 ft. long, nodding, yellowish-green or purplish. Eu., N. N. Amer.

pilòsa: *Eragrostis pilosa.*

praténsis. KENTUCKY BLUE-GRASS. JUNE-GRASS. Tufted per. to 3 ft.: lvs. to 6 in. or more long and ¼ in. wide: panicles to 8 in. long, branches spreading or ascending. Eu., Asia; nat. in N. Amer.

triviàlis. ROUGH-STALKED MEADOW-GRASS. Per. to 3 ft., often decumbent at base: lvs. to 7 in. long and ⅙ in. wide: panicles open, to 6 in. long, branches ascending or spreading. Eu.; nat. in N. Amer.

POD: a dehiscent dry pericarp; a rather general uncritical term.

PODACHÆNIUM. *Compositæ.* Shrubs or tree-like with large opposite lvs. and small heads of white ray-fls. and yellow disk-fls. borne in panicled corymbs; pappus of bristles and scales; native Mex. to N. S. Amer. and one grown out-of-doors in S. Calif.

éminens (*Ferdinanda eminens*). To 25 ft.: lvs. ovate or orbicular, to 1 ft. and more long, entire or angular-lobed, gray-tomentose beneath: heads to 1 in. across. Mex., Cent. Amer.

PODALÝRIA. *Leguminosæ.* Shrubs of S. Afr. with alternate simple lvs., purple, rose or whitish papilionaceous fls., and leathery swollen pubescent pods; grown in Calif.

calyptràta. To 6 ft.: lvs. to 1¾ in. long and 1 in. across, pubescent and green on both sides.

serícea. To 6 ft., sometimes procumbent: lvs. oblong, silvery-silky on both sides.

PODOCARPÀCEÆ. PODOCARPUS FAMILY. A few genera of evergreen coniferous resinous trees of the southern hemisphere, grown for ornament in S. U. S. or rarely in conservatories. Until recently this family has been united with Taxaceæ but differs in technical characters of the fl., particularly in anthers composed of only 2 cells rather than several: fr. a naked seed surrounded by a fleshy aril and berry-like: lvs. usually needle-like or broadly oblong and alternate. The cult. genera are Dacrydium, Phyllocladus, Podocarpus, Saxegothæa.

PODOCÁRPUS. *Podocarpaceæ.* Trees and shrubs with flat mostly narrow but sometimes broad persistent lvs., yellow catkin-like male fls. and greenish inconspicuous female fls., and berry- or drupe-like frs. often on fleshy red or purple stalks; native in the mts. and highlands of warm regions, many of them in the southern hemisphere. For cult., see *Conifers.* The foliage of most of the species does not at first suggest the Coniferæ. The podocarpuses are grown in the open far south in the eastern and central U. S. and in Calif., and sometimes under glass as tub plants.

acutifòlia. Much branched shrub to 10 or more ft.: lvs. linear, to 1 in. long, thin. New Zeal.

alpìna. Shrub or tree to 15 ft.: lvs. linear, to ½ in. long, pale beneath. Tasmania, Australia.

andìna. Tree to 45 ft.: lvs. linear, to 1¼ in. long, with 2 glaucous bands beneath. Chile.—Some of the material in the trade may be *P. saligna.*

chinénsis: *P. macrophylla* var. *Maki.*

dacrydioìdes. KAHIKA. Tree to 100 ft. or more: lvs. overlapping, to ⅛ in. long or on young trees ¼ in. New Zeal.

elongàta. Tree to 70 ft.: lvs. linear-lanceolate, to 3 in. and more long, thin, pointed. S. and trop. Afr.—Prized in S. Calif. in juvenile stage for its attractive habit and bright green foliage, as a tub and decorative plant.

ferrugínea. MIRO. Tree to 80 ft.: lvs. linear, to ¾ in. long, crowded. New Zeal.

gracílior. Tree to 60 ft.: lvs. linear-lanceolate, to 4 in. long and ¼ in. wide. Cent. Afr.

Hállii. Tree to 60 ft.: lvs. linear-lanceolate, to 1¼ in. long, leathery. New Zeal.

japónica: *P. macrophylla* var. *Maki.*

longifòlia: *P. macrophylla.*

macrophýlla. (*P. longifolia*). Tree to 60 ft.: lvs. lanceolate, to 4 in. long, glossy dark green above, paler beneath. Japan. Var. **appréssa** is a low form with shorter lvs. Var. **Màki** (*P. chinensis, P. japonica, P. sinensis*). has smaller lvs. and is usually shrubby.—Apparently the commonest species in cult.

Nàgi. Tree to 90 ft.: lvs. lanceolate to ovate, to 3 in. long and about 1 in. broad (like Agathis), paler beneath. Japan.

neriifòlia. Tree to 70 ft.: lvs. lanceolate, to 6 in. long, slightly glaucous beneath, midrib in a groove. China to New Guinea.

nivàlis. Much branched shrub to 8 ft.: lvs. to ⅔ in. long, leathery, with thickened margins. New Zeal.

nubígena. Tree or shrub: lvs. linear-lanceolate, to 1¾ in. long, with 2 glaucous bands beneath. Chile.

salígna. Tree to 60 ft.: lvs. linear-lanceolate, to 4 in. long, blue-green above and pale beneath. Chile.

sinénsis: *P. macrophylla* var. *Maki.*

spicàta. MATAI. Tree to 80 ft., with pendulous branches when young: lvs. linear, to ½ in. long, glaucous beneath, leathery. New Zeal.

spinulòsa. Spreading shrub: lvs. linear, to 2½ in. long, stiff, pungent-pointed. Australia.

Totàra. Tree to 100 ft.: lvs. linear, to 1 in. long, dull green, leathery. New Zeal.

PODÓLEPIS. *Compositæ.* Ann. and per. herbs of Australia with deciduous tomentum, alternate entire linear to lanceolate lvs., and terminal heads of yellow, pink or purple ray-fls. and disk-fls.; bracts of involucre stiff and showy; pappus of bristles.

Species of podolepis are grown as everlastings and thrive in sunlight in porous soil. Propagated by seed, sown under glass in April or outdoors when the soil is in proper condition.

affìnis: *P. canescens.*

aristàta (*P. chrysantha*). Ann. to 1 ft.: heads solitary, 1 in. or more across, rays yellow, 3–4-lobed.

canéscens (*P. affinis*). Ann. to 1 ft.: heads solitary, about ¾ in. across, rays yellow, 3–4-lobed.

chrysántha: *P. aristata.*

grácilis. Ann. to 1 ft. or more, much branched: rays purple or lilac, entire or 2-lobed, ½ in. long.

PODOPHÝLLUM. MAY-APPLE. *Berberidaceæ.* Per. herbs with large peltate palmately lobed lvs., solitary white fls., and fr. a fleshy berry; useful for shady places in the wild-garden; native in N. Amer. and Asia. A drug is obtained from the rhizomes of the native species. Propagated by division and seed.

emòdi. To 1 ft.: lvs. to 10 in. across, 3–5-lobed: fls. to 1½ in. across: fr. red, to 2 in. across, edible. Himalayas. Var. **màjor** is listed as having pink fls.

peltàtum. To 1½ ft.: lvs. to 1 ft. across, 5–9-lobed: fls. 2 in. and more across: fr. yellowish, 2 in. long. Que. to Fla. and Tex.

PODRÀNEA. *Bignoniaceæ.* A small African genus allied to Pandorea, differing in having an inflated calyx when in fl., the ovary oblong, not ovoid, and fr. an elongate linear caps. with flexible leathery valves, not short and oblong with stiff woody valves. See *Pandorea* for cult.

Brỳcei (*Pandorea Brycei. Tecoma Reginæ-Sabæ*). Lvs. of 9–11 lanceolate long-pointed entire lfts. to 2 in. long: fls. pale pink marked with red and throat yellow, 1¼ in. long and 2 in. across, in any-fld. panicles. Rhodesia.

Ricasoliàna (*Pandorea* and *Tecoma Ricasoliana. T.* and *Bignonia Mackenii*). Lvs. of 7–11 ovate short-pointed toothed lfts. 1 in. long: fls. pale pink striped with red, 2 in. long, in loose panicles. S. Afr.

POGÒNIA. *Orchidaceæ.* Terrestrial orchids, chiefly American, with sts. bearing usually a solitary lf. and a single bracted terminal fl., having sepals and petals nearly equal, and toothed bearded lip. Grown out-of-doors in shady or moist situations; see *Orchids.*

divaricàta: *Cleistes divaricata.*

ophioglossoìdes. To about 21 in. high, with a solitary lf. to 3¼ in. long on the st.: fls. (rarely 2) rose-pink, fragrant. Mar.–May (in S.), June–Aug. (in N.). Newf. to Fla. and Tex.

verticillàta: *Isotria verticillata.*

POINCIÀNA. *Leguminosæ.* Trees or shrubs with 2-pinnate lvs., showy fls. in panicles or racemes, the stamens often long-exserted, calyx-lobes strongly imbricate, and flat pods; native in warm regions. Cult. as for *Cæsalpinia.*

Conzáttii. Small tree: lfts. 8–10, oblong to obovate: fls. yellowish-red to brilliant red, in sessile racemes: pods curved, pubescent. Mex.

Gîlliesii (*Cæsalpinia Gilliesii*). Straggling shrub or small tree, not prickly, branchlets glandular-pubescent: lfts. numerous and very small: fls. light yellow with bright red stamens: pods to 4 in. long. S. Amer.

pulchérrima (*Cæsalpinia pulcherrima*). Barbados Pride. Barbados Flower-Fence. Dwarf Poinciana. More or less prickly glabrous shrub to 10 ft.: lfts. to ¾ in. long: fls. orange or yellow with bright red stamens to 2½ in. long: pods to 4 in. long. Tropics. Var. **flàva,** fls. yellow.

règia: *Delonix regia.*

POINSETTIA: *Euphorbia pulcherrima*; culture under *Euphorbia.*

POISON-BULB: *Crinum asiaticum.*

POKE: *Phytolacca americana.*

POKEBERRY: *Phytolacca.*

POKER-PLANT: *Kniphofia.*

POKEWEED: *Phytolacca.*

POLANÍSIA. *Capparidaceæ.* Coarse weedy ann. herbs of warm and trop. countries, probably 30 species, differing from Cleome in the absence of a conspicuous stalk (gynophore) to the ovary. **P. trachyspérma** of N. Amer. is sometimes grown as *Cleome gigantea* and *C. grandis* by error or admixture; it is a glandular plant, not showy, with purple and whitish fls. and much shorter stamens than the Cleome.

POLEMONIÀCEÆ. Phlox Family. Bland herbs or rarely shrubs or small trees, of about 12 genera in Eu., Asia and N. Amer., characterized by bisexual mostly regular fls. having 5 sepals, 5-lobed gamopetalous corolla, 5 stamens, superior usually 3-celled ovary, and capsular frs. The family furnishes many garden ornamental subjects, as Cantua, Cobæa, Collomia, Gilia, Loeselia, Phlox, Polemonium.

POLEMÒNIUM. *Polemoniaceæ.* Mostly per. herbs with alternate pinnately dissected lvs. and blue, purplish, white or yellowish often nodding fls. in terminal corymbs; grown in the flower-garden or border. Of easy cult. in rich loam. Propagated by division or seeds sown in fall.

álbum: plants in trade under this name may be vars. of *P. cæruleum* or *P. Richardsonii.*

amœnum. To 2 ft.: lvs. of 15–21 lanceolate lfts.: fls. pale blue, ¾ in. long. Wash.—By some authors considered a variant of *P. carneum.*

Árchibaldiæ. To 2 ft.: lvs. of 13–19 oblong-lanceolate lfts.: fls. purple, ¾ in. long. Mts., Colo., Utah.

boreàle: see *P. Richardsonii.*

cærùleum. Jacobs-Ladder. Greek Valerian. Charity. To 3 ft.: lvs. of 11–21 lanceolate lfts.: fls. blue, 1 in. across, drooping. Eu. Var. **álbum** has white fls. Var. **himalayànum** (*P. grandiflorum*) has lilac-blue fls. to 1½ in. across. Var. **tangùticum** is probably not distinct from var. *album.* In var. **variegàtum** the foliage is variegated.

cárneum. To 2 ft.: lvs. of 5–17 ovate to oblong-lanceolate lfts. to 1½ in. long: fls. salmon fading purplish, to 1½ in. across. Calif., Ore.

cashmiriànum: listed name of unknown botanical standing.

confértum. Skunkweed. To 8 in.: lvs. of 30–40 orbicular or oblong lfts.: fls. blue or violet, 1 in. long. Mts., Wyo. to New Mex.

delicàtum. To 4 in., very slender: lvs. of 11–23 ovate to oblong sticky-hairy lfts.: fls. violet, ⅓ in. across, sepals acute. Mts., Colo., Utah, Ariz., New Mex.

élegans. To 6 in., viscid: lfts. numerous, ovate to elliptic, very small: fls. blue with yellow throat, about ½ in. long. Wash.

exímium. To 9 in., tufted: lvs. of many linear palmately divided lfts.: fls. blue, in dense heads. Calif.

Fárreri: perhaps referable to *P. cæruleum* var. *himalayanum.*

filicìnum. To 3 ft. or more: lvs. fern-like, the lfts. lanceolate: fls. deep blue or purple, ½ in. across. New Mex.

flàvum. To 3 ft.: lvs. of ovate to oblong-lanceolate lfts.: fls. tawny-red outside, yellow inside, about 1 in. across. Mts. of New Mex. Var. **cærùleum** may not differ from type.

Fórrestii: listed name of unknown botanical standing.

grandiflòrum: *P. cæruleum* var. *himalayanum.*

Hàydenii. Per. to 1 ft., sts. glandular-puberulent above: st.-lvs. usually 3–5, lfts. 15–25, ovate to oblanceolate, to ½ in. long: fls. blue, to ⅝ in. long, campanulate, in narrow infl. Mont., Ida., Wyo.

himalayànum: *P. cæruleum* var.

hùmile: *P. Richardsonii.*

mellìtum. To 10 in.: lvs. of 30–60 oval to linear lfts.: fls. white or cream, 1 in. long. Rocky Mts.

micránthum. Ann. to 10 in.: lvs. to 2 in. long, lfts. elliptic to lanceolate, to ⅜ in. long: fls. white, minute, solitary. Wash. to Mont. south to Calif.

mólle. To 2 ft., hairy: lvs. of 13–21 oblong or lanceolate lfts.: fls. purple, ½ in. long. Rocky Mts.

occidentàle. To 3 ft., glandular-pubescent: lvs. of 15–27 ovate-oblong or lanceolate lfts. to 1½ in. long: fls. blue or violet, ½ in. long. Alaska to Colo. and Calif.

parvifòlium. To 1 in. or less: lvs. of 11–25 very small oval or orbicular lfts.: fls. dark violet, ⅓ in. long, sepals obtuse. Mts., Mont.

pauciflòrum. To 1 ft., glandular-pubescent: lvs. of 12–24 narrow-lanceolate lfts. ¾ in. long: fls. yellow tinged red, 1½ in. long, sometimes solitary. Mex., Ariz.

pilòsum: *P. viscosum* var.

pulchéllum: *P. Richardsonii* var.

pulchérrimum. To 1 ft.: lvs. glabrous to puberulent, of 15–27 oval lfts.: fls. violet or rose, yellowish at base, ⅓ in. long, sepals acute. Mts., Alta. to B. C., Wyo. and Ariz.

réptans. To 1 ft.: lvs. of 5–15 ovate to lanceolate-oblong lfts.: fls. light blue, to ¾ in. long. N. Y. to Ala. and Kans. Var. **himalàicum** is probably *P. cæruleum* var. *himalayanum.*

Ríchardsonii (*P. humile*). To 9 in., with villous-hairy sts.: lvs. of 15–21 round-ovate to oblong lfts., hairy: fls. blue to purplish, ½ in. across. Arctic regions.—The name *P. humile* was applied to another species many years prior to its use for this plant. The plant known as *P. boreale* (*P. humile* var. *boreale*) is tall and glabrescent, native of arctic Eurasia, and now treated as a variant of *P. lanatum,* neither form known to be in cult. in U. S. Var. **álbum** has white fls. and var. **pulchéllum** (*P. pulchellum*) smaller violet to white fls.

robústum. To 3 ft.: lvs. of 11–17 lanceolate lfts.: fls. rose or purplish, to ⅗ in. long. Mts. of Colo.

ròseum: listed name for a pink form.

Van-Brúntiæ. To 2½ ft., with stout horizontal roots: lvs. of 3–5 or more ovate or lanceolate lfts.: fls. bluish-purple, ¾ in. across. Vt. to Md.

viscòsum. To 4 in., sticky-pubescent: lvs. of 30–41 orbicular lfts. to ⅙ in. long: fls. blue or violet, ¾ in. long. Mts., Alta. to Ida. Var. **pilòsum,** plant woolly-pilose, fls. white.

POLIÁNTHES. *Amaryllidaceæ.* Herbs with tuberous roots, grass-like basal and st.-lvs. and white fls. in terminal racemes or spikes, the perianth-tube long. Mex.

Tubers or bulbs should be set out early in June and covered with about an inch or more of fine light soil. One, the tuberose, is a popular garden plant. The roots should be dug before frost and stored over winter in a dry warm place. Tuberoses are summer and autumn bloomers; they may be forced for bloom in April to June by starting in January and kept in a temperature of 75–80°. The bulbs may be retarded in a cool dry place and forced for November bloom.

tuberòsa. Tuberose (that is, tuber-ose). To 3½ ft.: lvs. to 1½ ft. long and ½ in. wide, those on the st. clasping and successively smaller: fls. waxy-white, very fragrant, 2½ in. long, the double form mostly planted. Unknown wild.

POLIOTHÝRSIS. *Flacourtiaceæ.* Chinese tree adaptable far S. Propagated by seeds, cuttings of green wood and roots. **P. sinénsis.** To 40 ft.: lvs. ovate or ovate-oblong, to 7 in. long, toothed: fls. monœcious, greenish-white, small, without petals, in terminal panicles to 8 in. long: caps. ¾ in. long.

POLLEN: spores or grains borne by the anther, containing the male element; sometimes, as in orchids and milkweeds, it is not granular.

PÓLLIA. *Commelinaceæ.* Per. herbs in tropics of the Old World, having large lvs. borne near the top of the st. and white or pale rose fls. in terminal panicles; sometimes found in greenhouse collections. Requires the treatment of other glasshouse spiderworts.

condensàta. Sts. to 6 ft.: lvs. to 1 ft. long and 3 in. wide. Trop. Afr. Var. **variegàta** has lvs. variegated with yellowish-white.

POLYANDROCÓCOS. *Palmaceæ.* Two tall unarmed monœcious Brazilian feather-palms, one of which has been planted in Fla.; spadix among the lvs., long and simple, staminate in the upper part; stamens 15–20; pistillate fls. subtended by bracts that enlarge in fr., making a close cylindrical spike: fr. ellipsoid or obovoid, concave at apex. For cult. see *Palm.*

caudéscens (*Diplothemium caudescens*). Trunk to 20 ft., closely ringed, bearing a heavy dense crown of stiff foliage: pinnæ very many, 2 in. or less broad, with very strong midrib and other nerves faint, somewhat crenate near the point: stamens 90–120: fr. obovoid, about ¾ in. long, punctate, pubescent in apical cavity. Bahia to Espirito Santo.

POLYANTHUS: *Primula polyantha.*

POLYCALYMMA: *Myriocephalus Stuartii.*

POLYCODIUM: *Vaccinium stamineum.*

POLÝGALA. Milkwort. *Polygalaceæ.* Many herbs or shrubs planted out-of-doors in warm climates or grown in the greenhouse, and some of them native in N. Amer.; characters of *Polygalaceæ*, which see.

Some species may be transplanted from the wild and these should mostly be placed in shady situations in light soil; propagated by seed. The tender species are propagated by cuttings in spring, over heat.

álba. Ann. or bien. to 1½ ft.: lvs. linear, to 1 in. long: fls. white, in spike-like racemes. Minn. to Mex.

amàra. Per. to 10 in.: lvs. obovate, lower ones in rosette and longer than st.-lvs.: fls. pale blue or whitish, bracts shorter than pedicel: caps. small. Eu.

apopétala. Shrub to 15 ft. or more: lvs. lanceolate, obtuse: fls. pinkish-purple, in terminal racemes. Lower Calif.—Planted on Pacific coast.

brachýpoda. Erect: fls. reddish-purple, in racemes. Native country unknown.

calcàrea. Per. to 8 in., tufted: lvs. in rosettes, oboval to linear-lanceolate, variable in size: fls. blue, seldom white or rose, in terminal clusters. Eu.—Differs from *P. amara* in its larger bracts and caps.

Chamæbúxus. Creeping evergreen shrub to 1 ft.: lvs. lanceolate to obovate, to 1 in. long: fls. yellow, 1 or 2 together. Eu.; stands in S. New England. Var. **grandiflòra** (vars. *atropurpurea* and *purpurea*) has purple wings and yellow petals. Var. **lùtea** is listed as having clear yellow fls.

cruciàta. Ann. to 10 in.: lvs. linear to spatulate, usually in 4's: fls. rose, wings usually bristle-pointed, in short thick sessile spikes. Me. to Minn. south to Fla. and Neb.

Dalmaisiàna. A hybrid with *P. myrtifolia* var. *grandiflora* as one parent: fls. purplish- or rosy-red, blooming almost continuously.—Greenhouse bush, planted out far S. and in Calif.

grandiflòra: *P. myrtifolia* var.

hebeclàda (*P. rhodoptera*). Per. to 1 ft.: lvs. linear to cuneate, puberulous, margins somewhat revolute: fls. yellow with pink wings, on long pedicels in lax terminal racemes. Brazil.

lùtea. Tufted ann. to 1 ft.: lvs. oblong-lanceolate, about 1 in. long: fls. orange-yellow, ¼ in. long, in dense spike-like racemes to 1½ in. long. L. I. to Fla. and La.

myrtifòlia. Shrub to 8 ft.: lvs. oblong or obovate, to 1 in. long: fls. greenish-white veined with purple, the lower petal with a conspicuous fringed crest, borne in short terminal racemes. S. Afr.—Greenhouse, or in the open in warm regions. Var. **grandiflòra** (*P. grandiflora*) has large rich purple fls.

paucifòlia. Fringed P. Flowering Wintergreen. Per. trailer to 6 or 7 in.: upper lvs. clustered and ovate or oblong, lower ones distant and becoming scale-like: fls. rose-purple or rarely white, 1–4 together, appearing terminal, with conspicuous fringed crest on corolla. N. B. to Ga. and Minn.; sometimes colonized about woods.

polýgama. Bien. to 1½ ft.: lvs. spatulate to oblong, to 1 in. long: fls. purple or rose, ¼ in. long, in loose racemes to 4 in. long. N. S. to Fla. and Tex.

rhodóptera: *P. hebeclada.*

sanguínea: *P. viridescens.*

Sénega. Seneca Snakeroot. Per. to 1½ ft.: lvs. lanceolate or oblong-lanceolate, to 2 in. long: fls. white or greenish, very small, in terminal spikes to 2 in. long. N. B. to N. C. and Ark.

Váyrediæ. Per. to 8 in.: lvs. lanceolate, usually deflexed and drooping: fls. purple with yellowish keel, in short axillary racemes. Pyrenees.

virgàta. Shrub to 15 ft.: lvs. linear: fls. purple or pink, in many-fld. leafless racemes. S. Afr.—Planted sometimes in warm regions.

viridéscens (*P. sanguinea*). Ann. to 15 in.: lvs. oblong or linear-oblong, about 1 in. long: fls. rose-purple, varying to greenish or white, in globose heads ½ in. across. N. S. to N. C. and La.

POLYGALÀCEÆ. Milkwort Family. Herbs, shrubs or trees, sometimes climbing, of about 10 widely distributed genera, Comesperma, Polygala and Securidaca being known as cult. subjects. The family is characterized by simple lvs., bisexual irregular fls. with 5 sepals of which 2 resemble petals, 3–5 petals often united, 8–10 stamens, superior 2-celled ovary, and fr. usually a caps. but sometimes a samara or drupe. Grown somewhat for ornament.

POLYGAMOUS: bearing unisexual and bisexual flowers on the same plant or in the same inflorescence; a sexually mixed inflorescence.

POLYGONÀCEÆ. Buckwheat or Knotweed Family. About 40 widely distributed genera of herbs, vines, shrubs or trees having jointed sts., simple lvs. with stipules usually united into a prominent more or less tubular sheath or ocrea, and small bisexual or unisexual fls. without petals and with 2–6-parted calyx, 2–9 stamens, superior 1-celled ovary, and fr. an achene. A few genera yield food products and others are cult. for ornament, as Antigonon, Atraphaxis, Chorizanthe, Coccolobis, Eriogonum, Fagopyrum, Homalocladium, Muehlenbeckia, Oxyria, Polygonella, Polygonum, Rheum, Rumex, Tovara, Triplaris.

POLYGÓNATUM (*Salomonia*). Solomons-Seal. *Liliaceæ.* Several per. herbs of north temp. zone with creeping roots, sts. leafy toward the top, and greenish drooping fls. solitary or in umbels in the axils, the perianth-segms. united; suitable for the wild-garden. They thrive in shady positions in deep rich soil. Propagated by division.

biflòrum (*P. pubescens*). Small S. To 3 ft.: lvs. to 4 in. long and 2 in. wide, pubescent beneath: fls. 1–4 together, to ½ in. long. N. B. to Fla. and Tenn. Var. **màjor** is a large form.

commutàtum (*P. giganteum*). Great S. To 8 ft.: lvs. to 6 in. long and 4 in. wide, glabrous: fls. 1–8 together, ¾ in. long. N. Amer.

giganteum: *P. commutatum.*

grandiflòrum: listed name, probably of hort. origin.

latifòlium. To 4 ft.: lvs. to 6 in. long: fls. 1–5 together, ¾ in. long. Eu.

màjor: *P. biflorum* var.

multiflòrum. To 3 ft.: lvs. 3 in. long and 1½ in. wide, glabrous: fls. 2–8 together, ⅔ in. long. Eu., Asia. Var. **màjor** is listed.

officinàle (*Convallaria Polygonatum*). To 1½ ft.: lvs. to 5 in. long and 2 in. wide: fls. 1–2 together, ¾ in. long, fragrant. Eu., Asia.

pubéscens: *P. biflorum.*

POLYGONÉLLA. *Polygonaceæ.* Ann. and per. herbs of E. N. Amer., with jointed sts., alternate lvs., and small white or greenish fls. in panicled racemes; allied to Polygonum; sometimes offered but of little hort. merit.

americàna. Per. to 4 ft., sts. somewhat flexuous: lvs. linear to linear-spatulate, to 1 in. long, fleshy: racemes to 3 in. long, dense: fr. winged. Dry soil, Ga. to Ala., Mo. and Tex.

articulàta (*Delopyrum articulatum*). Ann. to 1½ ft.: lvs. linear or linear-subulate, to 1 in. long: racemes to 1½ in. long: fr. not winged. Coast, Me. to Fla.

POLÝGONUM. Knotweed. Fleece-Flower. *Polygonaceæ.* Many species, mostly herbs, sometimes twining or aquatic, with alternate simple lvs., small fls. in racemes, spikes, or heads, and fr. a small achene; grown in borders or the wild-garden. Plants of varied character, in many parts of the world, a few of the kinds of good ornamental value for their profusion of little white, greenish or red fls. and sometimes for the abundant foliage; some of the natives, little known in cult., are known as Smartweeds, growing in low places. Of easy cult. Propagated by seeds and division.

affìne (*P. Brunonis*). Per. to 1½ ft.: lvs. mostly basal, oblanceolate, 6 in. or more long, finely toothed: fls. bright rose-red, in dense spikes to 3 in. long, in autumn. High Himalayas.

alpìnum. Per. to 3 ft.: lvs. lanceolate to ovate-lanceolate, to 6 in. long, ciliate on margins: fls. white, in panicled racemes, in summer. Alps and Asia.

amphíbium (*Persicaria amphibia*). Aquatic per. with st. to 20 ft. long which roots at joints: lvs. rather thick, floating, oblong to lanceolate, to 4 in. long: fls. light rose, in dense terminal racemes to 1 in. long, in late summer. In ponds and lakes, N. Amer. and Eu.; sometimes nat. in pools.

amplexicaùle (*P. oxyphyllum*). Mountain Fleece. Per. to 3 ft.: lvs. ovate to lanceolate, to 6 in. long, the upper st.-clasping: fls. rose-red or white, in spikes to 6 in. long, in mid-summer. Himalayas. Var. **álbum** has white fls. Var. **atropurpùreum** is listed as having mahogany-red fls. Var. **rùbrum** has red fls.

Aùbertii. China Fleece-Vine. Silver Lace-Vine. Twining per. vine to 20 ft.: lvs. ovate-lanceolate, to 2½ in. long: fls. greenish, fragrant, in long erect panicled racemes, in late summer. W. China, Tibet.

baldschuánicum. Closely resembling *P. Aubertii* but with larger rose-colored fls. in denser drooping panicles. Bokhara.

Bistórta. Snakeweed. Per. to 2 ft.: lvs. basal and cauline, oblong-ovate, truncate at base, with long winged petiole: fls. white or pink, in a dense spike to 2 in. long, in late summer. N. Eu. and Asia.

bistortoìdes (*Bistorta bistortoides. P. calophyllum*). Per. to 2½ ft.: lvs. mostly basal, oblong or lanceolate, to 10 in. long: fls. white, in dense racemes to 2 in. long. B. C. to Calif. and Rocky Mts.—Differs from *P. Bistorta* in the longer narrower lvs. commonly tapering into unwinged petioles.

Brunònis: *P. affine.*

calophýllum: *P. bistortoides.*

capitàtum. Per. with trailing branches to 10 in. long: lvs. elliptic, to 1½ in. long: fls. pink, in dense heads to ¾ in. across. Himalayas.

compáctum: *P. cuspidatum* var.

cuspidàtum. Japanese K. Mexican-Bamboo. Per. to 8 ft.: lvs. oval to nearly orbicular, to 5 in. long, abruptly pointed: fls. small, greenish-white, in axillary panicled racemes, in late summer and autumn. Japan. Var. **compáctum** is a condensed form about 2 ft. high. Var. **críspulum** is listed.—The name *cuspidatum* was employed earlier in the genus but is apparently an undetermined or dead name and under the International Rules does not invalidate the present use of it; under other interpretation, however, the name cannot be employed again and both *P. Sieboldii* and *P. Zuccarinii* have been used instead.

filifórme: *Tovara virginiana* var. *filiformis.*

multiflòrum. Climber, with tuberous root: lvs. cordate-ovate, 2–5 in. long, evergreen in mild climates: fls. greenish, in slender panicles, in autumn. Japan.

orientàle (*Persicaria orientalis*). Princes-Feather. Hairy ann. to 6 ft.: lvs. broadly ovate, to 10 in. long: fls. bright pink or rose, in dense spikes to 3½ in. long, in autumn. Asia, Australia; nat. in N. Amer. Var. **variegàtum** is listed as having variegated foliage.

oxyphýllum: *P. amplexicaule.*

Paronýchia. Per. with prostrate or ascending sts. to 3 ft.: lvs. linear-lanceolate, to ¾ in. long, margins revolute: fls. white or rose, in leafy terminal spikes. B. C. to Calif.

Persicària. Ladys-Thumb. Ann. to 2 ft.: lvs. lanceolate or narrower, usually with triangular spot near middle: fls. pink or greenish-purple, in dense spikes to 2 in. long, in summer. Eu.; nat. in N. Amer.

polygaloìdes. Ann. to 8 in.: lvs. narrow-linear, to 1 in. long: fls. white or pinkish, the bracts with white petal-like margins. Wash. to Mont.

polystàchyum. Shrubby per. to 6 ft.: lvs. oblong-lanceolate, to 9 in. long and 3½ in. wide: fls. white or pink, in large terminal panicles, in autumn. Himalayas.

réptans: probably an error for *repens* which is a synonym of *P. capitatum.*

rivulàre. Ann. to 3 ft., erect, usually simple: lvs. lanceolate, to 4 in. long and ¾ in. wide, sheaths glabrous and ciliate: fls. rose-pink, in lax cylindrical spikes to 1½ in. or more long. Chile.

sachalinénse. Sacaline. Coarse per. to 12 ft.: lvs. oval-oblong, 1 ft. and more long, slightly heart-shaped at base: fls. greenish, in short axillary clusters, in autumn. Saghalin Isl.—Sometimes grown for rough forage or as a coarse cover or screen.

scándens. Twining per.: lvs. ovate, to 5 in. long: fls. greenish-yellow, in axillary leafy racemes to 10 in. long. N. S. to Fla. and La.

seríceum: the plant grown under this name is *P. alpinum.*

Sièboldii: see *P. cuspidatum.*

Spàethii. Erect per. to 12 ft., roots much knotted, sts. thick with enlarged nodes, internodes about 10 in. long: lvs. cordate-ovate, to 18 in. long and 9 in. wide, petiole blood-red, to 6 in. long, margins undulate and somewhat ciliate: fls. whitish, in short axillary clusters. China.

sphærostàchyum. Tufted per.: lvs. linear or linear-oblong, wavy-toothed: fls. crimson, drooping, in dense solitary spikes. Himalayas.

tinctòrium. Erect per. to 3 ft.: lvs. ovate, obtuse, tapering into petiole pellucid-dotted, ciliate: fls. bright crimson-pink, in dense cylindrical spikes to 3½ in. long. China.—Source of an indigo-blue dye of commercial importance in Orient.

vaccinifòlium. Per. to 1 ft. with trailing branches: lvs. orbicular, to ⅔ in. long, slightly glaucous beneath: fls. rose, ⅓ in. across, in racemes to 3 in. long. Himalayas.

virginiànum: *Tovara virginiana.*

vivíparum (*Bistorta vivipara*). Per. to 1 ft.: lvs. oblong to linear, to 8 in. long: fls. pale rose or white, in narrow terminal racemes. N. Amer., Eu., Asia.

Wéyrichii. Per. to 3 ft.: lvs. ovate, to 7 in. long, white-tomentose beneath: fls. white or greenish, in racemes forming a large terminal panicle. Saghalin.

Zuccarínii: see *P. cuspidatum.*

POLYMNIA GRANDIS: *Montanoa bipinnatifida.*

POLYPETALOUS: having several distinct (separate) petals.

POLYPODIÀCEÆ. Common - Fern Family. Most of the common low ferns without distinct trunks, planted in the open and grown under glass, belong to this variable family of wide distribution: fronds or lvs. simple or pinnate, or palmate in some species, bearing sori on backs or margins, usually covered with an indusium. The most important genera known to hort. are Acrostichum, Adiantum, Anopteris, Asplenium, Athyrium, Blechnum, Camptosorus, Cheilanthes, Coniogramme, Cryptogramma, Cyclophorus, Cyrtomium, Cystopteris, Davallia, Dennstaedtia, Diplazium, Doodia, Doryopteris, Dryopteris, Elaphoglossum, Hemionitis, Humata, Hypolepis, Microlepia, Nephrolepis, Notholæna, Odontosoria, Onoclea, Onychium, Pellæa, Phyllitis, Pityrogramma, Platycerium, Polypodium, Polystichum, Pteretis, Pteridium, Pteris, Sadleria, Stenochlæna, Struthiopteris, Woodsia, Woodwardia. For cult. see *Ferns*.

POLYPÒDIUM. Polypody. *Polypodiaceæ*. A great genus of ferns growing in all parts of the world, of various habit and often epiphytic: fronds simple or compound; sori naked, on backs of veins. Some of the species are good in the rock-garden, others are tropical and therefore greenhouse subjects, of diverse kinds but mostly easy to grow. A number of them are root-climbers. Propagation is by spores, and readily by division of clumps or rhizomes. See *Ferns*.

aùreum (*P. glaucum. Phlebodium aureum*). Hares-foot-Fern. Golden P. Coarse fern with brown-scaly rhizomes: fronds to 4 ft. long and 1 ft. wide, deeply cut or pinnate, pinnæ to 1 ft. long and 2 in. wide, often glaucous beneath. Trop. Amer.

diversifòlium. Fronds leathery, of two forms, about 9 in. long and 2 in. wide and entire, or to 1½ ft. long and 9 in. wide and deeply pinnatifid, pinnæ to 5 in. long. New Zeal., Australia, Tasmania.

Dryópteris: *Dryopteris Linnæana.*

falcàtum: *P. vulgare* var. *occidentale.*

fraxinifòlium. Ashleaf P. Fronds to 4 ft. long and 1½ ft. wide, pinnate, pinnæ entire, to 9 in. long. Colombia to Brazil and Peru.

glaucophýllum críspum: form of *P. aureum.*

glaùco-pruinàtum (*P. glaucum. Phymatodes glaucum*). Fronds to 1½ ft. long and 8 in. wide, deeply pinnatifid, segms. entire, ½ in. or more wide. Philippines.

glaùcum: *P. aureum* or *P. glauco-pruinatum.*

glycyrrhìza: *P. vulgare* var. *occidentale.*

hespèrium: *P. vulgare* var.

hexagonópterum: *Dryopteris hexagonoptera.*

incànum: *P. polypodioides.*

irioìdes. Fronds to 3 ft. long and 3 in. wide, entire, leathery. Trop. Asia, Afr., Pacific Isls.

Knightiæ: hort. form of *P. subauriculatum.*

Língua: *Cyclophorus Lingua.*

Lòwii: a form of *P. aureum.*

Mandaiànum: a wavy-lvd. form of *P. aureum.*

occidentàle: *P. vulgare* var.

Pálmeri. Rhizomes very thick, white-scaly: fronds to 8 in. long and 3 in. wide, the fertile smaller, oblong to linear, entire. Mex. to Panama.

pennígerum: *Dryopteris pennigera.*

percússum (*Phymatodes percussum*). Fronds to 1 ft. long and 1½ in. wide, entire, narrowed toward both ends, very leathery. Colombia to Peru and Brazil.

Phegópteris: *Dryopteris Phegopteris.*

Phyllítidis (*Campyloneuron Phyllitidis*). Strap-Fern. Fronds to 3 ft. long and 4 in. wide, simple, leathery, shining, sometimes wavy-margined. Fla. to Uruguay.

Phymatòdes (*Drynaria vulgaris. Phymatodes vulgaris*). East Indian P. Similar to *P. aureum* but with slender blackish rhizomes, smaller fronds and different venation. Asia, Afr.

polypodioìdes (*P. incanum*). Resurrection-Fern. Fronds evergreen, leathery, to 7 in. long and 2 in. wide, pinnatifid into oblong entire segms., gray-scaly beneath. On trees, Del. to Tex., trop. Amer.

pustulàtum. Fronds variable to 9 in. long and ⅜ in. wide and entire, or to 1½ ft. long and 6 in. wide and deeply pinnatifid into linear-lanceolate segms. to 3 in. long. New Zeal., Australia.

quercifòlium (*Drynaria quercifolia*). Oak-leaved-Fern. Fronds leathery, of two kinds; fertile long-stalked, to 3 ft. long, pinnatifid into oblong entire segms. to 9 in. long; sterile sessile, shape of oak lvs., to 1 ft. long and 8 in. wide, lobed. India, Malaya to Australia.

Reìnwardtii: a hort. form of *P. subauriculatum.*

Scoùleri. Fronds to 1½ ft. long, leathery, pinnate into segms. to ¾ in. wide, slightly wavy. Coast, B. C. to Calif.

subauriculàtum (*Goniophlebium subauriculatum*). Jointed P. Fronds to 3 ft. long and 1 ft. wide, pinnate into entire or toothed segms. to 6 in. long and ½ in. wide. Trop. Asia to Australia.

venòsum: a name of uncertain application.

virginiànum. American Wall-Fern. Formerly included in *P. vulgare* but rhizomes not sweet, fronds smaller, the lower segms. as long as or longer than middle ones. E. N. Amer., on cliffs and rocks, north to Labrador.

vulgàre. Common P. Wall-F. Forming mats, rhizomes sweet: fronds to 2 ft. long and 5 in. wide, deeply pinnatifid into segms. to 2 in. wide, the lowest usually shorter than middle ones. On rocks, banks and trees, Eu., Asia, W. N. Amer. Var. **hespèrium** (*P. hesperium*). Fronds pinnate, to 7 in. long, pinnæ oblong or oval. B. C. to Calif. Var. **occidentàle** (*P. falcatum. P. glycyrrhiza. P. occidentale*). Fronds pinnate, to 1½ ft. long and 7 in. wide, pinnæ to 2½ in. long. Calif. to Alaska.—There are many crested, dissected and plumed forms.

POLYPODY: *Polypodium.* **Limestone:** *Dryopteris Robertiana.*

POLYPÒGON. *Gramineæ.* Grasses, mostly annuals with flat lvs. and spikelets borne in spike-like panicles; native in temp. regions and one sometimes planted for the ornamental fluffy spikes. See *Grasses.*

monspeliénsis. Annual Beard-Grass. Ann. to 2 ft.: lvs. to 6 in. long and ¼ in. wide, rough: panicles to 4 in. long, dense, awns to ¼ in. long. Eu., Asia; nat. in N. Amer.

POLÝPTERIS. *Compositæ.* Erect herbs with entire alternate lvs. and rose-purple or flesh-colored radiate heads in loose panicles; pappus of scales; native in N. Amer. One sometimes cult.

Hookeriàna (*Palafoxia Hookeriana. Othake Hookerianum* and *O. sphacelatum*). Ann. to 4 ft., sticky above: lvs. lanceolate, to 4 in. long, rough: heads 1 in. or more across, rays rose-red, deeply 3-lobed, the bracts of involucre tipped purple. Neb. to Mex.

POLÝSCIAS. *Araliaceæ.* Aromatic shrubs and trees from tropics of Old World and Pacific, with pinnate exceedingly variable lvs., very small fls. in umbels or heads which are often panicled, and berry-like frs.; known in cult. usually as Aralia and Panax. Certain authors prefer to put the following species in Nothopanax.

These araliads are planted in greenhouses and out-of-doors far South, being much employed in tropics for hedges and division plantings. Of easy cultivation. Propagated mostly by cuttings of firm wood; also by eye-cuttings over heat. Old stools placed over bottom heat will yield cuttings which may be rooted in heat. Cleft- or wedge-grafting is also employed.

Balfouriàna (*Aralia Balfouriana*). To 25 ft.: lvs. usually of 3 orbicular coarsely toothed lfts. to 4 in. across, somewhat heart-shaped at base, often blotched with white at the margin. New Caledonia.

filicifòlia (*Aralia filicifolia*). To 8 ft.: lvs. 1-pinnate, on the same plant, the lfts. varying from oblong and entire to 7 in. long, to very narrow, pinnatifid and sharply toothed, and to 1 ft. long. Pacific Isls.—A cut-lvd. form was once grown in this country as *Panax gracillima.*

fruticòsa (*Aralia fruticosa*). To 8 ft.: lvs. at least 3-pinnate, the lfts. varying from narrowly ovate to lanceolate, to 4 in. long, toothed or deeply cut. India to Polynesia. Var. **plumàta** (*Panax excelsum*) has small, very fine and narrow segments. One of the leaf forms has been called *Panax dissectum.*

Guilfòylei (*Aralia Guilfoylei*). To 20 ft.: lvs. 1-pinnate, the ovate to orbicular lfts. remotely toothed, to 5 in. long, usually margined or blotched with white. Polynesia. There are many leaf forms, the most important being var. **laciniàta** with the white margins cut into pronged teeth, var. **monstròsa** (*Aralia monstrosa*) with lfts. irregularly cut and jagged, and var. **Victòriæ** (*Aralia Victoriæ*) having much divided and cut lfts., useful in pots.

obtùsa. Tree to 12 ft.: lvs. bipinnate, glabrous; lfts. small, nearly orbicular, rounded or truncate or subcordate at base, sharp-toothed or cut, perhaps variegated. Java; grown in S. Fla. and southward.

POLYSTÀCHYA. *Orchidaceæ.* Cosmopolitan epiphytic orchids with leafy sts. and terminal racemes or panicles of small fls. with lateral sepals and 3-lobed lip united to column-foot. See *Orchids* for cult.

affìnis (*P. bracteosa*). Lvs. thin, to over 7 in. long: infl. usually racemose, downy, to 1 ft. long: fls. golden-yellow. May. W. Afr.

bracteòsa: *P. affinis.*

lutèola (*P. minuta*). A widely distributed species of both hemispheres, to about 22 in. high: lvs. to 12 in. long and 1½ in. wide: infl. loosely paniculate (less often racemose), many-fld., exceeding lvs.; fls. greenish-yellow. Trop. Amer., trop. Asia.

minùta: *P. luteola.*

POLÝSTICHUM. *Polypodiaceæ.* Ferns of temp. regions, mostly in woods, with fronds pinnatifid to 4-pinnate into sharp-toothed segms.; sori round, covered by indusia. Here are included some of the ferns formerly known as Aspidium. The native species are sometimes transferred to grounds; others are cool greenhouse subjects of easy cult. See *Ferns.*

acrostichoìdes (*Aspidium* and *Dryopteris acrostichoides*). CHRISTMAS-FERN. DAGGER-FERN. Hardy: fronds evergreen, to 2 ft. long and 5 in. wide, 1-pinnate into linear-lanceolate segms., those bearing spores contracted. N. S. to Tex.

aculeàtum (*Aspidium aculeatum. Dryopteris aculeata. P. angulare*). Hardy, dark green: fronds to 2 ft. long and 6 in. wide, 1-pinnate into pinnatifid segms. Widely distributed in Old World and S. Amer.—Very variable. Var. **dénsum** (*P. angulare* var. *densum*) has the fronds in a dense mass. Var. **prolíferum** (*P. proliferum*) is a proliferous form.

adiantifórme (*P. capense. P. coriaceum*). Fronds triangular, leathery, to 3 ft. long and 2½ ft. wide, 1–3-pinnate, segms. oblong, to 1 in. long, coarsely toothed. Tropics.

Ándersonii. Fronds to 3 ft. long and 8 in. wide, nearly 2-pinnate into triangular segms. minutely scaly beneath, rachis proliferous below tip. Alaska to Wash. and Mont.

angulàre: *P. aculeatum.*

aristàtum (*Aspidium aristatum. Lastrea aristata*). EAST INDIAN HOLLY-FERN. Stipes to 1½ ft. long: fronds to 2 ft. long and 1 ft. wide, 1–3-pinnate, segms. pinnatifid and spiny-toothed. Asia to Australia. Var. **variegàtum** has segms. banded with whitish-green.

Braùnii (*Aspidium Braunii*). SHIELD-FERN. Hardy: fronds to 2 ft. long, 2-pinnate, segms. sharp-toothed, covered with hair-like scales. N. N. Amer., Eu.

califórnicum (*Aspidium californicum*). Fronds to 2½ ft. long and 8 in. wide, 1-pinnate into pinnatifid linear segms. Wash. to Calif.

capénse: *P. adiantiforme.*

coriàceum: *P. adiantiforme.*

falcàtum: *Cyrtomium falcatum.*

ímbricans: *P. munitum* var.

Lémmonii. Fronds to 1 ft. long and 2 in. wide, pinnate into many small pinnately lobed or divided segms., margins wavy-toothed. Alaska to N. Calif.

lobàtum (*P. aculeatum* var. *lobatum*). Differs from *P. aculeatum* in somewhat shining fronds distinctly tapering to base, mostly sessile pinnules at an acute angle to rachis, the lowest considerably larger than one next to it.

Lonchìtis (*Aspidium Lonchitis*). MOUNTAIN HOLLY-FERN. Hardy: fronds leathery, evergreen, to 2 ft. long, 1-pinnate into lanceolate segms. to 1½ in. long, spiny-toothed and strongly auricled at base. Mts., N. Amer., Eu., Asia.

montànum: *Dryopteris oreopteris.*

munìtum (*Aspidium munitum*). GIANT HOLLY-FERN. Hardy: stipes to 2 ft. long: fronds leathery, evergreen, to 3½ ft. long and 10 in. wide, 1-pinnate into linear sharp-toothed or cut segms. Alaska to Mont. and Calif. Var. **ímbricans** has smaller fronds with crowded obliquely imbricated pinnæ.

plumòsum var. **compáctum** and var. **dénsum:** listed names, probably to be referred to variations of *P. munitum.*

prolíferum: *P. aculeatum* var.

scopulìnum. Fronds to 1 ft. long and 2½ in. wide, pinnate into few large pinnately lobed or divided sharp-toothed segms. Wash. to Calif., Que.

setòsum: a name of uncertain application.

tsus-siménse (*Aspidium tsus-simense*). Small and suitable for fern-baskets: fronds thin, 2-pinnate, to 2 ft. long including the stipe. Japan.

vàrium. JAPANESE HOLLY-FERN. St. partly creeping: fronds to 2 ft. long and 1 ft. wide, 2–3-pinnate, somewhat leathery. China, Japan.

vivíparum. Fronds to 1½ ft. long and 6 in. wide, pinnate into many lanceolate segms., auricles of the pinnæ forming distinct lfts. W. Indies.

POMADÉRRIS. *Rhamnaceæ.* Shrubs and trees of the Australia-New Zeal. region with alternate mostly tomentose and stellate simple lvs., small greenish fls. in cymes, corymbs or panicles, and little capsular frs.; grown for ornament in the S. and Calif. Propagated by cuttings of half-ripened shoots under glass.

apétala. To 20 ft.: lvs. oblong, to 4 in. long, white-tomentose beneath, rusty on veins: fls. greenish-white, in panicles to 7 in. long, without petals. Australia, New Zeal.—Planted as a yard and street tree in Calif.

Édgerleyi. To 4 ft., sometimes procumbent: lvs. oblong, to 1 in. long, rusty-tomentose beneath, bristly above: fls. in cymes, without petals. New Zeal.—Planted in Calif.

ellíptica. To 8 ft.: lvs. oblong, to 3 in. long, white-tomentose beneath: fls. bright yellow, ¼ in. across, in much branched panicles, with petals. New Zeal.

lanígera. Tall shrub: lvs. oblong or ovate-lanceolate, to 3 in. long, soft-tomentose beneath: fls. in panicles, with petals. Australia.

phylicæfòlia. To 4 ft.: lvs. linear or linear-oblong, to ⅓ in. long, margins revolute to midrib, rough-hairy above: fls. in small cymes, without petals. New Zeal.

rugòsa. To 8 ft.: lvs. oblong-lanceolate, to 1½ in. long, pubescent beneath, rusty on veins: fls. in cymes, without petals. New Zeal.

POME is from the Latin *pomum*, fruit; the English word, however, designates a particular kind of fruit represented by apples, pears, quinces, having a peculiar morphological structure: the ovary is immersed in a thick outer part that supplies most of the edible flesh; in prevailing cases the outer part completely covers the carpels, only the old styles protruding at the apex when the fruit is mature, but in the medlar the carpels are exposed on top. In *pomology* the Latin element retains its original signification, the word meaning the subject and practice of fruit-growing, whether the fruits are pomes, grapes, berries, avocados, citrus, nuts, plums, persimmons, dates.

POMEGRANATE: *Punica Granatum.*

POMELO: *Citrus paradisi;* see *Citrus Fruits* (page 183).

POMERACK: *Eugenia malaccensis.*

POMME BLANCHE: *Psoralea esculenta.*

POMPELMOUS: *Citrus maxima.*

PONCÌRUS. *Rutaceæ.* A small stiff-growing spiny deciduous tree of China, planted for ornament and hedges in the southern states and in protected places as far north as Philadelphia and much employed as stock for citrus fruits to improve their hardiness. **P. trifoliàta** (*Citrus trifoliata, Ægle sepiaria*), TRIFOLIATE-ORANGE, blooms in spring on bare branches in axils of large spines, the fls. white, opening flat, and sometimes 2 in. across: lfts. 3, oval or oblong, to 2 in. or more long, petiole winged: fr. small but orange-like and aromatic, to 2 in. diam., downy, pulp scant and acid.—A parent in hybridization: see *Citrus Fruits.* Propagated by seeds.

POND-APPLE: *Annona glabra.*

PONDWEED: *Potamogeton.* **Cape:** *Aponogeton distachyus.*

PONGÀMIA. *Leguminosæ.* Tree to 40 ft., grown for ornament in S. U. S., and the seeds furnishing an oil. **P. pinnàta** (*P. glabra*). KARUM or POONGA OIL TREE. Lvs. pinnate, of 5–7 ovate lfts. to 4 in. long, strong-smelling: fls. papilionaceous, purplish, pink to white, in loose racemes to 5 in. long: pods woody, thick and flat, to 2 in. long and 1 in. across. Trop. Asia, Australia.

PONGELION: *Ailanthus.*

PONTEDÈRIA. *Pontederiaceæ.* American aquatic per. herbs with thick parallel-veined lvs. having long petioles and blue fls. in spikes; grown in ponds and bog-gardens. The water should be about 1 ft. deep. Propagated by division.

cordàta. Pickerel-Weed. To 4 ft., from a rootstock: lvs. to 10 in. long and 6 in. wide, heart- or arrow-shaped at base: fls. with upper lobe having 2 yellow spots. N. S. to Fla. and Tex. and S. Var. **angustifòlia** (*P. montevidiensis*) has much narrower lvs.

paniculàta: *Eichhornia Martiana.*

PONTEDERIÀCEÆ. Pickerel-Weed Family. Six genera native in swamps or ponds: lvs. various: fls. bisexual, somewhat irregular, having 6-parted corolla-like usually showy perianth, 3 or 6 stamens, and superior ovary: fr. a caps. or achene. Eichhornia and Pontederia are grown in ponds and tanks.

POONGA OIL TREE: *Pongamia pinnata.*

POOR MANS WEATHERGLASS: *Anagallis arvensis.*

POPINAC: *Acacia Farnesiana.* **White:** *Leucæna glauca.*

POPLAR: *Populus;* see *Liriodendron Tulipifera.*

POPONAX: *Acacia macracanthoides.*

POPPY: *Papaver, Meconopsis.* **Bush-:** *Dendromecon rigida.* **California-:** *Eschscholzia californica.* **Celandine-:** *Stylophorum diphyllum.* **Flaming-:** *Stylomecon heterophylla.* **Horned-:** *Glaucium.* **Matilija-:** *Romneya Coulteri.* **Mexican Tulip-:** *Hunnemannia fumariæfolia.* **Plume-:** *Macleaya cordata.* **Prickly-:** *Argemone.* **Sea-:** *Glaucium.* **Snow-:** *Eomecon chionantha.* **Tree-:** *Dendromecon rigida.* **Water-:** *Hydrocleys nymphoides.* **Wind-:** *Stylomecon heterophylla.*

PÓPULUS. Poplar. Aspen. Cottonwood. *Salicaceæ.* Many species of diœcious trees and bushes with soft white wood, widely distributed in the northern hemisphere, having alternate long-stalked lvs. and fls. in drooping catkins before the lvs., the seeds surrounded by copious silky hairs; widely planted for avenues, windbreaks and ornament. The term cottonwood is applied mostly to *P. deltoides* and associates, as *P. Sargentii, P. Fremontii, P. Wislizenii;* the pistillate tree becomes offensive from the "cotton" discharge from the capsules.

Poplars are of easy cultivation in almost any soil and are of prompt and rapid growth. The roots are likely to stop drains or cause heaving of sidewalks, so should be planted with caution. Propagated by hardwood cuttings, suckers, or sometimes by seeds, and the weeping sorts are grafted on the upright forms.

acuminàta. To 45 ft.: lvs. rhombic-lanceolate, to 4 in. long, broadly cuneate at base, glossy dark green above, light green beneath. Sask. to Colo.

adenópoda. Chinese A. To 75 ft. or more: lvs. ovate, to 4 in. or more long, truncate or heart-shaped at base, pale green below with grayish pubescence at least when young. China.

álba. White P. Abele. To 90 ft. or more: lvs. ovate, to 5 in. long, palmately 3–5-lobed or -toothed, rounded or slightly heart-shaped at base, white- or gray-tomentose beneath. Eu., Asia. Var. **Bolleàna** is var. *pyramidalis.* Var. **globòsa** is a small form with dense oval head. Var. **nívea** has lobed lvs. densely white-tomentose beneath. Var. **péndula,** branches drooping. Var. **pyramidàlis** (*P. Bolleana*) is of columnar habit. Var. **Ríchardii** (*P. Richardii*) has lvs. yellow above.

Ándrewsii. Hybrid between *P. Sargentii* and *P. acuminata,* having oblong-ovate lvs. to 4 in. long.

angulàta. Probably a hybrid, perhaps between *P. balsamifera* and *P. nigra,* having ovate lvs. to 7 in. long and 5 in. wide, truncate or heart-shaped at base, light green beneath. Var. **cordàta** is a staminate hardier form.

angustifòlia (*P. fortissima*). To 60 ft.: lvs. lanceolate or ovate-lanceolate, to 4 in. long, rounded or wedge-shaped at base, light green beneath. Sask. to Ariz.

aùrea: *P. tremuloides* var.

Baileyàna: *P. Jackii.*

balsamífera: *P. deltoides.*

berolinénsis. Hybrid between *P. laurifolia* and *P. nigra* var. *italica,* of columnar habit, with ovate long-pointed lvs. to 4 in. long, having a narrow translucent border.

betulifòlia: *P. nigra* var.

Bolleàna: *P. alba* var. *pyramidalis.*

canadénsis. Carolina P. Hybrid probably between *P. nigra* and *P. balsamifera,* staminate plants only, with triangular-ovate lvs. to 4 in. long, truncate at base, somewhat ciliate on margins. Var. **aùrea** (*P. Van Geertii*), has yellow lvs. Var. **erécta** is of pyramidal form. Var. **Eùgenei** (*P. Eugenei*), Eugene P., is of narrow-pyramidal habit. Var. **marilándica** (*P. marilandica*) has wide-spreading branches. Var. **regeneràta** (*P. regenerata*) comes into lf. about two weeks earlier than var. **serótina** (*P. serotina*) which has wide-spreading ascending branches.

cándicans. Balm-of-Gilead. To 90 ft., pistillate plants only: lvs. triangular-ovate, to 6½ in. long and 4 in. wide, heart-shaped at base, whitish and pubescent beneath. Probably a hybrid of European origin.—Sometimes confused with *P. Tacamahaca* var. *Michauxii.*

canéscens. Gray P. Resembling *P. alba* but with smaller lvs. only obscurely lobed and gray beneath. Eu., W. Asia.

carolinénsis, caroliniàna. This name in the trade may be applied to more than one poplar, but it probably refers to *P. canadensis,* mostly to var. *Eugenei.*

cathayàna (*P. suaveolens*). To 90 ft.: lvs. ovate to ovate-lanceolate, to 4 in. long and 2¼ in. wide, rounded or wedge-shaped at base, glossy above and whitish beneath. Asia.—Likely to be confused with *P. Maximowiczii.*

certinénsis. Considered to be staminate plants of *P. berolinensis,* but material in the trade under this name may belong elsewhere.

chinénsis: see *P. nigra* var. *italica.*

cordàta: probably *P. angulata* var.

deltoìdes (*P. balsamifera. P. monilifera*). Cottonwood. To 90 ft., with broad head: lvs. ovate, to 7 in. long, truncate or somewhat heart-shaped at base, glossy above. Que. to Fla. and Tex.—The Norway poplar is probably a form of this species or a hybrid; it is a vigorous hardy tree planted in Minn. and Dak.—See *P. Tacamahaca.*

élegans: *P. nigra* var. *plantierensis.*

Eùgenei: *P. canadensis* var.

fastigiàta is *P. nigra* var. *italica,* and its var. **Wílsonii** is *P. Wilsonii.*

fortíssima: *P. angustifolia.*

Frèmontii. To 90 ft.: lvs. triangular, to 2½ in. long and 3 in. wide, truncate or slightly heart-shaped at base, glossy above. Calif. to Ariz.

generòsa. Hybrid between *P. trichocarpa* and *P. angulata* with lvs. pale green beneath and with trarslucent narrow margins.

græca: *P. tremuloides.*

grandidentàta. Large-toothed A. To 60 ft.: lvs. ovate, to 4 in. long, coarsely toothed, truncate or wedge-shaped at base, grayish-tomentose beneath but becoming glabrous. N. S. to N. C. and Tenn.—For the pendulous form see *P. pseudo-grandidentata.*

heterophýlla. Swamp C. To 90 ft. or shrubby in cult.: lvs. broad-ovate, to 7 in. long, heart-shaped or rounded at base, pale green and often slightly pubescent below. Conn. to Ga. and La.

Jáckii (*P. Baileyana*). Hybrid between *P. Tacamahaca* and *P. balsamifera,* with broad ovate lvs. heart-shaped at base.

koreàna. To 75 ft.: lvs. to 6 in. long and 3¼ in. across, rounded at base, dark green and wrinkled above, whitish beneath, with red midrib. Korea.

lasiocárpa. To 60 ft.: lvs. ovate, to 1 ft. long, heart-shaped at base, light green and pubescent beneath, with red midrib. China.

laurifòlia. To 45 ft.: lvs. elliptic-ovate to lanceolate, to 5 in. long, rounded at base, whitish and slightly pubescent beneath. Siberia. Var. **Lindleyàna** (*P. Lindleyana, P. salicifolia*) has narrower lvs. with wavy margins.

Lindleyàna: *P. laurifolia* var.

MacDoùgalii. To 100 ft.: lvs. broad-ovate, to 3 in. long, truncate at base, margin usually finely crenate-serrate. S. Calif., Ariz.

macrophýlla: hort. name, sometimes referable to *P. candicans,* sometimes to *P. angulata.*

marilándica: *P. canadensis* var.

Maximowíczii. To 90 ft.: lvs. leathery, elliptic to nearly orbicular, to 5 in. long, slightly heart-shaped at base, whitish beneath and pubescent on veins. N. E. Asia, Japan.

monilífera: *P. balsamifera.*

nìgra. Black P. To 90 ft.: lvs. triangular, to 4 in. long and 3 in. wide, wedge-shaped or rounded at base, light green beneath. Eu., Asia. Var. **betulifòlia** has lvs. pubescent when young. Var. **itálica** (var. *pyramidalis*. *P. sinensis*. *P. fastigiata*), Lombardy P., narrow-columnar habit and usually only staminate trees. Var. **plantierénsis** (var. *elegans*), columnar form with pubescent petioles and branchlets. Var. **thevestìna** has whitish trunk and grayish branches.

Nòlestii: hort. name; probably a hybrid.

pekinénsis: *P. tomentosa.*

Petrowskyàna. Hybrid between *P. balsamifera* and probably *P. laurifolia*, with ovate lvs. to 6 in. long, pale beneath.

Przewálskii: *P. Simonii.*

pseùdo-grandidentàta (*P. grandidentata* var. *pendula*). Probably a hybrid, having pendulous branches and lvs. similar to *P. tremula*.

Púrdomii. Lvs. ovate or oblong-ovate, to 10 in. long, rounded or slightly cordate at base. China.

pyramidàlis: hort. name for a narrow-headed or fastigiate poplar, oftenest applied to *P. nigra* var. *italica*.

Rasumowskyàna. Hybrid between *P. nigra* and probably *P. laurifolia*, with elliptic to orbicular lvs. to 6 in. long.

regeneràta: *P. canadensis* var.

Ríchardii: *P. alba* var.

robústa. Hybrid between *P. angulata* and *P. nigra* var. *plantierensis*, of vigorous growth.

rotundifòlia. Lvs. orbicular, to 4 in. across, often heart-shaped at base. Himalayas. Var. **Duclouxiàna** has lvs. short-acuminate and fruiting catkins to 6 in. long.

salicifòlia: *P. laurifolia* var. *Lindleyana*.

Sárgentii. Resembling *P. balsamifera* but with light yellow branchlets, pubescent buds, and mostly smaller lvs. Sask. to New Mex. and Tex.

serótina: *P. canadensis* var.

Sièboldii. Japanese A. To 60 ft.: lvs. ovate, to 3 in. long, rounded or wedge-shaped at base, pubescent when young. Japan.

Sìmonii (*P. Przewalskii*). To 35 ft.: lvs. rhombic-ovate, to 5 in. long and 3 in. wide, rounded at base, whitish or pale green beneath. China. Var. **fastigiàta** is of narrow pyramidal habit. Var. **péndula** has drooping branches.

sinénsis: *P. nigra* var. *italica*.

suavèolens: *P. cathayana*.

szechuánica. To 120 ft.: lvs. ovate-oblong, to 8 in. long and 5 in. wide, rounded or wedge-shaped at base, whitish beneath. China.

Tacamaháca. Tacamahac. Balsam P. To 90 ft.: lvs. rather thick, ovate to ovate-lanceolate, to 5 in. long, rounded at base, whitish beneath. N. N. Amer. Var. **Michaùxii** has lvs. pubescent on the veins beneath.—This species was formerly known as *P. balsamifera* but is not the plant Linnæus described under that name.

tomentòsa (*P. pekinensis*). Chinese White P. To 90 ft.: lvs. triangular-ovate, to 6 in. long, acuminate, truncate or slightly cordate at base, gray-tomentose beneath. China.

trémula. European A. To 90 ft., with open head: lvs. thin, orbicular to oval, to 3 in. long, truncate at base, with large teeth, becoming glabrous beneath, with flattened petioles. Eu., Asia., N. Afr. Var. **Davidiàna** has lvs. with shallower teeth. Var. **péndula** has drooping branches. Var. **villòsa** has silky-pubescent lvs. when young.

tremuloìdes (*P. græca*). Quaking A. To 90 ft.: lvs. ovate to orbicular, to 3 in. long, truncate at base, finely toothed, with flattened petioles. N. Amer. Var. **aùrea** (*P. aurea*) has broader lvs. changing to orange-yellow in autumn. Var. **péndula** ("Parasol de St. Julien") has drooping branches.

trichocárpa. Western Balsam P. To 180 ft.: lvs. broad-ovate, to 5 in. or sometimes 10 in. long, truncate or rounded at base, whitish or rusty beneath. Alaska to S. Calif.

trístis. Small tree: lvs. narrow-ovate, 4 in. long and 2 in. wide, rounded at base, whitish and pubescent beneath. Cent. Asia.

Van Geèrtii: *P. canadensis* var. *aurea*.

vólga: listed name.

Wìlsonii. To 75 ft., pyramidal: lvs. ovate, to 7 in. long and 6 in. wide, heart-shaped or rounded at base, reddish-tomentose beneath but becoming glabrous. China.

Wislizènii. To 90 ft.: lvs. triangular-ovate, to 4 in. long and as broad, truncate at base, yellowish-green. W. Tex., New Mex.

Woóbstii. Hybrid between *P. laurifolia* and probably *P. tristis*, with lanceolate lvs.

yunnanénsis. Lvs. elliptic-ovate, to 6 in. long, wedge-shaped at base, whitish beneath, with red midrib. China.

PORÀNA. *Convolvulaceæ.* Twining herbs with alternate cordate-ovate entire lvs. and small white, blue or purple fls. in cymes or panicles; sometimes grown in S. U. S.

paniculàta. To 30 ft.: lvs. to 6 in. long, white-pubescent beneath: fls. white, to ⅓ in. across, in many-fld. panicles. India.—A profuse bloomer. Sometimes known as "White Corallita," but not related to Antigonon.

PORFÌRIA. *Cactaceæ.* A single species, **P. Schwártzii** (*P. coahuilensis, Haagea Schwartzii*), allied to Mammillaria. St. solitary, depressed-globose, to 1⅝ in. diam.; tubercles blue-green, to 1½ in. long, areoles woolly becoming glabrous; spines to about ¼ in. long, radials 16, uppers longer than lowers, gray-white, central 1, brownish: fls. pale pink to white, to 1¼ in. across, inner segms. with pink stripe, stamens white, style pink, stigma-lobes 5, yellowish-green. Var. **albiflòra** has pure white fls.

PORRECT: directed outward and at right angles to the principal axis, as in some spines of cacti.

PORTERANTHUS: *Gillenia.*

PORTHIÆA ARGUTA: *Photinia villosa* var. *lævis.*

PORTIA-TREE: *Thespesia populnea.*

PORTLÁNDIA. *Rubiaceæ.* Shrubs or small trees from Mex. and W. Indies, with opposite leathery lvs., large white or purple fls. having campanulate or funnelform 5-lobed corolla, and fr. a leathery caps.; one species is grown in the American tropics. Propagated by cuttings.

platántha. Shrub to 3 ft., evergreen: lvs. oval: fls. white, showy, 3 in. or more across and 6 in. long; resembles somewhat a Solandra.

PORTULÀCA. Purslane. *Portulacaceæ.* Fleshy or supple herbs with mostly alternate lvs., sun-blooming fls. of many colors subtended by a leafy involucre, and capsular frs. opening by the top falling off like a lid; grown as annuals in the flower-garden and one sometimes as a pot-herb.

grandiflòra. Rose-Moss. Prostrate or to 1 ft. high: lvs. terete, to 1 in. long: fls. rose, red, yellow, white, often striped, 1 in. or more across. Brazil.—A favorite garden ann. for warm sunny places.

marginàta. Sts. thick and red: lvs. spatulate, ¾ in. long, margined with red: fls. yellow. Venezuela.

oleràcea var. **satìva.** Kitchen-Garden P. To 1½ ft., the sts. thick and soft and mostly erect: lvs. obovate, to 1½ in. long: fls. bright yellow, ½ in. across. Probably cultigen. Var. **gigánthes** is a prostrate form with double fls. 1 in. across, grown for ornament.—*P. oleracea* itself is purslane or "pusley," a familiar garden weed.

pilòsa. St. with tufts of white shaggy hairs: lvs. terete, ½ in. long: fls. red, ½ in. or less across. N. C. to Fla. and Mex. Var. **hortuàlis,** Shaggy Garden P., has larger red-purple fls. to ¾ in. across. Cultigen.

PORTULACÀCEÆ. Purslane Family. About 20 genera of widely distributed rather fleshy herbs or subshrubs with simple entire often terete lvs. and bisexual fls. having usually 2 sepals, 4–5 fugacious petals, few or many stamens, superior 1-celled ovary and capsular fr. A few are grown for ornament and pot-herbs, as Anacampseros, Calandrinia, Claytonia, Lewisia, Montia, Portulaca, Portulacaria, Spraguea, Talinum.

PORTULACÀRIA. *Portulacaceæ.* S. African succulent shrubs or small trees, of which one is grown in Calif. and under glass in the N.; also recommended for fodder in warm dry regions.

áfra. To 12 ft., with soft wood: lvs. opposite, obovate, to ½ in. long, fleshy: fls. pink, about 1/12 in. long, in clusters.

POSOQUÈRIA. *Rubiaceæ.* Shrubs or small trees in trop. Amer. with opposite entire leathery lvs., fragrant white to red fls. in terminal corymbs having very long slender tube and 5-lobed limb, and fr. a fleshy berry; one species grown in S. Fla. Propagated by cuttings.

latifòlia (*Oxyanthus isthmia*). Tree to 20 ft.: lvs. oval to oblong, to 10 in. long: fls. white, salverform, to 6 in. long: fr. yellow, globose, 2 in. across. Mex. to S. Amer.

POSSUM-HAW: *Ilex decidua.*

POTAMOGÈTON. Pondweed. *Potamogetonaceæ.* Many aquatic plants sometimes grown in ponds and aquaria: lvs. often of two kinds, submerged and floating: fls. inconspicuous, in small spikes above the water.

críspus. Lvs. linear-oblong, to 4 in. long, obtuse, crisped: spikes ½ in. long, on stalks to 2 in. long. Mass. to Va., Eu.

POTAMOGETONÀCEÆ. Weak herbs in water, floating or submerged, in many parts of the world; they are without showy fls. or hort. distinction, but may be interesting and useful in aquaria and pools. Only Potamogeton appears in the North American trade; there are 8 other genera.

POTATO (*Solanum tuberosum*) is the most valuable member of the family Solanaceæ from the standpoint of human food supply. Its great value is due to the popularity of its starchy underground tubers, the quantity and quality of which varies principally with choice of variety, climate and character of soil. It is best adapted to moderately cool temperate climate and to regions having rather short days late in the growth period, ample rainfall and deep friable soil. The tubers represent surplus or stored carbohydrates which have been synthesized in the foliage and deposited below ground mostly late in the season after the foliage has reached maximum size. Under cool humid conditions, the plant may blossom and bear fruit or seed-balls resembling small green tomatoes. These seed-balls may be entirely devoid of seed (parthenocarpic) or they may contain from 75 to 300 seeds which, when planted, will produce a variety of types.

World production of potatoes approximates five billion bushels, the countries ranking highest being in order, Russia, Germany, France and the United States. In the United States annual production varies from 350 to 400 million bushels or approximately 3 bushels per capita. The principal producing states are Maine, Michigan, Minnesota, New York, Wisconsin, Idaho and Pennsylvania. Yields average slightly above 100 bushels, usually from 100 to 500 bushels to the acre.

The potato crop is propagated by tuber-cuttings or seed-pieces planted from 12 to 18 inches apart in rows 32 to 36 inches apart to provide for inter-row cultivation. Depth of planting varies from 2 to 4 inches depending on the soil type. The seed-pieces should weigh not less than one ounce and carry from one to three "eyes" to insure at least one vigorous sprout or stalk for each plant. Larger seed-pieces usually are not economical. When recommended planting practices are observed, from 15 to 20 bushels of seed are sufficient to plant an acre of land.

Among the factors which are most likely to limit yields is disease carried in the seed tubers. Most serious diseases of this type are leafroll, mosaic, yellow-dwarf, bacterial ring-rot, psyllid-yellows and purple-top. The best control of these is to plant healthy seed, as neither seed treatment nor spraying is effective. For the convenience of growers who are not familiar with these disease problems, public agencies have been set up to provide a system of seed inspection and certification in nearly all of the important potato seed-producing states.

In choosing a variety, the grower should be guided largely by prevailing practice and local or regional soil, climate and market conditions. In the Pacific coast states, Russet Burbank and White Rose are most extensively grown; in the Rocky Mountain region, Russet Burbank, Triumph, Rural and Red McClure; in the southern states, Bliss Triumph, Irish Cobbler and Katahdin; while east of the Mississippi River and north of the Ohio River such varieties as Rural, Green Mountain, Cobbler, Katahdin and Chippewa are most important. For farm and home gardens where early maturing varieties are desirable, such kinds as Warba, Cobbler and Chippewa may be chosen. Recently several new and promising varieties have been introduced and are now on trial. Among them are Houma, Earlaine, Sebago, Pontiac and Sequoia. See *Potomato.*

The potato crop draws heavily on soil nutrients and has a relatively high water requirement. Therefore, it is usually profitable to maintain the soil in good moisture-holding condition and in a state of high fertility. Successful growers either turn under forage crop residues or green-manure crops to provide soil humus. They also supply relatively large applications of commercial fertilizer. On the lighter, sandier soils of the Atlantic seaboard, applications of 1,000 pounds to the acre of 10–20–10, 5–10–10 or 10–16–14 are recommended. On the heavier soils farther inland and where stable manure is available, 500 pounds to the acre of such mixtures as 10–20–10 and 4–16–4 may be used profitably. Where potatoes are grown in rotation with other crops, the fertilizer should be applied in the row on each side of the seed-pieces. Automatic machine planters which apply both seed and fertilizer at one operation are now used extensively by growers who plant five acres or more annually.

Potatoes cannot be grown profitably without seed treatment and spraying of the plants against certain diseases and insects. Control of scab and rhizoctonia is mainly by keeping the soil sufficiently acid and seed disinfection with dilutions of formaldehyde or such mercury compounds as corrosive sublimate and yellow oxide of mercury. Late blight (*Phytophthora infestans*), the principal fungus affecting the foliage, is controlled by thorough spraying with 5–5–50 bordeaux mixture. To control the Colorado potato beetle and other foliage insects such arsenicals as calcium arsenate and lead arsenate are added to the bordeaux mixture.

POTATO, AIR: *Dioscorea bulbifera.*

POTENTÍLLA. Cinquefoil. *Rosaceæ.* Many herbs or sometimes subshrubs of the north temp. and frigid zones, with compound lvs. and yellow, white or red fls. solitary or in terminal cymes.

Potentillas are grown mostly in the border or rock-garden, but some are useful in the flower-garden; most of them are hardy North. Propagated by seeds and division.

adschárica. To 1½ ft.: lvs. palmately 3–5-parted, the lfts. toothed and ciliate: fls. yellow, in many-fld. loose clusters. Caucasus.

álba. To 10 in.: lvs. palmately 5-parted, white-silky beneath: fls. white, to 1 in. across, in 3's. Cent. Eu.

alchemilloìdes. To 1 ft.: lvs. palmately 3–7-parted, white-silky beneath: fls. white, to 1½ in. across, in clusters. Pyrenees.

alpéstris (*P. Crantzii. P. filiformis*). To 8 in.: lvs. palmately 5-parted into deeply toothed lobes, dull green: fls. yellow, sometimes with orange spot at base, to 1 in. across, in clusters. Eu.

alpìna: doubtful name in the lists.

amahnoìdes: a listed name.

ambígua. Sts. creeping or ascending, tufted: lvs. of 3 rather leathery 3-toothed lfts., glaucous beneath: fls. yellow, to 1 in. across, solitary. Himalayas.

andícola. Tufted per. with many-fld. branches to 6 in. high, silky-pubescent: lvs. pinnately 3–5-parted into ovate toothed lfts.: fls. yellow. Colombia.

Anserìna (*Argentina anserina*). Silver-Weed. Tufted herb with radical pinnate lvs. silky at least underneath; lfts. oblong, serrate to lacerate: fls. yellow, solitary on long peduncles, to 1 in. across. Shores and banks across the continent and in Eurasia, spreading by long runners. Var. **cóncolor** is *P. argentea*.

apennìna. Small silvery-silky plant: lvs. 3-parted into lfts. 3-toothed at apex: fls. white, rarely pink, usually in clusters of 3. Apennines. Var. **aùrea** is listed.

arbòrea: hort. name, probably *P. fruticosa*.

argéntea. To 1½ ft.: lvs. palmately 5-parted into deeply lobed lfts., white-tomentose beneath: fls. sulfur-yellow, ½ in. across, in clusters. Eu., Asia, N. Amer. Var. **calábra** (*P. calabra*) has lvs. white on both sides. Italy.

argùta (*Drymocallis agrimonioides*). To 3 ft.: lvs. pinnate into 7–11 toothed lfts., hairy on both sides: fls. creamy-white, ½ in. across, in dense clusters. N. B. to Va. and Colo.

argyrophýlla. To 1½ ft.: lvs. palmately 3-parted into coarsely toothed lfts., white-tomentose below: fls. yellow, 1 in. across, in clusters. Himalayas.—Variable, or else more than one species is involved in the forms, some of which run to red forms; see *P. atrosanguinea*. Var. **insígnis** has the basal lvs. quadrifoliolate or quinquefoliolate.

atrosanguínea. Closely resembling the last, but with red or purple fls. Himalayas.

aùrea (*P. chrysocraspeda*). To 1 ft.: lvs. palmately 5-parted into toothed lobes, with silvery hairs on margins and veins: fls. yellow, ½ in. across, in few-fld. clusters. Eu.

bícolor. Hybrid probably between *P. argyrophylla* and *P. atrosanguinea*, with orange and red fls.

bicrenàta. To 3 in.: lvs. palmately 5-parted into entire lfts., 3-toothed at apex, white-tomentose beneath: fls. ½ in. across, in clusters of 1–3. Wyo., New Mex.

bifúrca (*P. imbricata*). To 8 in.: lvs. pinnate into 5–15 2–3-parted lfts.: fls. yellow, ½ in. across. Himalayas.

Blaschkeàna. To 3 ft.: lvs. palmately divided into 7 deeply dissected lfts., white-tomentose beneath: fls. ¾ in. across, in many-fld. clusters. Alta. to Wyo. and N. Calif.

Brénnæ: probably a misspelling of *P. Brennia*.

Brénnia. Hybrid between *P. alpestris* and *P. nivea*, with the basal lvs. 4–5-parted.

Brèweri. To 10 in.: lvs. pinnate, basal lvs. with 7–17 cuneate lfts., densely white silky-villous: fls. yellow, to ½ in. across, with obcordate petals. Calif. and Nev. Var. **expánsa** is smaller, with smaller fls. and less hairy lfts. Calif.

Buccoàna. To 2 ft.: lvs. 3-parted, coarsely toothed: fls. yellow, about ½ in. across, in many-fld. clusters. W. Asia.

calábra: *P. argentea* var.

calýcina. Plant rough-hairy, to 10 in.: lower lvs. pinnate, upper ternate: fls. nodding, campanulate, with the white petals shorter than purple calyx. Asia Minor.

canadénsis (*P. pumila*). Small creeping per. to 4 in. high, with the first fl. from the node above the first well-developed internode: lvs. palmately 5-parted, lfts. dull, scarcely veiny, narrowly obovate: fls. yellow, about ¼ in. across. N. S. and Ont. to Pa. and Ohio.—Plants listed as *P. canadensis* may be *P. simplex*.

cascadénsis. St. erect or ascending to 1 ft.: basal lvs. pinnate into 7–13 deeply incised slightly hairy lfts. less than ¾ in. long: fls. yellow, ¾ in. across, calyx silky-strigose. Wash. to Calif.

cauléscens. Subcespitose from a stout rootstock, fl.-sts. ascending, slender, to 1 ft.: lvs. palmately 3–5-parted with lfts. oblong-obovate and coarsely serrate towards apex: fls. white, rarely pink, to ¾ in. across. S. Eu.

chrysántha. To 2 ft.: lvs. palmately 5–9-parted into toothed hairy lfts.: fls. golden-yellow, to 1 in. across, in few-fld. clusters. S. Eu.

chrysocráspeda: *P. aurea*.

cinèrea. Tufted, to 4 in.: lvs. palmately 5-parted into oblong or obovate toothed lfts., thick and hairy: fls. pale yellow. Alps.

Clusiàna. To 4 in.: lvs. in rosettes, palmately 5-parted into toothed and ciliate lfts.: fls. yellowish-white, ¾ in. across, in clusters of 1–3. Austria, Germany.

Convallària (*Drymocallis Convallaria*). To 3 ft., sticky-hairy: basal lvs. pinnate into 7–11 rhombic-obovate toothed or incised lfts.: fls. yellow, ¾ in. across, in narrow cymes. Mont., Wash. to New Mex.

Crántzii: *P. alpestris*.

crinìta. To 1 ft.: lvs. pinnate, with 11–15 toothed silky-pubescent lfts.: fls. yellow, about ½ in. across, in many-fld. clusters. Colo. to New Mex.

Cryptotæniæ. Erect: lvs. 3-parted, the lfts. toothed: fls. yellow, in panicled clusters. Japan.

dahùrica: *P. fruticosa* var.

dáscia. To 2 ft.: lvs. palmately 3–7-parted, with lfts. coarsely toothed and pubescent on both surfaces: fls. ½ in. across. Wash. to Calif. and Mont.

delphinénsis. To 1½ ft.: lvs. palmately 5-parted, lfts. cuneate-obovate, obtuse, appressed-pubescent, strongly serrate: fls. yellow, to 1 in. across. Alps.

Detómmasii. Sts. ascending: lvs. palmately 5–7-parted into toothed lfts. silky-pubescent beneath: fls. yellow, 1 in. across, in clusters. S. Eu.

dissécta. Erect, branching, glabrous: lvs. palmately 5-parted into pinnatifid lfts.: fls. in clusters. Hudson Bay.

divìsa. Per. with sts. spreading or diffuse, to 4 in. long: lvs. palmately 3–5-parted, lfts. obovate, deeply cleft, pubescent above and densely white-tomentose beneath: fls. cymose, less than ½ in. across. S. D. and Alta. to Colo.

Dómbeyi. Sts. decumbent, to 1 ft.: lvs. pinnate, with 3–5 lfts. toothed at tips: fls. yellow. Chile.

Drúmmondii. To 2 ft.: lvs. pinnate into 5–11 sharp-toothed lfts., soft-pubescent: fls. bright yellow, ¾ in. across. Mts., Alta. to N. Calif.

effùsa. To 1½ ft., much branched: lvs. pinnate, with 5–11 toothed tomentose lfts.: fls. yellow, about ¼ in. across, in loose clusters. Sask. to New Mex.

engadinénsis: hybrid.

erécta: *P. recta*.

eriocárpa. To 8 in.: lvs. of 3 coarsely toothed lfts.: fls. yellow, 1½ in. across, solitary or twin. Himalayas.

Fárreri: *P. fruticosa* var.

filifórmis: *P. alpestris*.

físsa (*Drymocallis fissa*). To 1 ft., very leafy and branched, glandular-hirsute: lvs. pinnate, with about 9 orbicular deeply incised lfts.: fls. to ¾ in. across, many in a narrow cyme, petals much exceeding sepals. S. D. to Alta., Colo. and Utah.

flabellifòlia. To 1 ft.: lvs. of 3 deeply toothed lfts., very thin: fls. bright yellow, ¾ in. across, in loose clusters of 1–3. Mts., B. C. to Ida. and Calif.

formòsa: *P. nepalensis*.

fragifórmis. To 8 in.: lvs. 3-parted into broad coarsely toothed hairy lfts.: fls. yellow, to ¾ in. across, in few-fld. clusters. Siberia, Aleutian Isls. Var. **mìnor** is listed.

Frièdrichsenii: *P. fruticosa* var.

frígida. To 3 in., sts. often decumbent: lvs. 3-parted, hairy: fls. yellow. Alps.

frutéscens: a name of uncertain botanical standing; probably *P. fruticosa*.

fruticòsa (*Dasiphora fruticosa*). Shrub to 4 ft.: lvs. pinnate, with 3–7 silky-pubescent lfts. to 1 in. long, margins revolute: fls. bright yellow, to 1¼ in. across, in few-fld. clusters. North temp. zone. There are many vars. as: **álbicans,** lfts. white-tomentose beneath, China; **dahùrica,** 1½ ft., lfts. ½ in. long, fls. creamy, China, Siberia; **Fárreri,** lfts. ¼–⅜ in. long; **Frièdrichsenii,** hybrid between the type and var. *dahurica;* **mandshùrica,** low, lfts. small, densely whitish silky-pubescent on both sides; **montàna,** dwarf, about 1 ft. high; **ochroleùca,** fls. creamy-white; **parvifòlia,** dwarf, lfts. ¼ in. long, Asia; **Púrdomii,** lfts. ⅓ in. long, nearly glabrous beneath, fls. pale yellow, China; **tenuíloba** (var. *tenuifolia*), lfts. nearly linear; **Veìtchii,** lfts. glaucous beneath, fls. creamy-white, China; **Vilmoriniàna,** lfts. white-tomentose beneath, fls. creamy, China. Vars. **Beesiàna** and **nàna** are listed.

fúlgens. To 2 ft.: lvs. pinnate, with many toothed lfts. silvery-pubescent beneath: fls. yellow, about ½ in. across, in panicled clusters. Himalayas.

gélida. To 2 ft.: lvs. 3-parted, the lfts. to ¾ in. long and coarsely toothed: fls. yellow, to 1 in. across, in 1–4-fld. clusters. N. Asia.

Gíbsonii: listed as having brilliant scarlet fls.

glandulòsa (*Drymocallis glandulosa*). To 2 ft., sticky: lvs. pinnate into 7–9 toothed lfts.: fls. yellow, ½ in. across, in many-fld. clusters. S. D. to Calif. Var. **Wrangelliàna** (*P. Wrangelliana*), to 4 ft., very glandular, basal lvs. to 1 ft. long.

glaucophýlla. To 1 ft.: lvs. palmately 5–7-parted into coarse-toothed somewhat glaucous lfts.: fls. ½ in. across, in 3–12-fld. clusters. B. C. to New Mex.

Gòldbachii: *P. thuringiaca* var. *elongata.*

Górdonii: *Horkelia Gordonii.*

grácilis. To 2½ ft.: lvs. palmately 5–7-parted, the lfts. white-tomentose beneath and cut halfway to midrib: fls. yellow, to ¾ in. across, in clusters. B. C. to Ore. and Mont. Var. **rígida** is listed.

grammopétala. To 1 ft.: lvs. 3-parted, the lfts. toothed, silky-pubescent beneath: fls. yellowish-white, in 3–7-fld. clusters. S. Eu.

grandiflòra. To 15 in.: lvs. 3-parted, the lfts. toothed, hairy, to 1 in. long: fls. golden-yellow, to 1 in. across, in clusters. Eu.

heptaphýlla: *P. thuringiaca.*

Hippiàna. To 2 ft.: lvs. pinnate, with 7–11 deeply toothed silvery-pubescent lfts.: fls. bright yellow, to 1 in. across, in loose clusters. Sask. to New Mex.

hírta. To 1 ft., sts. often decumbent: lvs. palmately 5–7-parted, the lfts. hairy and deeply toothed: fls. bright yellow, ½ in. or more across, in few-fld. clusters. Eu.

Hookeriàna. To 8 in.: lvs. mostly 3-parted into cut lfts., silky-pubescent on both sides: fls. ⅓ in. across, in dense cymes. Sask. to Mont.

Hopwoodiàna. Hybrid between *P. nepalensis* and *P. recta:* fls. dark red at base, pale yellow in center, rose at tips.

hýbrida. A group of hybrids between *P. nepalensis* and *P. argyrophylla*, with purple fls.

imbricàta: *P. bifurca.*

insígnis: *P. argyrophylla* var.

Kleiniàna. Ann. with prostrate sts. to 2 ft.: lvs. palmately 3–5-parted into toothed lfts.: fls. yellow, ¼ in. across, in panicled cymes. Asia.

Knáppii: *P. leucopolitana* var.

kúrdica. To 3 ft.: lvs. palmately 5-parted, lfts. coarsely toothed, pubescent: fls. yellow. S. W. Asia.

Leschenaultiàna. Sts. to 10 in. long, ascending or decumbent: basal lvs. with 5–9 obovate lfts., cauline lvs. ternate, pubescent: fls. ½ in. across, yellow, rarely white. Asia, Himalayas.

leucopolitàna var. **Knáppii** (*P. Knappii*). Sts. prostrate or ascending, to 8 in. long: lvs. palmately 5-parted: fls. pale yellow. Eu.

Leutiàna: listed name.

Levièri. To 1 ft.: lvs. palmately 3–5-parted, the lfts. deeply toothed, silky-pubescent, ciliate: fls. yellow, about ¼ in. across, in loose clusters. Caucasus.

libanótica. Low, glandular-hairy: lvs. 3-parted, the lfts. coarsely toothed: fls. white, in clusters. Lebanon, on limestone cliffs.

Macnabiàna. Hybrid between *P. argyrophylla* and *P. atrosanguinea.*

Matsumùræ. Sts. ascending to 6 in.: lvs. of 3 obovate or orbicular toothed lfts. to 1 in. long, slightly hairy: fls. yellow, ½ in. across, long-stalked. Mts., Japan.

megalántha. Subcespitose: basal lvs. cordate-orbicular, to 3 in. wide, deeply crenate and emarginate at apex, pubescent, cauline lvs. similar but smaller: fls. bright yellow. 1½ in. across Japan.

Meỳeri. Similar to *P. argentea* but with shorter less divided lfts. Asia Minor.

monspeliénsis: *P. norvegica* var. *hirsuta.*

montenegrìna. To 1½ ft.: lvs. 3-parted, the lfts. toothed and slightly hairy: fls. golden-yellow, large. S. E. Eu.

multífida. To 4 in.: lvs. pinnate, the lfts. deeply cut into linear segms., white-hairy beneath: fls. yellow, small, in 2–3-fld. clusters. Eu.

nàna vars. **argéntea** and **multiflòra:** listed names.

nepalénsis (*P. formosa*). To 2 ft. and more: lvs. palmately 5-parted, the lfts. toothed, green and hairy: fls. rose-red, 1 in. across, in forking panicles. Himalayas. Var. **Willmottiæ** ("Miss Willmott") is a dwarf free-flowering form or derivative with magenta-rose fls.

nevadénsis. Sts. prostrate: lvs. palmately 3–5-parted, the lfts. coarsely toothed, silky-pubescent beneath: fls. yellow, in 3–4-fld. clusters. Spain. Var. **mìnor** is listed.

nítida. Forming mats 1 in. or more high, the whole plant silky-hairy: lvs. 3-parted, the lfts. entire or toothed at tip: fls. rose, rarely white, to 1 in. across, solitary. High Alps. Var. **elongàta** is listed.

nivàlis. To 1½ ft.: lvs. palmately 5–7-parted, the lfts. toothed at apex or entire, silky-hairy on both sides: fls. white, in many-fld. clusters. S. Eu.

nívea. Cespitose, sts. to 8 in. high: lvs. ternate, densely white-tomentose below, lfts. oblong-cuneate, coarsely toothed: fls. 2–6 in a cyme, petals obcordate, yellow, ¼ in. long. Arctic and alpine regions of N. Amer., Eu. and Asia.

norvégica. To 1½ ft., ann. or bien.: lvs. 3-parted into oblong toothed lobes, rough-hairy: fls. yellow, in clusters. Eu. and Asia. Var. **hirsùta** (*P. monspeliensis*) has lfts. broadly obovate and more bluntly toothed. N. Amer., Eu., Asia.

O'Briàna: listed name.

olýmpica: listed name.

ornithopioìdes: name of doubtful status.

pacífica. Similar to *P. Anserina* but peduncles and sts. becoming glabrous, and differs in technical fr. characters. N. Amer., E. Asia.

palústris (*Comarum palustre*). MARSH C. Decumbent: lvs. palmately 5–7-parted into toothed lobes: fls. red or purple, to 1¼ in. across, in clusters or solitary. Swamps, N. Amer., N. Eu., N. Asia.

pensylvánica. To 2½ ft.: lvs. pinnate into 5–15 deeply lobed lfts., gray-tomentose beneath: fls. yellow, in dense cymes. N. Amer.

perfécta. A reputed hybrid with maroon fls. shaded with yellow.

pimpinelloìdes. To 1 ft.: lvs. pinnate, with 15–25 deeply toothed lfts. and palmately parted stipules: fls. bright yellow, ½ in. across, in many-fld. clusters. S. E. Eu.

pinnatífida: a monstrous form of *P. reptans* with lacerate sepals and stipules and very small petals.

propínqua. To 1½ ft., often decumbent, silky-hairy: lvs. of 9–11 oblanceolate coarsely toothed lfts., white-tomentose beneath: fls. yellow. Alta. to Ariz.

pseudorupéstris (*Drymocallis pseudorupestris*). To 1 ft.: lvs. pinnate into 7–9 toothed or cut lfts.: fls. white, ¾ in. across, in loose clusters. Alta. to Wyo. and Ida.

pulchérrima. To 2 ft.: lvs. of 5–7 oblanceolate toothed lfts. white-tomentose beneath: fls. yellow. Alta. to New Mex. Var. **commùnis** is the commonest variation, with basal lvs. long-petioled, digitately 5–7-parted, rarely subpinnate, sepals and peduncles densely gray-pubescent.

pùmila: *P. canadensis.*

Púrdomii. To 1 ft.: basal lvs. pinnate, to 6 in. long, lfts. very broad at base, dentate, green: fls. to ¾ in. across, yellow, with carpels hairy and styles subterminal. N. China.

purpùrea. Procumbent, sts. to 4 in.: lvs. of 5 lfts. toothed at apex: fls. pale purple, ⅕ in. across, solitary or twin. Himalayas.

pygmæ̀a: *P. rupestris* var.

pyrenàica. To 1 ft.: lvs. palmately 5-parted, the lfts. to ¾ in. long, toothed at apex: fls. golden-yellow, 1 in. across, in raceme-like clusters. Pyrenees.

récta (*P. erecta*). To 2½ ft.: lvs. palmately 5–7-parted, the lfts. toothed, green and hairy: fls. yellow, to 1 in. across, in many-fld. clusters. Eu. Var. **macrántha** is listed.

rèpens: probably an error for *P. reptans.*

réptans. Pubescent, with creeping shoots: lvs. digitate, with 5 obovate toothed lfts.: fls. yellow, to 1 in. or more diam., solitary from axils. Eu., Asia.

rivàlis. To 2 ft.: lvs. pinnate, with 3–5 coarsely toothed lfts., green and pubescent: fls. yellow, ⅙ in. across, in loose clusters. B. C. to Mex.

rupéstris. To 1½ ft., much branched, hairy: lvs. pinnate, with 5–7 toothed lfts.: fls. white, to 1 in. across, in loose clusters. Eu. Var. **pygmæ̀a** is a dwarf form, to 4 in. high, with smaller fls. Var. **álba** is listed.

Russelliàna. Hybrid between *P. nepalensis* and *P. atropurpurea:* fls. scarlet.

Sanguisórba. Erect: lvs. pinnate, the lfts. obovate, cut-toothed: fls. yellowish-white, usually in 2's. Siberia.

sanguisorbifòlia: the European form of *P. pensylvanica.*

Saxífraga. To 8 in.: lvs. palmately 5-parted into lanceolate leathery lfts. silvery-pubescent beneath: fls. white, in loose cymes. Alps.

Siègfriedii: *P. verna* var. *pseudo-incisa.*

símplex. Sts. prostrate or ascending, to 3 ft. or more long: lvs. palmately 5-parted into toothed lfts.: fls. yellow, ½ in. across, solitary. N. B. to Ga. and Tex.

speciòsa. To 10 in.: lvs. of 3 obovate thick toothed lfts., white-tomentose at least beneath: fls. white or yellowish, ¾ in. across, in few-fld. clusters. S. Eu.

spléndens: name of doubtful status, applied to several species.

stérilis. To 4 in., creeping: lvs. palmately 3-parted, lfts. toothed, hairy above: fls. white. Eu.

stolonífera. With stolons: basal lvs. pinnate, with 2–3 pairs of subelliptic or obovate coarsely toothed lfts.: fls. yellow, to 1 in. across. N. E. Asia, Bering Isl.

supìna. Procumbent ann., pubescent, pale green: lvs. pinnately 3–5-parted, lfts. deeply toothed: fls. pale yellow. Eu., N. Afr., W. Asia.

Thúrberi. To 2½ ft.: lvs. palmately 5–7-parted, lfts. coarsely toothed: fls. reddish-purple, about ½ in. across, in loose clusters. New Mex. to N. Mex.

thuringìaca (*P. heptaphylla*). To 1 ft.: lvs. palmately 5–7-parted, lfts. toothed, green and hairy: fls. yellow. Eu. Var. **elongàta** (*P. Goldbachii*) is more robust, with lfts. paler on the lower surface and more deeply toothed. European Russia.

thymàcea: listed name.

Tommasiniàna: a confused name, to be considered as one of the many forms of *P. verna*.

Tónguei: *P. tormentillo-formosa*.

Tormentílla. Sts. slender, erect or ascending, to 1 ft. or more: basal lvs. long-petioled, ternate, 4–5-parted: fls. yellow, ½ in. across. Eu., W. Asia.

tormentíllo-formòsa (*P. Tonguei*). Prostrate per., hybrid between *P. nemoralis* and *P. nepalensis*, with shoots pubescent, to 1 ft. long, spreading and ascending to a height of 6 in.: lvs. 3–5-foliolate, with lfts. obovate, coarsely dentate: fls. ½ in. across, petals obovate, yellow, red at base.

transcáspia. Robust per. to 2 ft.: lvs. 5–7-parted, lfts. oblong-lanceolate, remotely toothed: fls. yellow. Asia.

tridentàta (*Sibbaldiopsis tridentata*). To 1 ft., woody at base: lvs. 3-parted, lfts. 3-toothed at apex, shining above: fls. white, ¼ in. across, in loose clusters. Greenland to Ga. and Minn.

truncàta: *Horkelia truncata*.

uniflòra. To 2 in., densely tufted: lvs. of 3 coarse-toothed lfts. white-tomentose beneath: fls. yellow, ¾ in. across, usually solitary on scapose sts. Arctic-alpine regions of E. Asia and N. W. N. Amer.

Veìtchii: *P. fruticosa* var.

vérna. Matted sts. to 6 in. or more long: lvs. palmately 5- or rarely 7-parted into obovate lfts. to 1½ in. long, toothed or cut, sts. and lvs. puberulent: fls. golden-yellow, in few-fld. cymes. Eu., W. Asia. Var. **pseùdo-incìsa** (*P. Siegfriedii*) has lfts. more deeply and sharply toothed and pubescence strongly spreading. Vars. **aùrea** and **nàna** are listed.

villòsa. To 1 ft.: lvs. 3-parted, lfts. coarsely toothed, silky above, white-tomentose beneath: fls. yellow, 1 in. across, in few-fld. clusters. Alaska to Wash., Siberia.

Vilmoriniàna: *P. fruticosa* var.

virgàta. Erect, branched: lvs. palmately 7–9-parted, lfts. pinnately cut, white-tomentose beneath: fls. yellow, small, in many-fld. clusters. Eu.

visiàna. Sts. to more than 1 ft., usually red, divaricately branched: lvs. 5–7-parted, cuneate-obovate or suboblong, coarsely toothed: fls. yellow, to 1 in. across. Serbia.

Wárrensii: a variation of *P. erecta* with large bright yellow fls.

Wíllmottiæ: *P. nepalensis* var.

Wrangelliàna: *P. glandulosa* var.

POTÈRIUM. *Rosaceæ.* Deciduous spiny erect subshrub native in S. Eu., sometimes planted in S. U. S. **P. spinòsum** (*Sanguisorba spinosa*). To 1 ft., much branched: lvs. pinnate, of 7–15 pubescent lfts. ⅛ in. or less long: fls. unisexual, greenish, without petals, in spikes to 1 in. long: fr. red, globose, to ⅛ in. across.—For other plants listed as Poterium see *Sanguisorba*.

PÒTHOS. *Araceæ.* Climbing shrubs native in the tropics of the Old World, with entire or lobed lvs. and bisexual fls. borne on spadices. Cult. under glass or lath in our area, as for *Philodendron*; but the kinds commonly grown as Pothos are of other genera.

argyræus: *Scindapsus pictus* var. *argyræus*.

aùreus: *Scindapsus aureus*.

cordàtus: *Anthurium cordatum*.

nìtens. Hort. name of doubtful botanical standing: lvs. cordate-ovate, glossy purplish-green. Malaya.

POTOMATO. A name once applied to the combination potato-tomato plant produced by grafting one on the other. The grafting can be performed either way, but the hope that by this means one can produce good crops of both potatoes and tomatoes on the same plants is fanciful, although both tubers and tomatoes may be produced if the potato is the stock. See Cornell Bulletin 61, December 1893, as to name; and the literature of the subject is considerable. Recently this combination plant has been called topato.

POURRETIA: *Puya chilensis*.

PRÀTIA. *Lobeliaceæ.* Small creeping or prostrate herbs suitable for the rock-garden or greenhouse: lvs. alternate, toothed: fls. 2-lipped, split to base at back, solitary in the axils: fr. a berry.

angulàta. Per., sts. to 1 ft. long: lvs. to 1 in. long and ¾ in. across: fls. white streaked with purple, ½ in. long: berry reddish-purple, ½ in. long. New Zeal.

begonifòlia. Per.: lvs. to ½ in. across, denticulate: fls. green streaked with pink, to ½ in. long: berry black, to ⅓ in. long. Malaya to S. China.

hýbrida: probably hort. name.

mácrodon. Per., sts. to 4 in. long, somewhat fleshy and forming patches: lvs. broadly obovate to orbicular, to ⅓ in. long, coarsely toothed: fls. pale yellow, to ½ in. long, fragrant. New Zeal.

PRÉMNA. *Verbenaceæ.* Trees or shrubs of the Old World tropics, with opposite lvs., small white or greenish fls. in pubescent corymbs or panicles, and fr. a small drupe; one species is grown out-of-doors in S. Fla.

odoràta. To 25 ft.: lvs. broad-ovate, more or less cordate, to 8 in. long, tomentose beneath: fls. ⅕ in. long, in terminal corymbs 8 in. across: fr. dark purple. Philippines.

PRENÁNTHES. RATTLESNAKE ROOT. *Compositæ.* Per. herbs of the Old and New Worlds, having alternate lvs. and erect or drooping small heads of ligulate fls. borne in terminal spike-like panicles; pappus of white or brown bristles. By some authors the American species are retained under Nabalus and the Euro-African under Prenanthes. Adapted to borders and wild-gardens.

áspera (*Nabalus asper*). To 4 ft., rough-hairy: lvs. to 3 in. long and 1 in. wide, toothed: heads light yellow, ¼ in. across, erect and short-peduncled; pappus straw-color. Ohio to Neb. and La.

purpùrea. To 5 ft., glabrous: lvs. lanceolate, nearly entire, glaucous beneath: heads bluish-purple, on slender flexuose peduncles. S. Eu.

virgàta (*Nabalus virgatus*). To 4 ft., glabrous: lvs. lanceolate, lower ones sinuate to pinnatifid, to 10 in. long: heads with white to pinkish fls. to ⅜ in. long. N. J. to Fla.

PRÈNIA. *Aizoaceæ.* Mesembryanthemum segregate: succulent herbs, with prostrate sts. or flowering branches: lvs. linear-lanceolate, keeled on back: fls. in terminal few-fld. cymes or solitary; petals numerous, united into tube at base; stigmas 5, filiform. S. Afr.

Sladeniàna (*M. Sladenianum*). Glaucous ann.: lvs. to 2 in. long, becoming reflexed, often with pink edges, united at base: fls. white, ½ in. long, 2 of sepals very large and inclosing fl.

PRETTY FACE: *Brodiæa ixioides*.

PRIDE-OF-CALIFORNIA: *Lathyrus splendens*.

PRIDE-OF-INDIA: *Melia Azedarach*.

PRIM: *Ligustrum vulgare*.

PRIMROSE: *Primula*. Arabian-: *Arnebia cornuta*. Cape-: *Streptocarpus*. Evening-: *Œnothera*.

PRÍMULA. PRIMROSE. *Primulaceæ.* Well-known attractive mostly low per. herbs with basal lvs., fls. of many colors, in heads or umbels or in whorls one above another, corolla with slender tube and spreading lobes; mostly native to the north temp. zone, many kinds grown in gardens and greenhouses. Primulas have received much attention in recent years and are becoming fanciers' plants.

The hardy primroses thrive in any good garden soil. Seed should be sown in spring or early summer in flats or pans and the seedlings transplanted. Large plants may be propagated by division. Seed of the greenhouse species (mostly *P. sinensis* and *P. malacoides*) should be sown in January if wanted for Christmas bloom, in soil composed of equal parts loam, leafmold and sand. Frequent transplantings should be given until September when the plants should be set in the pots in which they are to bloom. Shade and moisture should be provided during the summer. A good temperature for these primroses is 55–60° F. The hardy outdoor kinds are largely spring and early summer bloomers.

acaùlis: *P. vulgaris.*

álgida. To 8 in.: lvs. oblong, to 2 in. long: fls. violet, ⅓ in. across, in many-fld. heads in May–June. W. Asia.

Alliònii. Lvs. ovate or oblong, to 1¾ in. long, gray-green and sticky: fls. rose with white eye, to ¾ in. across, in 1–7-fld. umbels on very short scapes, in spring. Maritime Alps.

alpícola. To 16 in.: lvs. elliptic to oblong-elliptic, to 6 in. long, suddenly contracted or obscurely cordate at base, crenulate, upper side rugose, glabrous: fls. yellow to violet, many in umbel, corolla-tube nearly ½ in. long, limb to ¾ in. across, spreading. Tibet. Two variants are recognized, **lùna,** fls. yellow and **violàcea,** fls. purple or violet and rarely white.

alpìna: *P. Auricula.*

americàna: a confused name; some of the material so listed may be *P. incana* or *P. intercedens.*

amœna. To 8 in.: lvs. oblong, to 4 in. long, wrinkled and minutely pubescent, margins remotely toothed: fls. rose-purple, to 1 in. across, in loose umbel on scape. Caucasus.—Reputedly confused in cult. with the scapeless *P. Sibthorpii.*

angustifòlia (*P. angustifolia* var. *Heleniæ*). To 2 in.: lvs. linear-oblanceolate, to 2 in. long: fls. rose-pink, ½ in. across, usually solitary, in early summer. Colo.

anisodòra. To 2 ft.: lvs. obovate, to 8 in. long: fls. dark purple, almost black, in superimposed whorls. China.

aurantìaca. To 10 in.: lvs. oblanceolate, to 6 in. long, narrowed into winged petiole: fls. deep ruddy-orange, ½ in. long, in 6–12-fld. superimposed umbels. China.

Aurícula (*P. alpina*). AURICULA. To 8 in.: lvs. thick, persisting, obovate, to 4 in. long: fls. of many colors, about 1 in. across, in many-fld. umbels, in spring. Alps of Eu. Var. **ciliàta** (var. *Balbisii*), lvs. not farinose, margins densely long-ciliate.—See *Auricula.*

auriculàta. To 14 in.: lvs. lanceolate to oblong-spatulate, to 10 in. long, often less, glabrous, finely and sparsely toothed: fls. rose to violet with whitish eye, to ¾ in. across. Asia Minor to Caucasus.

azùrea: listed name.

Barnardoàna: listed name.

Beesiàna. To 2 ft.: lvs. oblong, narrowed to winged petiole: fls. rose-lilac with yellow eye, ¾ in. across, in superimposed whorls in early summer. China.

Bríscoei. Hybrid between *P. Bulleyana* and *P. japonica.*

Bullesiàna. A strain of hybrids between *P. Bulleyana* and *P. Beesiana*, in shades of cream to orange, purple or lilac, pink to crimson.

Bulleyàna. To 2½ ft.: lvs. ovate-lanceolate, narrowed to winged petiole: fls. deep yellow, to 1 in. across, in superimposed whorls, in summer. China.

burmánica. To 2 ft.: lvs. oblanceolate, to 1 ft. long, narrowed into long winged petiole: fls. reddish-purple with orange eye, ½ in. across, in 16–fld. superimposed umbels. Burma.

cachemiriàna: *P. denticulata* var.

cærùlea. To 3 in.: lvs. ovate, to 4 in. long, pubescent beneath and puckered above: fls. purplish-blue, 1 in. across, in 1–2-fld. umbels. China.

calýcina: *P. glaucescens* var.

canéscens: listed name.

capitàta. To 1½ ft.: lvs. oblong-lanceolate, to 5 in. long, narrowed to winged petiole, silvery beneath: fls. purplish-blue, ½ in. across, in dense heads. Himalayas. Var. **Mooreàna** is *P. Mooreana.*

capitellàta. To 10 in.: lvs. farinose, becoming glabrous, narrowly oblanceolate to spatulate, remotely toothed to entire, shorter than scape: fls. rose, to ¼ in. across, subsessile in dense heads. Persia to Afghanistan.

carniólica. To 8 in.: lvs. obovate or oblong, shining: fls. rose with white eye, turning lilac, to 1 in. across, in many-fld. umbels. Alps.

cashmiriàna: *P. denticulata* var. *cachemiriana.*

chinénsis: *P. sinensis.*

chionántha. To 1½ ft.: lvs. lanceolate to oblong, to 10 in. long, narrowed to winged petiole, yellow-mealy beneath: fls. white, fragrant, to ¾ in. across, in superimposed umbels. China. Var. **atrosanguínea** is listed with deep red fls.

chrysòpa. To 10 in.: lvs. oblong-elliptic, 1¼ in. long, on petioles to 5 in. long: fls. lilac with yellow eye, ½ in. across, lobes bifid, in 2–4-fld. umbels or sometimes 2 superimposed umbels. China.

chungénsis. To 20 in. or more: lvs. oblong-oval, to 1 in. or more across, crenulate: fls. 4–8 in a terminal umbel and also in whorls, yellow (limb pink?), fragrant, about ½ in. long. China.

Clusiàna. To 7 in.: lvs. ovate or oblong, to 3½ in. long, shining, with narrow cartilaginous margins: fls. rose or lilac, 1 in. or more across, the lobes bifid, in 1–6-fld. umbels. Alps.

Cockburniàna. To 1½ ft.: lvs. obovate, to 4 in. long: fls. orange, 1 in. across, in 2 superimposed umbels. China.

Colúmnæ: *P. veris* var. *suaveolens.*

conspérsa. To 10 in.: lvs. oblong-lanceolate, to 2 in. long: fls. lilac with orange eye and yellow tube, to ¾ in. across, the lobes bifid, in superimposed umbels in summer. China.

cortusoìdes (*P. dentiflora*). To 1 ft.: lvs. ovate-oblong, heart-shaped at base, to 3½ in long, lobed: fls. rose, to ¾ in. across, in many-fld. umbels in May and June. W. Siberia.

cóttia. To 5 in.: lvs. obovate, to 3 in. long, sticky and covered with red glands: fls. rose with white eye, to 1¼ in. across, in 2–12-fld. umbels. Cottian Alps.

críspa (*P. capitata* var. *crispa*). To 8 in.: lvs. oblong or oblanceolate, to 3 in. long, narrowed into winged red petiole: fls. orange, in head-like umbels. China.

crispàta. To 1 ft.: lvs. in rosettes, oblong, to 4 in. long, narrowed into winged petiole: fls. lilac or blue, about ½ in. across, in umbel-like heads. Himalayas.

cuneifòlia. To 5 in.: lvs. obovate-cuneate, to 1 in. long: fls. pink or rose. ¾ in. across, in 1–6-fld. umbels. E. Siberia.

decípiens (*P. magellanica. P. farinosa* var. *magellanica*). To 20 in., usually less: lvs. spatulate to ovate or rhombic, to 4 in. long, serrulate-dentate, farinose or glabrous beneath: fls. white, sometimes tinged lilac, lobes to ¾ in. wide, involucral bracts lanceolate, flat, calyx glabrous or remotely farinose with lobes as long as tube. S. Chile, Colo. and Utah.

defléxa. To 2 ft.: lvs. in rosettes, oblanceolate, to 11 in. long, white-hairy: fls. dark blue or rose-purple, ½ in. long, in globose heads 1 in. across. W. China.

denticulàta. To 10 in.: lvs. ovate-lanceolate, to 2 in. long, narrowed into winged petiole: fls. lilac, ½ in. across, in dense heads in early spring. Himalayas. Var. **álba** has white fls. Var. **cachemiriàna** (*P. cashmiriana*) is more farinose, with rich purple fls. with yellow center. Var. **grandiflòra** is a more vigorous hort. form. Vars. **ròsea** and **rùbra** are color forms.

dentiflòra: *P. cortusoides.*

deòrum. To 10 in.: lvs. oblong or lanceolate, to 2 in. long, stiff, with cartilaginous margins: fls. purple, ½ in. across, in nodding one-sided 5–10-fld. umbels. Bulgaria.

diarálica: listed name.

dùplex: a double garden form.

edìna. Hybrid between *P. Beesiana* and *P. Bulleyana:* fls. yellow and violet.

effùsa. To 1½ ft.: lvs. cordate-ovate, 1½ in. long, slightly lobed or toothed, on stalks to 5 in. long: fls. lavender-rose with yellow tube, ½ in. long, in superimposed umbels. W. China.

elàtior. OXLIP. To 8 in.: lvs. wrinkled, ovate or oblong, to 3 in long, pubescent beneath: fls. yellow, to 1 in. across, in many-fld. umbels in spring. Eu. to Persia. Var. **álba,** fls. white. Var. **atrocærùlea,** fls. dark blue.

elongàta. To 1 ft.: lvs. obovate, to 5 in. long, glabrous above, sometimes farinose beneath, crenulate: fls. golden-yellow, to 1 in. across, in 5–8-fld. umbels. Sikkim-Himalayas.

Elwesiàna. To 6 in.: lvs. ovate-lanceolate, to 4 in. long, nearly entire, leathery: fls. violet, solitary. Himalayas.

Érikssonii: an improved strain of *P. malacoides.*

eròsa. To 7 in.: lvs. obovate, to 5 in. long, with jagged teeth: fls. purple or violet, ½ in. across, in many-fld. umbels. Himalayas.

farinòsa. BIRDSEYE P. To 1 ft.: lvs. obovate-lanceolate, to 5 in. long, silvery or farinose beneath: fls. usually lilac-purple with yellow eye, ½ in. or more across, in many-fld. umbels in early summer. Boreal or alpine regions in Old World.—The plants so named in N. Amer. belong to other species. The plant in the trade as var. **gaspénsis** is probably *P. laurentiana*.

Faùriei. To 4 in.: lvs. ovate to oblong-ovate, to 2 in. long, yellow-farinose beneath, margins crenulate-dentate to entire: fls. rose, to ½ in. across, several to many in umbel. Japan.

floribúnda. BUTTERCUP P. To 8 in.: lvs. ovate, to 3 in. long: fls. yellow, ½ in. across, in many-fld. superimposed umbels, in winter and spring in a greenhouse. Himalayas. Var. **grandiflòra** has fls. to 1 in. across.

flórida. To 1 ft., white-mealy: lvs. oblong or ovate, to 3 in. long, subcordate at base: fls. blue-purple, about ¾ in. across, in 9-fld. umbels. China.

Floríndæ. To 4 ft.: lvs. ovate-cordate, to 8 in. long, toothed, with reddish petiole 1 ft. long: fls. sulfur-yellow, ½ in. across, drooping, in terminal 30–40-fld. mealy umbels, in summer. Tibet.

Fórbesii. BABY P. To 14 in.: lvs. ovate, to 2 in. long, heart-shaped at base: fls. rose or lilac, to ½ in. across, in superimposed whorls, in winter and spring in the greenhouse. China, Burma.

formòsum: listed name of plant said to be 4 in. high and with various-colored fls.

Fórrestii. To 3 ft., producing rootstocks several ft. long: lvs. ovate-elliptic, to 1½ in. long, wrinkled above, mealy beneath: fls. yellow with orange eye, fragrant, ¾ in. across, in many-fld. umbels. China.

frondòsa. To 5 in.: lvs. oblong, 1 in. long, silvery beneath: fls. rosy-lilac, ½ in. across, in many-fld. umbels in spring. Balkans.

geraniifòlia. To 1 ft.: lvs. orbicular-cordate, to 2 in. long, 11–15-lobed, each lobe many-toothed: fls. rose, to ½ in. across, on slender pedicels to ½ in. long. Tibet.

Giraldiàna (*P. muscarioides*). To 1 ft.: lvs. narrow-oblong, narrowed into winged petiole: fls. blue, ¼ in. across, in heads. China.

glaucéscens. To 5 in.: lvs. lanceolate, to 4 in. long, shining and glaucous, with broad cartilaginous margins: fls. rose to purple, 1 in. across, in 2–6-fld. umbels, May–June. Alps. Var. **calýcina** (*P. calycina*) is more robust with larger fls.

glutinòsa. To 4 in.: lvs. lanceolate, to 2½ in. long, glandular-sticky: fls. deep blue turning violet, to ¾ in. across, fragrant, in 1–6-fld. heads. Alps.

glycyósma. To 2½ ft.: lvs. ovate-lanceolate, to 1 ft. long, narrowed into winged petiole: fls. deep purple, ½ in. or less across, in 2–many-fld. superimposed umbels. China.

grándis. Tall herb: lvs. ovate, to 6 in. long, on petioles to 1 ft. long, wrinkled, pubescent below: fls. pale yellow, tubular, ½ in. long, on slender nodding pedicels 2 in. long, in many-fld. umbels. Caucasus.

Héleniæ: *P. angustifolia*.

helodóxa. To 2 ft.: fls. deep yellow, in superimposed umbels in summer. China; requires protection.

heucherifòlia. To 6 in.: lvs. rotund, cordate, 7–9-lobed, somewhat pilose, petioles red-villous: fls. purple, to ½ in. across. Tibet and China.

hirsùta. To 4 in.: lvs. broad-obovate, to 5 in. long, glandular-sticky: fls. rose, lilac or white, to 1 in. across, with slender pedicels, in 1–many-fld. umbels. Mts. of Eu.

hýbrida: of the *japonica* type with very large purple fls.

incàna. Differs from *P. decipiens* in its densely farinose calyx whose lobes are shorter than the tube, with lilac petals to 1⅛ in. wide. Sask. to Colo. and Utah.—Material listed as *P. americana* may belong here.

integrifòlia. To 2 in.: lvs. oval or oblong, to 1½ in. long, glandular, entire: fls. rose-lilac or rarely white, to 1 in. across, in 1–3-fld. umbels. Alps, Pyrenees.

intercèdens. Closely allied to *P. mistassinica*, differing in lvs. often farinose beneath and the seeds strongly angled and reticulated.—Some of the material listed as *P. americana* may belong here.

involucràta. To 1 ft.: lvs. ovate or oblong, to 1 in. long, leathery, pale, on petioles 2 in. long: fls. white, fragrant, ¾ in. across, in 3–6-fld. umbels. Himalayas.

japónica. To 2 ft.: lvs. obovate-oblong, to 6 in long, narrowed into winged petioles: fls. purple, rose or white, 1 in. or more across, in many-fld. superimposed umbels in summer. Japan. Color forms are **álba, atrocærùlea, atrosanguínea, exímea, ròsea, salmònea, spléndens.**

jesoàna. Per. 8–24 in. high: lvs. all basal, palmately 7–9-lobed, reniform-orbicular, to 4 in. across, petioles to 1 ft. long, erect, purplish, glabrous: fls. rose-purple with yellow eye, salverform, to ½ in. long and ¾ in. across, in 1–4 umbels. Japan.—White-fld. forms are known.

Jùliæ. To 3 in.: lvs. orbicular-cordate, with winged petiole: fls. rose or red, to 1 in. across, scapeless, on pedicels to 2 in. long. Caucasus. Var. **álba,** fls. white. Var. **críspa,** lvs. somewhat curly on margin.

kewénsis. Hybrid between *P. floribunda* and *P. verticillata:* to 1½ ft.: lvs. obovate, to 8 in. long, narrowed into winged petiole: fls. bright yellow, fragrant, ¾ in. across, in superimposed umbels, in winter and spring in the greenhouse. Var. **farinòsa** is covered with silvery-white powder.

Kíngii. To 8 in.: lvs. elliptic-lanceolate, to 3 in. long, nearly entire: fls. scarlet, to ¾ in. across, in 4–6-fld. umbels. Himalayas.

Kleýnii: *P. veris* var.

laurentiàna. To 18 in.: lvs. farinose, spatulate to narrowly rhombic-ovate, to 5 in. long, dentate, usually petioled: fls. lilac, pedicels erect or ascending to nearly 2 in. long, 1–17 in umbel. Lab., E. Que. to N. E. Me.

lépta. To 4 in.: lvs. oblong-oval, to 2 in. long, crenulate-dentate, ciliate, minutely hirsute beneath: fls. bluish-purple, about ½ in. across, fragrant, scape yellow-farinose. N. W. Yunnan.

leucóchnoa. To 18 in., usually less: lvs. linear-lanceolate, 5–9 in. long, acute, margins revolute: scapes 1–3; fls. purple, to ¾ in. across, in umbels of 2 or more, pedicels somewhat pendulous. China.

leucophýlla. Similar to *P. elatior*, from which it differs chiefly in lvs. densely white-tomentose beneath. Carpathian Mts.

lichiangénsis. To 14 in.: lvs. ovate-oblong, lobed, heart-shaped at base: fls. rose to red with greenish eye, fragrant, in umbels. China.

Littoniàna. To 2 ft.: lvs. broad-lanceolate, 8 in. long, hairy: fls. violet-blue, fragrant, ⅓ in. across, in dense spikes to 5 in. long. China. Var. **màjor,** slightly larger than type with lavender and crimson fls.

longiflòra. To 1 ft., mealy: lvs. oblong, to 3 in. long: fls. violet with yellow throat, ¾ in. across, the corolla-tube 1 in. and more long, in many-fld. umbels. Alps.

lutèola. To 10 in.: lvs. lanceolate, to 8 in. long: fls. sulfur-yellow, ½ in. across, in many-fld. umbels in summer. Caucasus.

macrócalyx: *P. veris* var.

magellánica: *P. decipiens*.

malacoìdes. FAIRY P. To 1½ ft.: lvs. ovate, to 3 in. long, heart-shaped at base, on petioles to 7 in. long: fls. lilac and rose, to ½ in. across, in many-fld. superimposed umbels, in winter and spring in the greenhouse. China. Var. **álba** has white fls. and var. **ròsea** bright rose fls. Var. **fimbriàta** is said to have lacerate petals. Var. **gigantèa** is a more vigorous cult. form. Var. **nàna** is dwarf. Var. **Lèlandii** has large fls. said to reach 1½ in. across. Var. **robústa** has large fls. in great profusion. Var. **supérba** is an improved form.

marginàta. To 5 in., mealy: lvs. oblong, to 4 in. long, with silvery margins: fls. violet-rose, to 1 in. across, in 2–20-fld. umbels in spring. Alps.

Menziesiàna. To 4 in.: lvs. elliptical, to 1½ in. long, crenate, soft-hairy: fls. blue-violet with white eye, in heads to 1 in. across. Bhutan.

microdónta. To 1 ft.: lvs. broad-ovate, to 5 in. long, long-petioled: fls. yellow, ½ in. across, in many-fld. umbels. China. Var. **álba** is listed with fls. very pale yellow to white. For vars. **alpicola** and **violàcea,** see *P. alpicola*.

mínima. Lvs. obovate, to 1 in. long, shining: fls. rose or white, to 1 in. across, the lobes bifid, 1–2 on very short scapes. Mts. of Eu.

mistassínica. To 6 in.: lvs. spatulate or obovate, to 1½ in. long: fls. pink to pale blue, sometimes with yellow eye, ½ in. across, in 2–8-fld. umbels. N. N. Amer. Var. **leucántha** (var. *alba*) has white fls.

modésta. To 6 in.: lvs. spatulate, to 2½ in. long, dentate-serrate, farinose: fls. lilac to purple, to ⅝ in. across, in 8–10-fld. umbels. Japan.

Mòerheimii. Hybrids having large fls. in shades of red, pink and orange.

Mooreàna. Differs from *P. capitata* in larger lvs. which are coarsely reticulated and snow-white beneath and bright green above. China.

multiflòra: listed name.

muscarioìdes: *P. Giraldiana*.

nippónica. To 6 in.: lvs. spatulate, to 1½ in. long, farinose or glabrous, margins with few large teeth: fls. white, to 1 in. across, usually 2–5 in umbel on slender flexuous scape. Japan

nivàlis. To 10 in.: lvs. ovate-oblong to lanceolate, to 5 in. long: fls. purple or white, to ¾ in. across, in many-fld. umbels. Caucasus to China. Var. **Moorecroftiàna** is less densely or not at all farinose and has deep violet fls

nùtans. To 8 in.: lvs. oblong-ovate or oblong-lanceolate, to 4 in. long, narrowed into winged petiole: fls. violet, ¾ in. across, nodding, in small dense heads. China.

obcónica. To 1 ft.: lvs. oblong-ovate, to 4 in. long, with irritating hairs: fls. lilac or pink, to 1 in. across, in many-fld. umbels, in winter in the greenhouse. China. Var. **atrosanguínea,** fls. dark red. Var. **grandiflòra** has fls. to 1½ in. across. Var. **gigantèa** is a large form. Var. **álba** has white fls. Var. **ròsea,** fls. rose.

oblanceolàta. Lvs. oblanceolate, to 1 ft. long, glaucous: fls. rose, 1 in. or more across, in superimposed umbels. China.

obtusifòlia. To nearly 1 ft.: lvs. elliptic-spatulate to oval, somewhat dentate or entire, glabrous or farinose: fls. bluish-purple, to 1 in. across, in 4–15-fld. umbels. Himalayas.

officinàlis: *P. veris.*

Palinùri. Lvs. obovate or oblong, to 8 in. long and 3 in. wide, toothed: fls. deep yellow, in many-fld. umbels, on scapes longer than lvs. S. Italy.

pannónica: *P. veris* var. *inflata.*

Párryi. To 1 ft.: lvs. obovate-oblong, to 8 in. long, narrowed to winged petiole: fls. purple with a yellow eye, 1 in. across, in many-fld. umbels in summer. Rocky Mts.

Paxiàna. To 1½ ft.: lvs. heart-shaped, to 5 in. long and 7 in. broad, 7–12-lobed, on petioles 10 in. and more long: fls. blue-lilac, 1 in. across, in superimposed umbels. China.

pedemontàna. To 6 in.: lvs. ovate or oblong-lanceolate, shining: fls. rose or rarely white, 1 in. across, in few- to many-fld. umbels. Alps.

Poìssonii. To 5 ft.: lvs. narrowly oblong, to 5 in. long, stiff and glaucous: fls. rose, to 1¼ in. across, in superimposed umbels in summer. China.

polyántha. Polyanthus. A hybrid group, probably having parentage of *P. veris*, *P. elatior* and *P. vulgaris:* to 1 ft.: lvs. obovate, narrowed into winged petiole: fls. of many colors, in many-fld. umbels or sometimes solitary, in spring; an old garden plant. Color forms include **álba, cærùlea, ròsea** and **rùbra.**

prionòtes. To 15 in.: lvs. oblong to narrowly elliptic, to 7½ in. long, glabrous, margins toothed: fls. purple, in many-fld. umbels. Tibet.

pseudosikkiménsis. Similar to *P. sikkimensis*, but with smaller lvs. and larger bright yellow fls. on scapes to 1½ ft. Yunnan.

pubéscens. A group of hybrids between *P. Auricula* and *P. hirsuta:* fls. rosy crimson with white center.

pudibúnda. To 8 in.: lvs. obovate-spatulate, 3½ in. long, long-petioled: fls. yellow, ¼ in. across, in 3–4-fld. umbels. Himalayas.

pulverulénta. To 3 ft.: lvs. obovate, to 16 in. long: fls. purple with orange-brown eye, 1 in. across, in superimposed umbels on a silvery scape, in summer. China.

Rèidii. To 4 in.: lvs. oblanceolate, to 3 in. long, bullate and sparsely villous above, hairy beneath: fls. pale cream-white, to ¾ in. across, in several-fld. umbels on stiff scape. Himalayas.

Reìnii. Densely hairy: lvs. round or kidney-shaped, to 6 in. across, deeply toothed, cordate at base: fls. pale violet, in 2–6-fld. clusters. Japan.

ròsea. To 8 in.: lvs. oblong, to 2½ in. long: fls. bright rose, ¾ in. across, in loose heads, in spring Himalayas. Var. **grandiflòra** has large fls.

rotundifòlia. To 1 ft. or more: lvs. orbicular-cordate, to 4 in. across, toothed, crenate or erose, somewhat mealy, often lobulate, long-petioled: fls. purple, many in superimposed umbels, scape puberulous and mealy. Himalayas.

rùfa. To 8 in., hairy: lvs. elliptic, 2½ in. long, reddish-pubescent: fls. deep yellow, ½ in. across, in many-fld. umbels. China.

Rúsbyi. To 10 in.: lvs. oblong-spatulate, denticulate, with margined petiole to 5 in. long: fls. deep purple with yellow eye, 6–10 to a scape. New Mex., Ariz.

saxátilis. To 10 in.: lvs. oblong, to 3 in. long, heart-shaped at base, lobed and crisped: fls. rose-lilac, to ¾ in. across, in 1–10-fld. umbels. N. Asia.

scótica. Similar to *P. farinosa* but smaller, with bluish-purple fls. having yellow eye. Scotland.

seclùsa. To 1½ ft., hairy: lvs. cordate-ovate, to 10 in. long: fls. red, about ⅕ in. across, in superimposed umbels. China.

secundiflòra. To 8 in. or more: lvs. oblong, to 3 in. long, narrowed into winged petiole, yellow-mealy beneath when young: fls. deep violet, ¾ in. across, in 6–10-fld. one-sided umbels. China.

serratifòlia. To 2 ft., often less: lvs. oblong to ovate, to 8 in. long, glabrous, irregularly serrate: fls. yellow, striped or blotched orange, in superimposed umbels with lax pedicels. S. W. China.

sibírica. To 8 in.: lvs. ovate, to ¾ in. long, pale green: fls. lilac or rose, to ½ in. across, in few-fld. loose umbels. Arctic Eu., Asia, N. Amer.

Sièboldii. To 8 in.: lvs. ovate-oblong, to 4 in. long, lobed, heart-shaped at base: fls. white, rose or purple, to 2 in. across, in many-fld. umbels in spring. Japan. Var. **grandiflòra** is a garden form. Var. **álba,** fls. white. Var. **rùbra,** fls. red.

sikkiménsis. To 2 ft.: lvs. oblong, to 5 in. long, wrinkled, sharp-toothed: fls. yellow, 1 in. across, in many-fld. umbels in late spring. Himalayas.

sinénsis (*P. chinensis*). Chinese P. To 8 in.: lvs. round, to 4 in. long, lobed, often heart-shaped at base, long-petioled: fls. in many colors, to 1½ in. across, in many-fld. umbels, blooming in winter in the greenhouse. China. Var. **álba magnífica** has large white fls. Var. **filicifòlia** has crisped lvs. Var. **fimbriàta** has fringed or crested fls. Var. **stellàta,** Star P., has fls. in superimposed umbels.—Popular florist plant in many forms.

sinopurpùrea. To 1½ ft.: lvs. oblong-oval, to 10 in. long, narrowed into winged petiole: fls. deep purple, in many-fld. umbels. China.

Smithiàna. To 2 ft.: lvs. oblong-lanceolate, to 5 in. long, obtuse, thin, usually glabrous, margins serrate: fls. yellow, to 1 in. across, on slender pedicels to ½ in. long, in superimposed umbels. Sikkim-Himalayas.

spectábilis. To 4 in.: lvs. oblong, to 4 in. long, stiff and glossy: fls. rosy-purple, 1 in. across, in 1–7-fld. umbels in summer. Alps.

sphærocéphala. To 1 ft.: lvs. oblanceolate, to 5 in. long, narrowed into winged petiole: fls. purple, in small globular heads. China.

stellàta: *P. sinensis* var.

suavèolens: *P. veris* var.

suffrutéscens. To 4 in.: lvs. thick, spatulate, toothed at apex: fls. red-purple, ½ in. across, several to a scape. Calif.

szechuánica. To 10 in.: lvs. ovate to oblong-ovate, to 3 in. long, thin, glabrous: fls. yellow or violet, to ¾ in. across, lobes entire, reflexed, in 6–10-fld. umbel. China. Var. **tùba-purpùrea** is listed.

Thómassinii. Hybrid between *P. veris* var. *suaveolens* and *P. vulgaris*, differing from the former parent in its orange-spotted pale yellow fls. Pyrenees.

variábilis: name applied to plants of the *polyantha* group.

Veìtchii. To 1 ft.: lvs. round, to 4 in. long, silvery beneath, long-petioled: fls. rose, in a many-fld. umbel or umbels superimposed. China.

vèris (*P. officinalis*). Cowslip. To 8 in.: lvs. ovate or ovate-oblong, to 3 in. long, pubescent beneath: fls. yellow, fragrant, to 1 in. across, in many-fld. umbels in spring. Eu. Var. **álba,** fls. white. Vars. **aùrea** and **cærùlea** are listed. Var. **coccínea,** fls. crimson. Var. **grandiflòra** is a more vigorous larger-fld. cult. form. Var. **inflàta** (*P. pannonica*) has calyx as long as corolla-tube. Var. **Kleỳnii** (*P. Kleynii*) is listed as having yellow fls. shading to apricot. Var. **lùtea,** fls. pale yellow. Var. **macrócalyx** (*P. macrocalyx*), fls. orange-yellow with calyx to ¾ in. long. Var. **suavèolens** (*P. suaveolens*, *P. Columnæ*). has lvs. densely white-tomentose beneath, and slightly fragrant fls. Var. **supérba** is a hort. form perhaps not distinct from var. *grandiflora.*

verticillàta. To 2 ft.: lvs. lanceolate, to 8 in. long, narrowed into winged petiole: fls. yellow, fragrant, to ¾ in. across, in superimposed umbels, in winter in the greenhouse. S. Arabia.

vinciflòra: *Omphalogramma vinciflorum.*

viscòsa. To 8 in.: lvs. oval to lanceolate, to 7 in. long, rank-smelling, yellowish-green, glandular: fls. rose-lilac, fragrant, ½ in. across, in many-fld. umbels in late spring. Alps and Pyrenees.

vittàta. To 10 in.: lvs. narrow-oblong, to 6 in. long: fls. purple, ½ in. across, in many-fld. umbels or 2 superimposed umbels. China.

vulgàris (*P. acaulis*). To 6 in.: lvs. oblong, to 3 in. long, wrinkled: fls. yellow, purple or blue, 1½ in. across, solitary on long sts., in spring. Eu. Color forms are listed as **álba, atropurpùrea, azùrea, cærùlea, lilácina, ròsea, rùbra.** Var. **horténsis** is a term used to indicate garden mixtures of many forms. Var. **supérba** is offered as an improved form.

Wáltonii. To 2 ft.: lvs. oblong, to 8 in. long: fls. violet, ½ in. across, in large many-fld. umbels. Tibet.

Wárdii. To 10 in., tufted: lvs. oblong, to 1½ in. long, narrowed into winged petiole: fls. rose or violet, in few-fld. umbels. China.

Wáttii. To 6 in.: lvs. oval to broadly lanceolate, to 1½ in. long, pubescent beneath, remotely so above, margins coarsely dentate: fls. purple with white center, to ⅜ in.

across, bell-shaped, in drooping 3–6-fld. umbel. E. Himalayas.

Webbiàna: listed name.

Wílsonii. To 2 ft.: lvs. oblanceolate, to 8 in. long: fls. purple or violet, to ¾ in. across, in superimposed umbels. China.

Wínteri. Plant white- or yellow-mealy: lvs. obovate, 4 in. long: fls. pale purple with yellow eye, 1¼ in. across, in many-fld. umbels. Himalayas.

Wulfeniàna. To 2 in., tufted: lvs. lanceolate to oblong, to 2 in. long, shining: fls. rose with white throat, 1 in. across, in 1–3-fld. umbels. Alps.

yargongénsis. To 4 in.: lvs. ovate-oblong, to 2 in. long: fls. deep purple, ½ in. across, in 1–3-fld. nodding umbels. Tibet.

zambalénsis. To 4 in.: lvs. ovate-oblong, to 2 in. long, margins revolute: fls. deep rose-lilac, 1 in. across, in 3–5-fld. umbels. Tibet.

PRIMULÀCEÆ. Primrose Family. Nearly 30 genera of herbs, or seldom suffruticose, widely distributed particularly in the northern hemisphere, furnishing many flower-garden and greenhouse plants. Family characterized by the bisexual regular fls. with 5 petals more or less united, 1-celled ovary with many seeds, 1 style, and dehiscent fr. The genera in cult. are Anagallis, Androsace, Cortusa, Cyclamen, Dodecatheon, Douglasia, Glaux, Lysimachia, Omphalogramma, Primula, Samolus, Soldanella, Steironema, Trientalis.

PRINCES-FEATHER: *Amaranthus hybridus* var. *hypochondriacus, Polygonum orientale.*

PRINSÈPIA. *Rosaceæ.* Deciduous Asian spiny shrubs with simple lvs., yellow or white fls. in axillary clusters or racemes, and fr. a purple or black drupe; grown for ornament and hardy N.

Propagated by seeds sown as soon as ripe or stratified, by cuttings of young wood under glass, and by layers.

sinénsis. To 6 ft.: lvs. ovate-lanceolate to lanceolate, to 3 in. long: fls. yellow, ½ in. across, Mar–Apr.: fr. purple, ½ in. long. Manchuria.

uniflòra. To 5 ft.: lvs. narrow-oblong, to 2½ in. long: fls. white, ½ in. across, Apr.-May: fr. black, bloomy, ½ in. long. China.

PRITCHARDIA: *Eupritchardia.* **P. grandis:** *Licuala.* **P. Wrightii:** *Colpothrinax.*

PRIVET: *Ligustrum.*

PROBOSCÍDEA. Unicorn-Plant. *Martyniaceæ.* Broad-topped sticky-pubescent thick-stemmed ann. and per. herbs with large long-stalked lvs., large yellowish-purple fls. in few-fld. axillary racemes, and woody curved caps. having a beak which splits into 2 hook-like appendages; 9 known species, in the western hemisphere.

These plants are grown for ornament or for the young fruits which are pickled as cucumbers or used in mixed pickles. In the South seeds may be sown where the plants are to stand but in the North they may be sown in hotbeds and transplanted.

ánnua: *Martynia annua.*

formòsa: *P. Jussieui.*

fràgrans. Ann., sts. to 2 ft.: lvs. broad-ovate or deltoid, mostly broader than long, at maturity usually 5-lobed: fls. deep purplish. Mex.—The plant commonly grown under this name is *P. Jussieui.*

Jussieùi (*P.* and *Martynia louisiana. M. Proboscidea*). Common U. or Proboscis-Flower. Clammy, low and spreading, to 3 ft. broad, the branches in opposite pairs: lvs. nearly orbicular to ovate-cordate, to 1 ft. across, wavy-margined but not lobed: fls. creamy-white to violet or light red, to 2 in. long: fr. hanging, to 6 in. long, half the length being the slender beak. Del. and Ind. to New Mex. Var. **ròsea,** fls. rose.—Grown in the garden under such names as *Martynia craniolaria, formosa, fragrans.*

louisiàna: *P. Jussieui.*

lùtea: *Ibicella lutea.*

trícolor: hort. name.

PROBOSCIS-FLOWER: *Proboscidea Jussieui.*

PROCUMBENT: trailing or lying flat, but not rooting.

PROLIFEROUS: bearing offshoots or redundant parts; producing other similar structures on itself, as when a head of calendula has secondary heads springing from it.

PROMENÆA. *Orchidaceæ.* Trop. S. American epiphytes with 1–3-lvd. pseudobulbs and commonly 1-fld. lateral infl., the sepals and petals similar, lip 3-lobed. Grown in warm greenhouse; see *Orchids.*

citrìna: *P. xanthina.*

xánthina (*P. citrina*). Lvs. to 4 in. long and about ¾ in. wide: fls. to 2 in. wide, citron-yellow with side lobes of lip and column spotted with red. Nov.–July. Brazil.

PROPAGATION of plants is accomplished by two different means: (1) by seeds and spores, which are normal reproductive bodies, the seeds and sometimes the spores the direct result of sexual processes; (2) by vegetative or asexual parts. The second category may be again divided into propagation (a) by division of the plant, (b) by separation of naturally detachable parts, as bulblets and offsets, (c) by layers, (d) by cuttings, (e) by graftage.

Although plants have been propagated from immemorial time and great skill has been developed in the practices, yet modifications of these experiences are constantly arising. Many of the old ideas on multiplication of plants are being challenged and physiological studies have resulted in and will continue to suggest considerable changes in method. Persons desiring to develop the greatest success in the work should keep in touch with investigations as they are published. The skilled propagator develops a kind of intuitive sense as to how a plant new to him may be increased and handled to best advantage. The propagation of plants, as a subject, is much more than habit and manual skill.

Seedage is the subject and the practice of propagating plants by means of seeds. The practice is not only interesting in itself as a development of skill but it brings the practitioner into close relationship with fascinating natural objects. There is peculiar satisfaction in being the agent that causes the release of the dormant energy in the seed and sets the processes into cumulative action until the plant has attained its term. Many persons do not wish to wait for the slow processes of seed propagation, in the perennial plants, and therefore purchase their stock ready raised; but thereby they miss one of the major rewards in gardening, for the plant is as interesting in its beginnings as in its endings.

Seeds of most annuals, herbaceous perennials and many trees and shrubs are best stored dry in a fairly cool place. It is well to use screw-top bottles or other air-tight containers and keep them in a cool cellar or storage room. It is better to rely on fresh seeds and, before sowing, test their ability to germinate by placing a few in soil or between moist flannel pads at a temperature of 65°–70° F. in the house or greenhouse.

Seeds of annuals and herbaceous perennials may be germinated indoors or sown outside in spring or early summer. Most tree and shrub seeds are planted in prepared outdoor seed-beds in autumn or early spring. If the seeds are fresh, germination usually follows rapidly, but a few varieties of garden flowers and a number of trees and shrubs, handled by ordinary methods, may require from a few months to one or even two years to sprout. Such seeds are said to be "dormant" or to require a "rest" or "after ripening" period before germination can occur.

The simplest form of dormancy is caused by a hard seed-coat which, through excessive drying, has become impermeable to water and to gaseous exchange. Familiar examples are canna, moonflower, black locust and sweet pea. All seeds of this type are better if kept moist during storage. This method of storage is known as "stratification" and consists of mixing the seeds with moist peat moss, placing them in a box and keeping in a cool room or cellar at a temperature of preferably between 35° and 50° F. This to a large extent prevents the initial hardening of the seed-coats. Dry sweet pea seed is benefited by soaking in water, if not put into the ground until the soil is warm. Seed of canna, moonflower and others with hard shells may be scraped until the outer shell is pierced or is very thin to allow entrance of water. Seeds of black locust and certain other legumes are frequently soaked in concentrated commercial sulfuric acid for fifteen minutes or until small white spots appear upon the seed-coat. They must then be thoroughly washed in water before sowing.

Dormancy is caused in seeds of holly and orchids largely by a lack of stored food required for germination. Orchid seeds are germinated in flasks containing a sugar solution. Seeds of many rosaceous plants, including certain kinds of hawthorn, cotoneaster, viburnum and others, may normally require at least a year for germination. These are said to require an "after ripening period"—an interval during which certain internal processes are completed and which must take place before germination can occur. It has been found that the after ripening process of these slower seeds can be hastened artificially by stratifying them—keeping them moist and at a cool temperature—for one to several months before sowing. Different periods of stratification are required for different kinds of plants. For many with a short stratification period, fall sowing or burial of the seed-flat outdoors over winter may be all that is necessary to secure good germination in spring. Seed of flowering dogwood, stored dry and sown in spring, may normally require at least twelve months for germination. If secured in fall, however, stratified for sixteen weeks, and sown in May, seedlings may be obtained in a very few weeks. However, not all hastening treatments are as simple as this. Peony and certain species of Lilium, for example, have two definite stages in their germination process, the first involving the formation of the seedling root, the second the development of the shoot. The root develops readily but the shoot requires a period of low temperature first. If seedlings of such plants are desired in quickest time, they should be sown outdoors in early summer to secure root development while the weather is warm. Cool temperatures of winter affect the after ripening of the shoot and the young seedlings develop in spring. If sown in autumn these seeds would require two years to germinate. The process could be speeded up further by use of a greenhouse and stratification. Stratification is essentially a time-saving procedure for use with slow seeds. Descriptions of the best handling methods for the commoner seed types are available and should be consulted for more specific information.

In sowing seeds, the general rule is to cover them twice or thrice their thickness. This rule applies to the greater number of kinds of seeds, but in many plants of a naturally short season of bloom or growth, examples of which are the garden pea and sweet pea, it may be advisable to sow the seed deeper. Also, in sowing very minute seeds, as tobacco, petunia, begonia, and others of like size, care should be taken to place them only under the surface of the soil—simply pressed down with a smooth surface or allowed to settle into the soil with the soaking in of the water. The soil for all seeds should be loose and porous, to allow the excess moisture to escape and the warmth to penetrate, but should be firmed directly over the seeds to induce an upward flow of moisture.

Seedlings germinated in the house are frequently subject to a serious disease, known as "damping-off," which causes them to rot at the surface of the soil. The disease is likely to appear when the soil is kept too moist and warm. It can be prevented by pre-sterilizing the seed with a material such as red copper oxide and by sterilizing the soil before sowing with formaldehyde or with heat derived from steam or electricity.

One of the most common mistakes is sowing all seeds at the same time without regard to the season, thus causing a failure with some, while others grow freely. Seeds of tender plants should be sown only when the ground has become thoroughly warm, while seeds of the so-called hardy plants may be sown as early in the spring as the ground is fit to work.

Very small seeds are sometimes mixed with sand or other inert material to allow of more uniform distribution; and the bed is frequently shaded with lath or cheese cloth until the seedlings are established.

If seeds are not sown where the plants are to stand, the seedlings must be transplanted before they begin to crowd or become "drawn." This operation the gardener calls "pricking out." This means taking the young plants from the seed-box as soon as they are large enough to be handled—usually when the first true leaves have developed—and replanting them in other boxes or pots, either singly or at a greater distance apart than they were when in the seed-boxes. Transplant on a cloudy day, and just before a rain, if possible, if the plants are going in the open ground. Plants usually "take" quickly if transplanted on freshly plowed or spaded ground. Shade if necessary for a day or two, but do not cover closely. If the plants are of considerable size, it is good practice to remove part of the leaf surface to reduce evaporation.

Division is the simple process of producing two or more new and complete plants by the splitting apart of one original parent. Plants readily propagated by this method are those with many branching "crowns," rootstocks or rhizomes, those with tubers or tuberous roots, or which produce suckers, offsets or runners. Thus rhubarb and canna are multiplied by dividing the roots or rhizomes into pieces bearing an eye or bud; dahlia is increased by breaking apart the clustered "tubers" so that each has a portion of the stem with its dormant buds attached. Division is performed mostly in the resting season. Early flowering plants are usually divided after ripening in autumn, while those flowering in late summer may be left until just before growth starts in spring. The removal and planting of naturally detachable parts such as bulbels from about the mother bulb, bulblets from the axils of leaves or flowers, plantlets from the leaves of kalanchoë or certain ferns is sometimes referred to as "separation," but the process involved is essentially a form of division.

Layerage is the rooting of branches while still part of the parent. Some plants form natural layers; with others the production of roots on above-ground parts is a purely artificial process. The operation entails the covering of a stem or side growth with soil or other suitable medium into which rooting is likely to take place. The initiation of root production may be encouraged by wounding the portion of the root so covered. Tonguing, twisting, notching and ringing are methods frequently practiced. When sufficient roots have been produced, the shoot is removed and potted or planted out for growing into size.

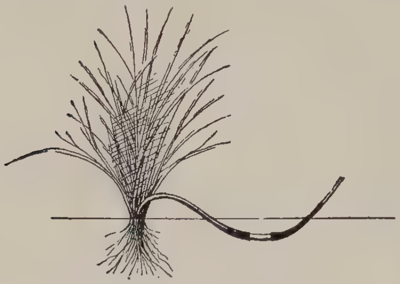
FIG. 10. A girdled layer.

Simple layering is that of a side shoot of perennials such as dianthus or viola or of shrubs such as magnolia or rhododendron. Strong branches are notched, bent down to the soil, and held in place with a peg or stone. The region of the cut is well covered with sandy soil. Layering can be done in spring or, more frequently, in autumn. The branch may be severed from the parent at the end of one year. Quick-rooting layers may be transplanted immediately, but slower types such as rhododendrons should be left a second year for plenty of root to form. Figs. 10 and 11 illustrate simple layers in a diagrammatic way.

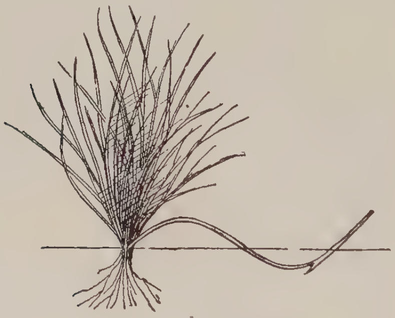
FIG. 11. A notched layer.

Tip layering is adapted to shrubs, such as black raspberry and forsythia, making long slender shoots which fall to the ground. In late summer, when growth is practically completed, the tips of such young shoots are pegged down to the soil and lightly covered. By late fall or spring these tips can be severed about 6 inches above the ground. By spring the young plants with roots, crown eyes and "handles," will be ready for transplanting to permanent locations.

Serpentine layering is particularly adapted to such vines as grape and clematis. In early spring long vigorous stems are taken down and undulated or arched so that occasional nodes are buried beneath the soil, the intervening ones and the tip being exposed. The lower nodes are nicked with a knife, pegged into place, and covered with soil. At the end of a year the stem is cut from the parent plant and the individual sections severed to leave an upper growing bud ahead of each root system. Transplanting can be done during the second year.

Stooling is a method of layering in which the parent plant is cut off just above the ground in spring. As new shoots develop their bases are, in successive stages, covered over with soil. These young shoots root into the soil and can be removed as rooted plants in autumn. Many stiff-wooded shrubs such as hydrangea and mock-orange can be handled by this system. Certain modifications of the method, known as mound stooling and trench layering, have particular application in the vegetative propagation of apple and quince understocks.

Air layering is a special form in which the layered part is not in the ground but is an upright shoot, wounded or ringed just below a node. The roots are struck in a marcot box or split pot containing peaty soil, or in moist sphagnum moss bound around the wounded part. When sufficient roots have formed, the shoot is cut from the parent plant and potted. The atmosphere should be moist at all times and careful watering of the new plant is necessary until it becomes well established. Air layering is particularly useful for lowering the heads of "leggy" or scraggly specimens of rubber plants, crotons or other tall foliage subjects.

Cutting propagation differs from layerage in the fact that the part is severed before roots are formed. Cuttings, therefore, are parts of plants inserted in sand, soil or water with the intention that they shall produce roots and make new plants. They are of various kinds. They may be classified, with reference to the age of the wood or tissue, into two classes: those made from perfectly hard or dormant wood (taken from the winter twigs of trees and bushes), and those from more or less immature or growing "wood." They may be classified again in respect to the part of the plant from which they are taken, as root-cuttings, tuber-cuttings (as the ordinary "seed" planted for potatoes), stem-cuttings and leaf-cuttings.

Dormant stem-cuttings are employed with grapes, willows, poplars, privets, spireas and many other kinds of easily rooting trees and shrubs. Such cuttings are ordinarily taken in fall or winter, but cut into the proper lengths and then buried in sand or moss where they do not freeze, that the lower end may heal over or callous. In spring these cuttings are set in the ground, preferably in a rather sandy and well-drained place. Usually, hardwood cuttings are made with two to four joints or buds, and when they are planted only the upper bud projects above the ground. They may be planted erect, or somewhat slanting. That the cutting may reach down to moist earth, it is desirable that it should not be less than 6 inches long; and it is sometimes better if it is 8 to 12 inches. If the wood is short-jointed, there may be several buds on a cutting of this length; and to prevent too many shoots from arising from these buds, the lowermost buds are often cut out. Roots start readily if the lower buds are removed, since the buds grow into shoots and not into roots. Cuttings of currants, grapes, honeysuckles, and the like may be set in rows far enough apart to admit of easy tillage either with horse or hand tools, and the cuttings may be placed 3 to 8 inches apart in the row. After the cuttings have grown for one season, the plants are usually transplanted and given more room for the second year's growth, after which they are ready to be set in permanent plantations. In some cases, the plants are set in the field at the end of the first year; but two-year plants are stronger and usually preferable. Dormant cuttings are shown in Figs. 12 and 13, ready for setting in spring.

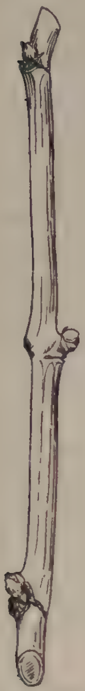
Fig. 12. Cutting of grape, made of the just-ripened cane.

Softwood or greenwood cuttings are made from the young shoots of coleus, geranium, fuchsia and many other greenhouse, house, and outdoor perennial plants. They are rooted under cover, in a greenhouse, coldframe or dwelling house. The shoots should be mature enough to break when bent sharply. When the wood is so soft that it will bend and not break, it is too immature, in most plants, for the making of good cuttings. Softwood cuttings are usually 3 to 5 inches long and bear two or three joints or nodes. If there are two nodes, the lower leaves are removed and the upper ones cut in two, so that they do not present their entire surface to the air and thereby lose, by evaporation, an excessive amount of moisture. If the cutting bears only one node, the lower end is usually cut just above the next lowest node. In either case the cuttings are inserted to a depth of 1 to 1½ inches in a rooting medium composed of well-drained sand. Mixtures of sand and peat moss are used for rooting certain plants while water is satisfactory for very easy varieties such as English ivy; but one should avoid ordinary soil or any material that holds too much moisture and becomes muddy and sour. The bed is kept uniformly moist throughout its depth and the cuttings shaded until they begin to emit roots. Occasional ventilation is necessary to prevent the air from becoming too close and to minimize the danger of damping-off or other disease attack. A gentle bottom heat of 65–75° F., provided by fermenting manure, electrical resistance cable, or other means will increase the speed of rooting. Figs. 14, 15, 16 illustrate three types of softwood cuttings.

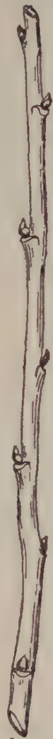
Fig. 13. Hardwood cutting, made from ripened cane of currant.

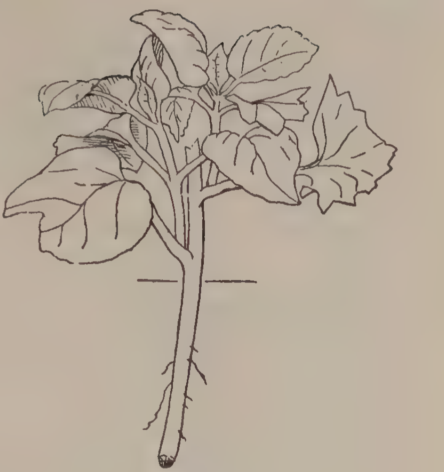
Fig. 14. A softwood cutting; it is set in earth up to the horizontal line.

Half-ripewood cuttings are made in late June and July from the ripening young shoots of various types of trees and shrubs. They represent a stage between the hardwood dormant cutting and the softwood green cutting in which the shoots are green and in leaf but becoming woody. They are illustrated in Figs. 17 and 18. Since a true distinction is often difficult to make between "softwood" and "half-ripewood" cuttings, there is a growing tendency to classify all leafy summer cuttings under the simple term

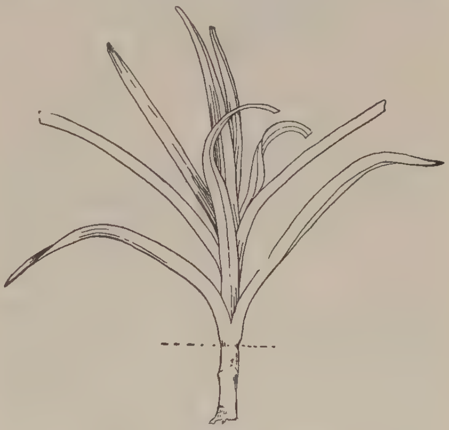
Fig. 15. Carnation cutting.

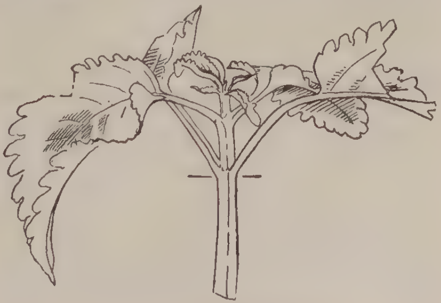
Fig. 16. Coleus cutting.

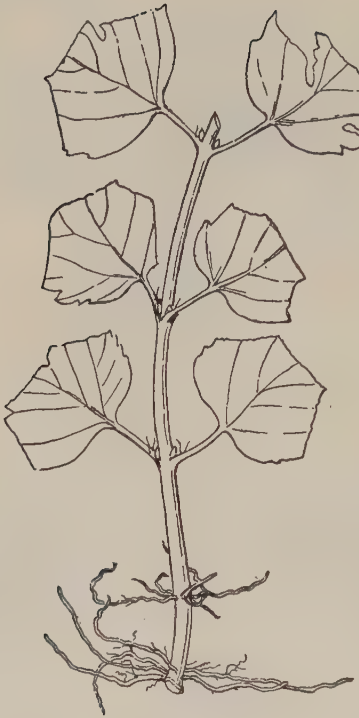

FIG. 17. Half-ripewood cutting of viburnum.

"softwoods" regardless of the type of plant or, within limits, the degree of maturity of the cutting involved. As designated here, however, three or more nodes are comprised in the half-ripewood cutting. The leaf surface is somewhat reduced; it is inserted in sand or sand and peat moss in a frame or propagating house, and given care similar to that accorded the ordinary soft or greenwood cutting. Fig. 18 is a thuja or arbor-vitæ cutting. Evergreens of this kind can be rooted in hotbeds in summer or in the greenhouse during fall and early winter. Later in the year such cuttings become practically true hardwoods inasmuch as the wood is ripened and the leaves are persistent.

Synthetic growth substances such as indolebutyric or naphthalene-acetic acid have come into use in recent years for the encouragement of earlier rooting or the production of heavier root systems by soft- or half-ripewood cuttings. These effects are secured with many of the easily rooting plants as well as with certain more difficult ones such as flowering dogwood, *Viburnum Carlesii* and hemlock. The treatment is effected by soaking the cuttings for a few hours in a liquid solution of one of these acids or by dipping their bases in a preparation of the acid in powder form before inserting them in the rooting medium. The acid powders are easier to use than the liquids and usually as effective.

Rooted softwood cuttings are commonly grown in pots until ready for transplanting to their permanent quarters. Half-ripewood cuttings may be either potted or planted in prepared soil outdoors for growing into size.

Root-cuttings are employed for blackberries, raspberries, perennial phlox, anchusa and certain other woody and herbaceous plants. With trees and shrubs they are usually made of roots from the size of a lead pencil to a little finger, cut into 3- to 5- inch lengths. Such cuttings are stored as are hardwood stem-cuttings and allowed to callous. In spring they are planted in a horizontal or inclined position in moist sandy soil and covered to a depth of 1 or 2 inches. Root-cuttings of herbaceous perennials, about 2 inches long, may be directly potted in the greenhouse in fall or planted in the greenhouse bench or in outdoor coldframes. They will be of size for transplanting at the end of the first year.

Leaf-cuttings are often employed for the fancy-leaved begonias, gloxinias and a few other plants. The young plant usually arises most readily from the leaf-stalk or petiole. The leaf, therefore, is inserted in the rooting medium much as is a softwood cutting. Begonia leaves, however, develop young plants from the main veins, if these veins or ribs are cut. For this to occur, well grown and firm begonia leaves, with the main veins cut, are placed upon moist sand and weighted down with pebbles.

The leaf-bud cutting is a variation which has acquired increasing usage in recent years. It consists not only of leaf-blade and petiole but of these with axillary bud and a portion of the stem attached. It has been very successful for the propagation of blackberries, is now being used for camellias, hollies, hybrid rhododendrons and various other plants. With such subjects it possesses the advantage of easier rooting than

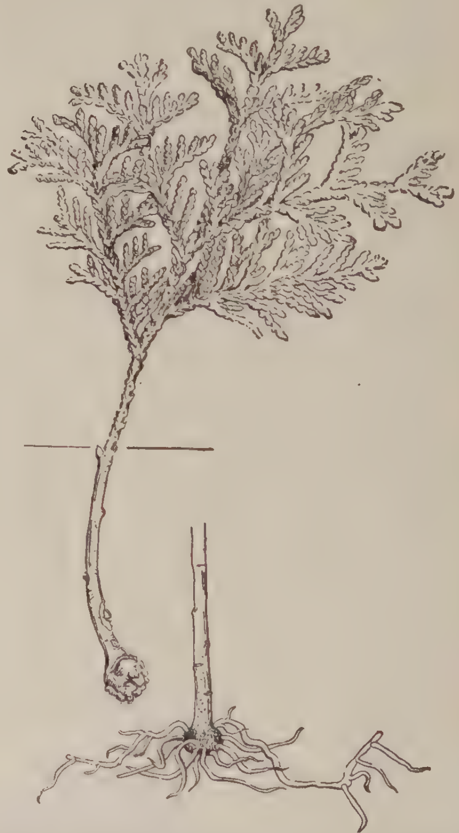

FIG. 18. Cutting of arbor-vitæ. The full cutting shows the formation of callus at base; the detail, later, has the roots well formed.

the stem-cutting and a more certain ability to produce shoot growth than the simple leaf-cutting. Maturing young leaves are used as cuttings in midsummer. Leaf-bud cuttings of rhododendrons, after potting, must be maintained at a relatively high temperature for a few weeks in order to secure rapid shoot growth before winter.

Plants may be propagated by means of cuttings or cions that are inserted in another plant rather than in soil. The practice is discussed under the article *Graftage*.

PROPHET-FLOWER: *Arnebia echioides.*

PROSARTES: *Disporum.*

PROSÒPIS. *Leguminosæ.* Trees or shrubs with 2-pinnate lvs., the lfts. usually small and numerous, greenish-yellow fls. in axillary spikes, and straight or sickle-shaped pods; the first species is of economic importance in arid regions, for forage and as a honey plant.

glandulòsa (*P. juliflora* var. *glandulosa*). Mesquite. Much branched shrub to 9 ft. or sometimes small tree to 20 ft. high, with axillary spines: spikes to 3½ in. long: pods to 8 in. long. Tex., N. Mex., S. Calif., characteristic of the region.

pubéscens (*Strombocarpa odorata* and *pubescens*). Screw Bean. Tornillo. Spreading shrub to 15 ft. or small tree to 35 ft., with axillary spines: fls. greenish, in spikes to 3 in. long: pods to 1½ in. long. Tex., Utah, Calif.

Stephanià na. Low tree, spiny: spikes about 3 in. long: pods to 1 in. long, black. S. W. Asia.

PROSTANTHÈRA. *Labiatæ.* Shrubs of Australia with opposite lvs. and white or red 2-lipped fls.; grown out-of-doors in S. Calif. Propagated by cuttings of young wood.

lasiánthos. Shrub or small tree: lvs. oblong-lanceolate, to 3 in. long, pale or glaucous beneath, margins often recurved: fls. tinged pink or blue, ½ in. long, in terminal racemes.

nívea. To 6 ft.: lvs. linear, to 1½ in. long, entire: fls. white or tinged with blue, ¾ in. across, axillary, forming leafy racemes.

rotundifòlia. To 7 ft.: lvs. broad-ovate, to ½ in. long, nearly entire: fls. blue or purple, about ½ in. long, in terminal racemes.

Sièberi. Tall shrub: lvs. ovate-lanceolate or oblong, to 1 in. long, deeply toothed: fls. blue or purple, ⅓ in. across, in terminal racemes.

PRÒTEA. *Proteaceæ.* Trees, shrubs or stemless perennials, mostly from the Cape region of S. Afr.: lvs. alternate, entire, leathery: fls. in many-fld. usually sessile solitary heads inclosed in an involucre of imbricated bracts: fr. a densely bearded nut.

compácta. Shrub: lvs. imbricated, to 4¼ in. long and 1½ in. wide: heads terminal, 4 in. long inner bracts pink to carmine.

grándiceps. Shrub to 5 ft.: lvs. elliptical, to 5 in. long, apex obtuse, base broad and somewhat cordate, glaucous usually with reddish margins, coriaceous and strongly veined, sessile: heads terminal, to 4½ in. long and 6 in. across, inner bracts red to purplish with rounded tips, beard white, orange, purple or black.

mellífera. Shrub to 8 ft.: lvs. to 3½ in. long and ⅓ in. wide: heads terminal, 5 in. long, bracts sticky, dark red or greenish-white with pink tips and margins.

obtusifòlia. Shrub: lvs. to 4¾ in. long and 1½ in. wide, obtuse or emarginate: heads terminal, 3¾ in. long, bracts ciliate.

scolymocéphala. Shrub to 3 ft.: lvs. to 2½ in. long and ⅙ in. wide: heads terminal, to 1 in. long, bracts pale green.

Sùsanniæ. Shrub: lvs. to 5 in. long and ¾ in. wide: heads terminal, 3¾ in. long, bracts pubescent.

PROTEÀCEÆ. Protea Family. South hemisphere trees and shrubs, sometimes herbs, abundant in Australia and S. Afr.: lvs. usually alternate: fls. bisexual or unisexual, with 4-parted perianth, 4 stamens, and superior 1-celled ovary, borne in racemes, clusters or bracteate heads: fr. a nut, drupe or caps. A few genera yield edible nuts and dyes and the following are grown for ornament in warmer parts of the country, particularly in Calif.: Banksia, Dryandra, Embothrium, Gevuina, Grevillea, Hakea, Hicksbeachia, Isopogon, Knightia, Lambertia, Leucadendron, Leucospermum, Lomatia, Macadamia, Persoonia, Petrophila, Protea, Roupala, Stenocarpus, Telopea.

PRUINOSE: covered with a bloom, like a plum or a cabbage leaf.

PRUNE. Any variety of Domestica plum (*Prunus domestica*) with firm meaty flesh, and which readily makes dried fruit. Some of the prunes are commercially grown in the East, but they are sold in the green state as are other plums; and they are adapted to all the uses of other plums. Prunes are cultivated like other plums. Fruits for drying are allowed to fall from the tree, then carefully gathered. They are dipped in lye to prevent fermentation and to hasten the drying, often being rinsed thereafter. They may then be dried in kilns, or in warm sunny regions like California on trays in the open air. In this country the product is raised and prepared on the Pacific coast. See *Plum*.

PRUNÉLLA (*Brunella*). *Labiatæ.* More or less weedy low-growing per. herbs, with purple or violet fls. in dense bracted heads or spikes; useful for the rock-garden or slightly shady parts of the border. They grow readily in common conditions.

atropurpùrea: a hort. form with bronzy lvs. and purple fls.

grandiflòra. To 1 ft.: lvs. ovate, toothed or entire: fls. purple, 1 in. long. June–July. Eu. Color forms are vars. **álba, carmínea, ròsea,** and **rùbra.**

hastæfòlia (*P. pyrenaica*). To 1½ ft., soft-pubescent: lvs. oval-hastate, 1 in. long, toothed: fls. blue-violet, 1 in. long. June–Sept. Spain, Portugal.

incìsa: *P. vulgaris.*

laciniàta: *P. vulgaris* var.

pyrenàica: *P. hastæfolia.*

vulgàris (*P. incisa*). Self-Heal. Heal-All. To 2 ft., sts. often procumbent: lvs. ovate to oblong-lanceolate, to 4 in. long, entire or toothed: fls. purple or violet, rarely white, to ½ in. long. May–Oct. Eu., Asia; nat. in N. Amer. Var. **laciniàta** has cut lvs.

Webbiàna: hort. name for a floriferous plant with bright purple fls.; botanical position uncertain.; some of the material so listed appears to be *P. grandiflora*.

PRUNING. All woody plants, and practically all others, are pruned by nature if not by man. Branches arise from buds, and yet there are any number more buds on a tree or bush than can grow full-size branches. A large part of the twiglets die and fall, probably having contributed to the welfare of the plant in their short life. The trunk of a tree has shed perhaps hundreds of twigs in its course from seedling to sapling and maturity, otherwise it would not be a smooth continuous bole. Twigs in disadvantaged positions, as on the inside and under side, fail and fall, as the droppings on the ground testify. Eventually the full-formed characteristic plant is produced; its form and character constitute its charm, and this charm should be retained.

The pruning of ornamental plantings, therefore, has for its object the maintenance of the plant in its normal, natural condition. It may be corrected, if need be, by removing superfluous, injured and wayward growths and by keeping it within bounds; and broken, diseased and wounded places on trees should be treated and the head so directed from the first as to avoid dangerous crotches and to make it shapely. Beyond all this, the plant should be left largely alone unless, for some special reason, it is desired to trim it into a formal shape; and in this case the work should be in the hands of a trained person and not a tree butcher or a person who happens to be possessed of pruning-shears. As to trees, the knowledge of insects and diseases, and of the physiological processes, now requires educated and trained men, and trees become more valuable as property values rise and as men and women become more sensitive to their surroundings.

When it is desired to grow a product of extra size and excellence, pruning must be undertaken to reduce competition between numbers, whether the product is roses or peaches. The gardener prunes his chrysanthemums for the production of extra-large blooms, and his greenhouse tomatoes for first-class fruit. No vineyardist expects an acceptable crop of fruit without pruning, nor any grower of blackberries and raspberries without at least removing the spent canes. Anybody can cut off limbs and make a great display with saws and pruning-shears, but real pruning requires discrimination and intelligent experience. Pruning is a process of educating the plant for the purpose of correcting its faults and developing its most desirable attributes.

Pruning has two objects: to trim the plant or make it assume a designed shape; to render it more vigorous or more fruitful, or to make other changes in its character. These objectives are well illustrated in the pruning of ornamental shrubs. If one wants the shrubs sheared into formal shape, the shearing may be undertaken at almost any season; in fact, it is better to practice it two or three times each year, to keep the plants attractive and neat. If only once, it is well to perform it early in the season so that new growths may quickly arise and cover whatever damage may be wrought. If, however, the desire is to obtain more flowers, the case is very different. Some shrubs and trees bear their flowers on the wood of the preceding year. Such, for example, are the early-flowering shrubs as lilacs and snowballs. The flower-buds are made the previous year. In this case, pruning in winter cuts off the flower-buds. The proper time for pruning them, therefore, is just after the flowers have passed. The flower-buds form later in the season for the production of flowers the following spring. Other shrubs, however (particularly those that blossom late in the season), bear on wood of the current year's growth. Some kinds of clematis blossom in late summer and fall on the wood of the season. Roses present a similar case. The greater the quantity of strong wood in any season, therefore, the greater the bloom in that season. With such shrubs, it is well to prune in winter or early spring, and rather heavily. The abundance of new shoots may be expected to bear flowers later in the season. Following are shrubs which, for best results in flower-bearing, may be pruned when dormant (in winter): camellia, Jackmanii type of clematis, cornus, hibiscus (shrubby), hydrangea, many loniceras or honeysuckles, philadelphus or mock-orange, some spireas. Shrubs that may be pruned when in leaf (after blooming): lilac, deutzia, weigelas, exochorda, spring-flowering loniceras, tree peony, flowering almond, some spireas and viburnums, wisteria. Fig. 19 shows a plant form that is likely to be ruined by persons who shear bushes.

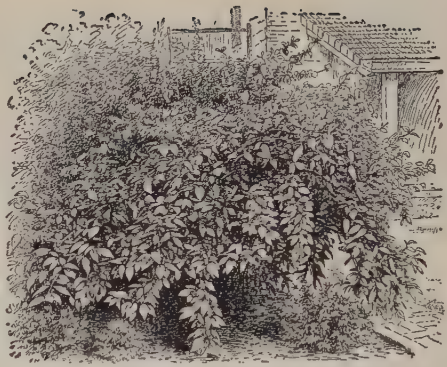

Fig. 19. Bush in its natural attractive form.

Fruit-trees, particularly apples, during the first years after planting, are pruned to space the limbs and build a strong framework. Important considerations are: (1) spacing the limbs vertically along the main trunk so that only one is inserted on the trunk at any one level; (2) avoiding the formation of crotches in which the two arms are of equal size; the main trunk should be of greater diameter than any branch arising from it; (3) choosing for permanent limbs only those that make a wide angle with the trunk. Fig. 20 shows a properly formed system of scaffold branches. Later pruning may be to stimulate the formation of vigorous fruiting wood, to facilitate spraying and picking and to keep the trees from becoming unmanageably tall. Peaches are given rather heavy detailed pruning for the purpose of thinning the crop. Annual pruning is essential for peaches and grapes. Apples and other temperate zone fruits may be pruned every two years. Citrus and some subtropical

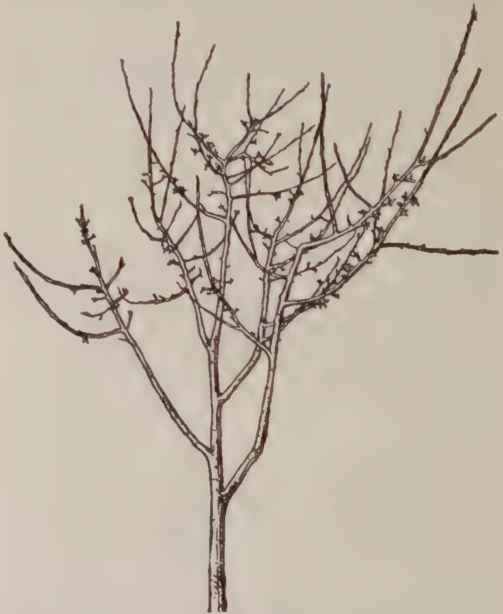

Fig. 20. A properly formed system of scaffold branches.

fruits need very little pruning of any kind. Heavy pruning is rarely justified except in neglected orchards where the growth is much too thick. Excessive pruning of fruit-trees may result in considerable reduction of crop. Pruning should be so managed that the tops of the trees will be open, that no two limbs interfere with each other, that the fruit will not be so abundant as to overload the tree. Before one can prune a fruit-tree intelligently one must know its fruit-bearing habit and be able to distinguish fruit-buds and flower-buds.

The wound made by pruning heals by being covered with callus tissue, which grows out from the cambium region and rolls over the face of the exposure. The hard wood itself never heals; that is, the cells do not have the power of making new cells; the old wood is covered up, or hermetically sealed as a cap is put on a fruit-jar, as indicated in Fig. 21. It is evident, therefore, that no kind of dressing will hasten the healing of the wound. The merit of a dressing is to keep the cut wood sound and healthy until the callus naturally covers it over. A good dressing is thick linseed-oil paint, but special kinds are on the market. Water-soluble asphalt emulsions are among the best. A dressing should be adhesive and enduring, and have antiseptic properties. Small wounds on sound limbs or trunks are usually not dressed in orchard pruning.

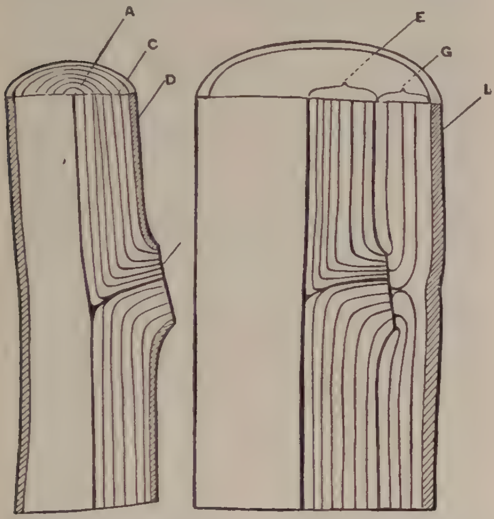

Fig. 21. Healing of pruning wound. Left, pruning wound on side of trunk showing annual growth rings. A, pith, C, wood, D, bark. Right, the same wound healed over. E, wood formed prior to cut, G, annual layers of wood formed after cut, L, bark. The cambium is between the bark and the wood.

The time or season for pruning, so far as the wound is concerned, is ordinarily in spring just as growth starts; but the season also influences fruit-bearing and wood-making, and these questions should be considered. Those wounds heal best that are on strong main limbs, where there is a full flow of nutritious sap. The limb should be cut off so that the wound is approximately parallel with the trunk on which it sits, and close to it. With many trees there is an enlarged shoulder at the base of each limb. Correct practice is to start the cut close to the trunk on the upper side of the branch and slant the saw slightly outward (Fig. 22). Stubs projecting beyond this shoulder will not heal properly. One has only to observe the trunks of trees as one passes, or the knots in fire-wood, to understand the decay and damage that result from long stubs, whether left by the pruner or by storms, for knot-holes are only decayed branches. The injury may invade the trunk far beyond the knot-hole.

It is generally best to prune hardy orchard trees late in winter or early in spring, but much depends on climate and also on the extent of the work and available labor supply. It is ordinarily better, however, in the North, to leave peaches and other tender fruits until after the buds have swollen, or even after the flowers have fallen, that one may determine how much they have been injured by the winter. Grape vines should be pruned in winter or preferably not later (in the North) than the first of March. If pruned later than this, they may bleed. Such loss of sap, however, is of little importance and should not prevent late pruning if earlier pruning has been impossible. These remarks may be made to apply to other woody plants as well as to fruit-trees.

Tree surgery, or the treating of wounds, depredations and damages, is a different practice from pruning although pruning may be involved in it. Special knowledge and equipment are required for it.

Pruning and trimming should be contrasted although they are ordinarily confounded. Trimming is an affair of the shaping of plants and not to the thinning of them, or to training for wood, fruit or other special object. Trimming is mostly employed on hedges. It is also practiced to keep evergreens in shape. Many ornamental plants are also trimmed into various forms, although it is a question whether such practice is often desirable. Fruit-trees should be pruned, as a rule, rather than trimmed: they should be allowed to take their natural form, the pruner taking out

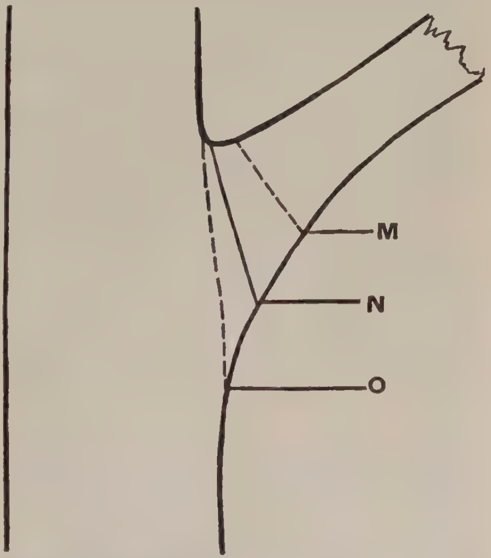

Fig. 22. Position of cut in removing branch. N, correct line of cut for quick healing, M, too far out, a stub is left, O, too close, the wound is larger than necessary.

the superfluous and unnecessary wood and keeping them within manageable bounds.

Training is still another practice. It directs the parts, often placing them on trellises or walls. The plant must first be pruned, and the nature of the pruning may be modified by the form of training. If grapes are to be trained on the Kniffin system, pruning is one thing; if on the horizontal-arm system it is quite another thing.

PRÙNUS. The Stone-Fruits. *Rosaceæ.* Orchard, ornamental and interesting deciduous and evergreen trees and bushes, mostly of the north temp. zone, of about 200 species, with alternate and prevailingly simple lvs.: fls. normally bisexual, white or pink, solitary or in clusters and often preceding the foliage; stamens 20 or more; pistil single, inside the calyx-cup: fr. a drupe, mostly edible, with a single pit or stone.

For Hortus Second it is best to keep the genus Prunus intact, to include the plums, apricots, peaches, cherries, and cherry-laurels. The cherry species fall into several groups, of which three may be mentioned: the umbellate, in which the flowers are in small umbel-like clusters, as in the orchard kinds, although in some cases they may be only 1, 2 or 3; the racemose cherries, with the flowers in distinctly elongated clusters or racemes, as the choke-cherry; the cherry-laurels, with flowers racemose and leaves persistent (evergreen).

All the prunus plants are tractable in cultivation. Most of the kinds are hardy in the northern parts of the country. They are not particular as to soil. Usually they are propagatable directly from seeds sown in autumn or stratified until spring. Named varieties are started from firm-wood cuttings under glass or are budded on closely related stock, commonly the latter. The usual stocks are common plum, myrobalan plum, peach, cherry. Note the statements under some of the species in this account, and consult *Almond, Apricot, Cherry Peach, Plum.*

ácida: *P. Cerasus* var. *caproniana.*

æquinoctiàlis: form of *P. subhirtella* var. *pendula.*

alabaménsis. Racemose cherry like *P. serotina* but a smaller tree, the lvs. underneath as well as petioles and rachis of raceme tomentose or pubescent, lvs. relatively broader. Ala.

alleghaniénsis. Plum: shrub or small tree: lvs. lance-ovate to narrow-obovate, long-pointed, serrate, becoming glabrous: fls. about ½ in. across, white turning pink, calyx somewhat pubescent outside: fr. about ½ in. diam., dark purple and glaucous. Conn. to Pa.

americàna. Small native plum tree 20–30 ft. or much less: lvs. obovate or oblong-obovate and acuminate, dull, sharp-serrate, petiole usually glandless: fls. about 1 in. across, calyx-lobes not glandular: fr. about ¾ in. diam., but in some strains larger, yellow or red, stone swollen. New England to Man., west and south.—Blackhawk, Hawkeye, DeSoto and other plums belong here.

Amýgdalus (*P. communis. Amygdalus communis*). Almond. Glabrous tree to 25 ft.: lvs. oblong-lanceolate and acuminate, closely serrate, somewhat shining above: fls. mostly before lvs., 1½ in. or less across, pink: fr. oblong and flattened, 1½ in. or more long, with dry inedible flesh, varying in thickness of stone and edibleness of kernel. Probably W. Asia.—There are double-fld. forms in different tints, variegated-lvd. and pendulous., with varietal names.

angustifòlia. Chickasaw Plum. Small twiggy glabrous tree or a bush: lvs. lanceolate, standing trough-like, shining, closely fine-serrate: fls. ⅓ in. across, white: fr. about ½ in. diam., red or yellow. Del., west and south to Fla. and Tex.—Produces Caddo Chief. Var. **vàrians.** More robust and fr. larger: stone pointed at apex. Var. **Wátsonii.** Sand Plum of Kans. southwest. Bush, with very zigzag twigs.

apétala (*P. ceraseidos*). Small tree or shrub: lvs. oblong to obovate, to 2 in. long, acuminate, sharp-serrate, pubescent: fls. with small petals soon perishing, the calyx purple, with the lvs. Japan.

Armenìaca. Apricot. Small tree with ovate to round-ovate, often cordate, abruptly pointed, closely serrate lvs. pubescent on veins underneath: fls. 1 in. or less across, pinkish or white, solitary in advance of lvs.: fr. large, becoming nearly smooth with very short st.; stone mostly smooth. Perhaps W. Asia. Var. **mandshùrica.** Lvs. more cuspidate, sharply serrate: fr. with st. about ¼ in. long. Var. **sibírica.** Lvs. narrower and smaller, long-acuminate: fr. small and scarcely edible, splitting. For plumcot, see *P. salicina.*

Arnoldìana: see *P. triloba.*

àvium. Sweet Cherry. Large tree with central leader and birch-like bark: lvs. oblong-ovate to -obovate, large, soft, doubly serrate: fls. about 1 in. across, with the lvs. in clusters, white: fr. globular or oblong, long-stemmed. Eurasia.—Often spontaneous in the form known as Mazzard, the seedlings used as stocks. There are double-fld., cut-lvd. and drooping forms. Var. **actiàna** (var. *sylvestris*) is the wild or run-wild form bearing very small sweet dark colored fr. Var. **durácina.** Bigarreau or Hard-fleshed Cherries. Var. **Julìana,** Heart Cherries. Var. **regàlis** (*P. effusa*), Duke Cherries, with narrow growth and sour flesh, thought to be hybrid with *P. Cerasus.*

azórica: *P. lusitanica.*

Bésseyi. Sand Cherry. Glabrous little bush, diffuse or nearly prostrate: lvs. elliptic to oval, finely serrate: fls. about ⅓ in. across, white: fr. about ½ in. diam. or more, black, edible. Plains, Man. to Kans. and Colo.—Sometimes employed as stock for hardiness and for dwarfing.

Blireàna: see *P. cerasifera.*

brigantìna (*P. brigantiaca*). Apricot: small tree or shrub: lvs. ovate, short-acuminate, sharply serrate, pubescent underneath: fls. short-stalked, white or pink, about ½ in. or more across: fr. small, yellow, smooth, subacid; seed oily and fragrant. S. France.

Buergerìana. Racemose cherry, 20–30 ft.: lvs. elliptic to oblong and acuminate, serrulate, glabrous except in axils underneath: fls. about ¼ in. across: fr. small, black. Japan, Korea; hardy N.

campanulàta. Handsome umbellate cherry to 25 ft., young growth glabrous: lvs. oblong-ovate, sharply serrate, acuminate, nearly or quite glabrous underneath: fls. with the lvs. or in advance of them, long-pedicelled, calyx and corolla dark deep rose-red: fr. ovoid, about ½ in. long, red. S. Japan; thrives in S. Calif.

canéscens. Shrubby cherry with pubescent branchlets and lvs., the latter ovate or longer, short-acuminate, serrate: fls. 2–5 together, nearly ½ in. across, pink: fr. about ½ in. diam., red. China; hardy N.

Capùli (*P. serotina* var. *salicifolia. P. Capollin*). Capollin. Lvs. narrow and long-acuminate: racemes stout, closely flowered: fr. large, sometimes 1 in. across. Trop. Amer.; grown for fruit and ornament.

caroliniàna (*Laurocerasus caroliniana*). Native evergreen cherry-laurel to 40 ft. or more: lvs. oblong-lanceolate and acuminate, nearly or quite entire: fls. small, cream-white, in racemes: fr. ½ in. or less long, shining black. N. C. to Tex., mostly near coast.—Known as Wild-Orange and Mock-Orange.

ceraseìdos: *P. apetala.*

cerasífera (*P. myrobalana*). Cherry or Myrobalan Plum. Slender small tree glabrous or essentially so at maturity: lvs. small and thin, 2 in. long, short-ovate, finely serrate: fls. 1 in. or less across, white, single or 2 or 3 together, before lvs.: fr. mostly 1 in. or less diam., globular, red or yellow, sweet, very juicy. S. W. Asia.—Much used as stock. Runs into more or less weeping and leaf-margined forms. Var. **atropurpùrea** (var. *Pissardii*) is purple-lvd.; several derivatives of it are listed, as *P. Blireana* (supposed to be hybridized with *P. Mume*), *P. Hessei, P. Moseri, P. Veitchii.* Var. **divaricàta** (*P. divaricata*) is more bush-like, branches very slender, lvs. rounded at base, fls. smaller and coming with the lvs. Var. **Woòdii** (*P. Spaethii*), lvs. dark purple, holding color all summer. Marianna and similar plums are apparently offshoots of *P. cerasifera,* perhaps by hybridization.

cerasoìdes (*P. Puddum*). Like *P. campanulata* but lvs. broad-oval and very sharply toothed: fr. pointed. Himalayas.

Cérasus. Sour Cherry. Small round-topped or much spreading variable tree, suckering from root: lvs. short-ovate to somewhat obovate, stiffish, abruptly short-pointed, doubly serrate: fls. about 1 in. across, white to pink, a little in advance of lvs. or with them, sometimes double: fr. ¾ in. or so diam., red, sour. Eurasia; sometimes spontaneous.—There are double- and pink-fld. forms. Much cult. as an orchard fr. in two forms, var. **austèra** or Morello with colored juice and var. **caproniàna** (*P. acida*) or Amarelle with light or uncolored juice. Var. **Rhéxii** has double white fls. Var. **semperflòrens,** Everblooming or All Saints Cherry, blooms on shoots of the season, in summer.

Chamæcérasus: *P. fruticosa.*

cistèna. Purpleleaf Sand Cherry. Hybrid between *P. pumila* and *P. cerasifera* var. *atropurpurea:* lvs., pedicels and calyx reddish.

Cocomílìa. Often bushy, with thorny branches: lvs. oval to obovate, sharp-serrate, tapering at base: fls. mostly in pairs, whitish, about ½ in. across: fr. about 1 in. or less diam., yellow. Italy.—Allied to *P. cerasifera.*

commùnis: *P. Amygdalus.*

concínna. Umbellate bush cherry, becoming nearly or quite glabrous in all parts: lvs. narrow, to 1 in. wide, with not more than 10 pairs of veins, finely serrate: fls. 1 in. or less across, 4 or fewer together, white, before the lvs.: fr. about ½ in. long, black. China.—Ornamental.

Conradìnæ. Umbellate cherry allied to *P. concinna*, tree to 25 ft., glabrous or nearly becoming so: lvs. 2 in. or so broad, with more than 10 pairs of veins: fls. 4 or fewer together, whitish or pinkish, nearly 1 in. across: fr. nearly ½ in. long, red. China.

cornùta. Like *P. Padus*, of which some writers consider it a var., but has lvs. rounded at base, reddish hairs in axils underneath, commonly pubescent racemes, calyx glabrous inside, and stone smooth. Himalayas.

cuneàta: *P. pumila* var. *susquehanæ*.

dasycárpa. Purple Apricot. Small tree like apricot, to 20 ft., branches purplish: lvs. plum-like, ovate to oval, to 2½ in. long, closely serrate, usually pubescent on veins underneath: fls. 1 in. or more across, white, before the lvs.: fr. 1½ in. diam., pubescent, dark purple, acid. Unknown wild; perhaps a hybrid with *P. cerasifera*.

Davidiàna. Peach-like, glabrous tree to 20 or 30 ft.: lvs. narrow and willow-like, finely serrate: fls. 1 in. or more across, white or light pink to red, very early and often taken by frost, sessile: fr. about 1 in. diam., pubescent, flesh dry. China; hardy N.—Has been used as a stock.

dehíscens: *P. tangutica*.

demíssa: *P. virginiana* var.

depréssa: *P. pumila* var.

Dielsiàna. Umbellate cherry, tree to 30 ft. or sometimes bushy, much like *P. Pseudocerasus:* fls. pink or white, before the lvs., 3–5 in an involucrate cluster, bracts fimbriate, calyx-lobes longer than the tube: fr. small, red. China.

divaricàta: *P. cerasifera* var.

doméstica. Common Plum. Small tree, with twigs more or less pubescent at least when young: lvs. ovate to obovate, rather thick, dull green, pubescent underneath: fls. 1 in. or less across, whitish, solitary or few together and mostly in advance of lvs.; blossoms sometimes double (var. *Plantieri*): fr. various, mostly oblong or ovoid. Eurasia; sometimes spontaneous. Var. **insitítia.** Damson, Bullace. Usually a more compact grower and young growth more pubescent: lvs. smaller: fr. much smaller, often in clusters.

Dúnbari. Hybrid between *P. maritima* and *P. americana:* lvs. larger than in the former and more sharply serrate, less pubescent: fr. larger, purple.

effùsa: *P. avium* var. *regalis*.

emarginàta. Allied to *P. pensylvanica* but a smaller tree or a shrub, lvs. obtuse or only acute and closely or indistinctly serrulate, often pubescent underneath: fr. about ⅓ in. diam., becoming black. N. Ariz. to B. C.

fruticòsa (*P. Chamæcerasus*). European Dwarf or Ground Cherry. Bush 3–4 ft., sometimes with pendulous branches, glabrous or becoming so: lvs. oval to oblanceolate or narrow-obovate, about 2 in. long, closely serrate: fls. ¾ in. across, white, with the young foliage: fr. about ⅓ in. across, red-purple. Eu., Siberia.—Sometimes worked on tall or standard stocks.

glàbra var. albiplèna: probably *P. glandulosa* var. *albiplena* is meant.

glandulòsa. One of the flowering almonds, but properly a cherry: shrub 3–5 ft.: lvs. oblong to ovate-oblong, broadest at about the middle or sides nearly parallel, not acuminate, apex blunt: fls. white to pink: fr. about ⅓ in. diam., red. Japan, China.—Common in cult., usually double as in var. **albiplèna.** Var. **ròsea** has pink fls. Var. **sinénsis** has double pink fls. and lanceolate or oblong-lanceolate lvs.

grácilis. Oklahoma Plum. Bush to 15 ft., with oval or ovate-elliptic lvs. slightly pubescent above and densely so underneath: fls. about ⅓ in. across, white, preceding the lvs.: fr. about ½ in. diam., reddish with thin bloom. W. Ark. to N. Tex.; hardy N.

Grayàna. Somewhat like *P. Padus*, but lvs. with setaceous teeth and long point, the petiole not glandular: tree to 30 ft.: fls. about ⅓ in. across, white, in racemes: fr. about ¼ in. diam., black. Japan; hardy N.

Héssei: see *P. cerasifera*.

hortulàna. Hortulan Plum. Tree to 30 ft., not forming thickets, glabrous or lightly pubescent on veins or under side of the obtusely serrate lvs. which are oblong-ovate to elliptic and long-acuminate: fls. preceding lvs., about ½ in. across, white: fr. 1 in. or less diam., red to yellow. Ky., Tenn. to Iowa and Okla.—Parent of Cumberland, Golden Beauty, Wayland and other orchard plums. Var. **Mìneri** has thicker and duller coarsely toothed lvs. and late firmer fr.; here belong Miner, Clinton and other plums.

hùmilis. Bush cherry to 4 or 5 ft.: lvs. 2 in. or less long, elliptic-ovate and somewhat acute, serrulate, glabrous: fls. appearing with lvs., solitary or in pairs, white to pinkish, ½ in. across: fr. ½ in. long, red. China; hardy N.

ilicifòlia. Islay. Evergreen glabrous shrub or tree to 30 ft.: lvs. 2 in. or less long, spiny-toothed and holly-like: fls. about ⅓ in. across, white, racemose: fr. ⅔ in. or less diam., dark red to nearly black. S. Calif.

incàna. Bush cherry, 3–6 ft.: lvs. small, variously oblong, obtuse or short-pointed, serrate, tomentose underneath: fls. with the lvs. or just in advance, ½ in. across, rose: fr. about ¼ in. diam., red. S. E. Eu. and W. Asia; hardy N.

incìsa. Small cherry tree or big bush: lvs. ovate to obovate and acuminate, double-serrate, pubescent both surfaces: fls. with the lvs., nodding, red and pink, short-pedicelled, less than ½ in. across: fr. about ¼ in. long, purple-black. Japan; hardy N.

injucúnda: *P. umbellata* var.

insitítia: *P. domestica* var.

integrifòlia: *P. Lyonii*.

Jácquemontii. One of the flowering almond or dwarf cherry kind, shrub-like, glabrous, to 10 or 12 ft.: lvs. elliptic to obovate, acute, serrate: fls. in advance of lvs., about ⅓–½ in. across, pink: fr. about ½ in. diam., red. Himalayas.

japónica. A dwarf flowering cherry, known as flowering almond, closely allied to *P. glandulosa* but less frequent in cult. and differing in ovate sharply serrate lvs. broadest below the middle: fls. about 1 in. across, blush or pink, usually double in cult.: fr. ⅓–½ in. diam., red. China.—Several races or forms are cult.

lanàta (*P. americana* var. *mollis*. *P. Palmeri*). Small round-headed tree occurring in thickets: lvs. obovate to nearly oblong, acuminate, pubescent underneath, petioles mostly without glands: fr. nearly globose, about 1 in. diam., red or yellow. Ill. and Iowa to Tex.

Lannesiàna: *P. serrulata* var.

Laurocérasus (*Laurocerasus officinalis*). Cherry-Laurel. Evergreen bush or small tree: lvs. oblong, remotely small-toothed, shining and thick: fls. about ⅓ in. across, white, very fragrant, in racemes not longer than the lvs.: fr. about ½ in. long, dark purple. S. E. Eu. to Persia.—Much planted in southern states and Calif. There are many leaf forms and others, as *angustifolia*, *Bertinii*, *caucasica*, *japonica*, *latifolia*, *magnoliæfolia*, *parvifolia*, *rotundifolia*, *schipkaensis*, *serbica*, *versaillensis*, *Zabeliana*.

lobulàta. Cherry, to 35 ft.: lvs. oblong to obovate, acuminate, sharply double-serrate, hairy underneath on veins: fls. preceding lvs., white: fr. about ⅓ in. diam., red. China.

lusitánica (*P. azorica*). Portugal-Laurel. Much like *P. Laurocerasus*, but tree larger, lvs. crenate-dentate and racemes surpassing the lvs. Portugal, Spain; planted far S. Leaf forms are *angustifolia*, *myrtifolia*, *variegata*.

Lỳonii (*P. integrifolia*). Islands Cherry. Evergreen bushy tree to 30 ft.: lvs. ovate to ovate-lanceolate, acute, margins entire or on young shoots denticulate: fls. about ¼ in. diam., white, in axillary racemes: fr. 1 in. or more diam., dark purple. Isls. of S. Calif., and planted in the region.—By some considered to be a form of *P. ilicifolia*.

Maàckii. Racemose cherry, to 50 ft., parts pubescent or becoming nearly glabrous: lvs. oblong to elliptic-ovate, acuminate, sharply glandular-serrate: fls. white, about ⅓ in. across: fr. about ¼ in. diam., black. Manchuria, Korea, China; hardy N.

Mahàleb. Mahaleb or St. Lucie Cherry. Green-twigged tree to 30 ft.: lvs. broad-ovate to orbicular, abruptly short-pointed, 2½ in. or less long, glabrous both sides except perhaps on midrib underneath: fls. ¾ in. or less across, in umbels, white and fragrant: fr. about ¼ in. long, black. Eu. and W. Asia.—Cult. for ornament and as stock for other cherries; sometimes escaped. A form has pendulous branches.

mandshùrica: *P. Armeniaca* var.

marítima. Beach Plum. Straggling bush or sometimes tree-like: lvs. 2 in. or less long, oval to obovate, obtuse or short-pointed, serrate, pubescent underneath: fls. about ½ in. across, white, preceding lvs.: fr. ¾ in. or less diam., red or yellow, edible. N. B. to Va., on or near coast.

Maximowíczii. Racemose cherry, tree to 50 ft.: lvs. obovate, double-toothed, acute, glabrous except perhaps on veins underneath: fls. about ¾ in. across, whitish, after the lvs.: fr. about ¼ in. diam., red to black. Manchuria, Korea, Japan; hardy far N.

melanocárpa: *P. virginiana* var.

mexicàna. Big-Tree Plum. Tree to 25 ft., not suckering: lvs. large, oblong to obovate, short-acuminate, sharp-serrate, pubescent usually both surfaces: fls. ¾ in. across, white, preceding lvs.: fr. 1 in. or more long, purplish-red and glaucous. Ky. and Tenn. to Okla. and Mex.; hardy N.

mìra. Peach-like, tree to 30 ft., glabrous except on midrib underneath: lvs. lanceolate and tapering, crenate-serrate: fls. about 1 in. across, 1 or 2 in a place, white, nearly sessile: fr. about 1 in. diam., tomentose, stone smooth. W. China; hardy in central states.

Mòseri: see *P. cerasifera.*

Mùme. Japanese Apricot. Differs from common apricot in bark greenish or gray, lvs. smaller and narrower and not cordate and long-pointed and often pubescent underneath, fr. smaller and stone mostly pitted. Japan; hardy N., particularly when worked on plum.—There are double-fld. and other forms, constituting the "flowering plums" of Japan.

Munsoniàna. Wild Goose Plum. Tree to 25 ft., suckering from roots and forming thickets: lvs. rather thin, oblong-lanceolate, often trough-like, glossy above, finely serrate, mostly slightly pubescent on veins underneath: fls. ½ in. or more across, white, commonly preceding lvs.: fr. about ¾ in. long, red or yellowish, slightly glaucous. Ky., Tenn., Kans., Tex.; hardy N. in vars. Newman, Robinson and others.

myrobalàna: *P. cerasifera.*

myrtifòlia (*P. sphærocarpa*). Myrtle-leaved Cherry-Laurel. Evergreen tree to 40 ft., glabrous: allied to *P. occidentalis* but lvs. such smaller (2–4 in. long), elliptic to ovate: fls. yellowish-white, ⅛ in. diam.: fr. subglobose, about ½ in. diam., black-purple. S. Fla., W. Indies, Mex. to Brazil.—Another *myrtifolia* is a form of *P. lusitanica.*

nàna: *P. tenella.*

nìgra (*P. americana* var. *nigra*). Lvs. commonly broader than in *P. americana* and obtusely or closely glandular-serrate, petiole with 2 glands: fls. larger, white changing to pink, calyx-lobes glandular-serrate: fr. often larger. N. B. far west and south to N. Y. and Wis.—Yields Cheney, Itaska and other orchard vars.

nikkoénsis: *P. nipponica.*

nippónica (*P. nikkoensis*). Umbellate cherry allied to *P. incisa*, but petioles glabrous rather than pubescent, pedicels longer (to 1 in.), fls. twice larger: bushy tree to 20 ft. with ovate long-acuminate lvs. and white or pale pink bloom. Japan; hardy N.

nucipérsica: *P. Persica* var. *Nectarina.*

occidentàlis (*Laurocerasus occidentalis*). West Indian Cherry-Laurel. Evergreen glabrous tree to 40 or 50 ft.: lvs. oblong or elliptic, 4–8 in. long, acuminate, entire: fls. white and fragrant, about ¼ in. long, in dense racemes shorter than the lvs.: fr. ellipsoid, about 1 in. long, purple. Jamaica and Cuba to St. Vincent.—The name *occidentalis* has been applied also to *P. Lyonii.*

orthosépala. Probable hybrid between *P. angustifolia* var. *Watsonii* and *P. americana:* shrub to 6 ft., with larger lvs., frs. and fls. than in *P. angustifolia.*

Pàdus (*Padus racemosa*). European Bird Cherry. Tree to 30 or 40 ft.: lvs. elliptic to obovate, short-acuminate, sharply serrate, glabrous except on veins underneath: fls. about ½ in. across, white, fragrant, appearing with full leafage on drooping or spreading racemes, calyx pubescent inside, petals twice longer than stamens: fr. about ¼ in. diam., black, stone sculptured. Eu. to Japan. Var. **commutàta.** Lvs. appearing early, with coarse serratures, green underneath. E. Asia.—Planted for ornament, sometimes in pendulous, red-fld., double-fld., spotted-lvd. and other forms.

Pálmeri: *P. lanata.*

pedunculàta. Bush of the Amygdalus section: lvs. elliptic to oblong, dentate: fls. pink, solitary: fr. ovoid, about ⅓ in. long, pubescent; stone smooth. Siberia.

pensylvánica. Wild Red Cherry. Small tree to 35 ft.: lvs. ovate or oblong-lanceolate, long-pointed, finely toothed, glabrous: fls. ½ in. across, in umbels, white: fr. ¼ in. across, red. Newf. to N. C., west to Colo.

Pérsica (*Amygdalus Persica. Persica vulgaris*). Peach. Small glabrous tree: lvs. long-lanceolate, finely serrate: fls. solitary in advance of foliage, sessile, 2 in. or less across, pink: fr. ⅓ in. diam., pubescent, stone pitted and wrinkled. China.—Cult. for edible fr. and also in ornamental forms as double-fld., purple-lvd., dwarf, pyramidal, pendulous with various Latin names. Sometimes spontaneous. Var. **compréssa** (var. *platycarpa*), Flat and Peen-to Peach, fr. flattened endwise. Var. **Nectarìna** (*P.* and var. *nucipersica*), Nectarine, fr. smooth.

pilosiúscula. Umbellate cherry, shrub or tree to 40 ft.: lvs. obovate to oblong, acuminate, serrate, pubescent on veins underneath: fls. with the lvs. or just preceding them, about ¾ in. across, pink: fr. about ⅓ in. long, red. China, hardy in parts of N.

Pissárdii: *P. cerasifera* var. *atropurpurea.*

plantierénsis, Plantièri: double-fld. form of *P. domestica.*

Pseudocérasus. Small cherry, to 25 ft., with much the look of *P. Cerasus:* lvs. ovate to broad-ovate, firm, more or less pointed, sharp-serrate, somewhat hairy on veins underneath: fls. just in advance of full foliage. 1 in. or less across, white and fragrant: fr. a very early red edible cherry ¾ in. or less diam. China.—Now intro. for experimental purposes.

pubígera. Like *P. Padus:* lvs. minutely serrulate: fls. smaller, the petals nearly as long as stamens; stone smooth. W. China.

Púddum: *P. cerasoides.*

pulchérrima: listed name.

pùmila. Sand Cherry. Decumbent at base when old but growths erect 3–5 ft., all parts glabrous: lvs. narrow-oblanceolate to oblong-lanceolate and mostly acuminate, 2–3 in. long, margins closely serrate toward apex, lighter underneath: fls. white, slender-pedicelled, mostly 2–3 together with the lvs., ½ in. or more across: fr. about ⅓ in. across, purple-black, stone subglobose. Sandy shores, Great Lakes. Var. **depréssa** (*P. depressa*). Prostrate dwarf cherry on beaches and shores, Que. to Mass. and Ont., probably not in general cult. but to be distinguished from *P. pumila:* lvs. less acuminate and thinner, more glaucous underneath: fr. small with ellipsoidal stone. Var. **susquehànæ** (*P. susquehanæ. P. cuneata*). Erect to 3 or 4 ft.: lvs. short, mostly short-obovate or spatulate to elliptic-ovate, toward apex bearing appressed teeth: fls. with the lvs., white, about ⅓ in. across: fr. about ¼ in. diam. Woods, hills and shallow bogs, Me. to Penna. and Man.

Réverchonii. Hog Plum. Shrub to 6 ft., forming thickets: lvs. ovate-lanceolate to lanceolate, acuminate, conduplicate, glandular-serrate, somewhat pubescent underneath: fls. with or before the lvs., white, about ⅓ in. across: fr. about ¾ in. diam., yellow to red. Okla., Tex.

Rhéxii: *P. Cerasus* var.

rùfa. Like *P. campanulata* but young parts densely reddish-tomentose, lvs. narrower and glandular-serrate. Himalayas.

sachalinénsis: *P. Sargentii.*

salícina (*P. triflora*). Japanese Plum. Small tree to 25 ft.: lvs. oblong-obovate or -ovate, pointed, usually shining above and not conspicuously rugose, closely serrate, mostly glabrous underneath: fls. ¾ in. or less across, mostly in advance of lvs., white: fr. various, yellow or bright red, often pointed. China.—Cult. in several orchard vars. Plumcot is apparently a hybrid between *P. salicina* and *P. Armeniaca.* Plum peach may be a hybrid with *P. Persica.*

Sárgentii (*P. serrulata* var. *sachalinensis*). Fls. 2–4 in sessile umbels: teeth on lvs. very sharp: fls. pink, very early. Japan.—Handsome and hardy tree growing to large size.

serícea. Racemose cherry, to 50 ft. or more: lvs. elliptic to obovate, pointed, silky underneath: fls. about ⅓ in. across: fr. ½ in. or more long, black. China.

serótina. Wild Black Cherry. Large forest tree: lvs. oblong to lanceolate to oval, acuminate, with appressed callous teeth, nearly or quite glabrous underneath: fls. white, about ¼ in. across, with the lvs., in racemes, fragrant: fr. ½ in. or less diam., purple-black. N. S. to Dak., Fla. and Tex.—Leaf and habit forms are in cult. Var. **salicifòlia:** see *P. Capuli.*

serrulàta. One of the Japanese flowering cherries (see *P. Sieboldii, P. subhirtella, P. yedoensis*). Tree to 60 ft. and more: lvs. ovate or narrower, long-acuminate, acutely or short-aristate serrate, somewhat glaucous underneath: fls. white but with many pink double forms, not fragrant, 1½ in. or less across, in clusters with fimbriate bracts, with or in advance of foliage: fr. size of pea, black. Japan, Korea, China. Var. **Lannesiàna** (*P. Lannesiana*). Teeth on lvs. long-aristate: fls. pink, fragrant. Var. **sachalinénsis** is *P. Sargentii.* Var. **spontanèa.** Considered to be an original form of the species: fls. white or pink, single.

sibírica: *P. Armeniaca* var.

Sièboldii. Small tree, like *P. serrulata* but branchlets and under side of lvs. soft-pubescent: fls. pink or white, single and double. Japan, but unknown wild.—Includes the plant known as *P. Watereri.*

Sìmonii. Apricot Plum. Narrow-headed glabrous tree to 25 ft.: lvs. narrow-obovate, dull, rather thick, trough-like, obtusely serrate: fls. nearly sessile, preceding lvs., white, about ¾ in. across: fr. 1–2 in. diam., flattened lengthwise, dull red, flesh yellow, with strong flavor. China.

sinénsis: applied to dwarf flowering almonds, particularly to *P. glandulosa.*

Spaèthii: *P. cerasifera* var. *Woodii.*

sphærocárpa: *P. myrtifolia.*

spinòsa. Sloe. Blackthorn. Thorny suckering bush, or tree to 10 or 12 ft.: lvs. many and small, obovate to ovate, obtuse, serrate, pubescent or glabrous underneath: fls. ¾ in. or less across, white, before the lvs.: fr. about ½ in. diam., blue to black, glaucous. Eu., W. Asia.—Planted for ornament; fls. sometimes double; sometimes purple-lvd.

Ssiòri. Racemose cherry, to 50 ft. or more: lvs. oblong to obovate, acuminate, aristate-serrate, nearly glabrous underneath: fls. white: fr. about ⅓ in. across, black. N. E. Asia; hardy N.

subcordàta. Pacific Plum. Tree to 25 ft., or sometimes shrubby: lvs. broad-ovate to orbicular, obtuse or nearly so, serrate, pubescent or becoming glabrous underneath: fls.

white to rose, ⅔ in. across, before lvs.: fr. 1 in. more or less diam., red or yellow, edible. Calif., Ore. Var. **Kélloggii,** Sisson Plum, lvs. not cordate and glabrous, fr. larger.

subhirtélla. Rosebud Cherry. Small tree to 25 or 30 ft., sometimes bushy: lvs. lanceolate to ovate, short-pointed, double-serrate, hairy on veins underneath: fls. in profusion, pink to nearly white, about ¾ in. across, before the lvs., petals notched: fr. about ⅓ in. diam., black. Japan; hardy N.; beautiful species. Var. **ascéndens.** Tall tree, not weeping: lvs. elliptic-oblong. Var. **autumnàlis.** Shrub or small tree bearing partly double fls. some of which may bloom in autumn. Var. **péndula** has crooked drooping branches.

sultàna. Apparent hybrids between *P. Simonii* and *P. salicina*, as Wickson.

susquehànæ: *P. pumila* var.

tangùtica (*P. dehiscens*). Glabrous bush of the dwarf almond group with more or less spiny branches: lvs. small and narrow, not much exceeding 1 in. long, finely crenate: fls. 1 in. across, solitary and sessile: fr. nearly 1 in. diam., very tomentose, splitting. China; hardy in some of the northern states.

tenélla (*P. nana*). Dwarf Russian Almond. Hardy bush to 5 ft., glabrous: lvs. stiffish and narrow, 3 in. or less long, obtuse or nearly so, serrate: fls. about ¾ in. across, with the lvs., pink to white: fr. about ¾ in. long, pubescent. Eurasia.—Sometimes grown for ornament. The name *P. nana* is applied by some writers to the choke-cherry (*P. virginiana*).

tomentòsa. Bush cherry or very small tree: lvs. broad-oval to -obovate, 2½ in. or less long, short-pointed or obtuse, serrate, tomentose underneath and on young growths: fls. nearly sessile, just before the lvs., ¾ in. across, usually tinted: fr. about ¾ in. diam., reddish, edible. China; hardy N. Var. **endótricha** has shorter lvs., fls. white and abundant.

trichóstyla: a form of *P. glandulosa.*

triflòra: *P. salicina.*

tríloba. One of the plants known as flowering almond: bush, but sometimes tree-like and 10 ft. or more: lvs. broad-ovate to obovate, sometimes 3-lobed on shoots, double-serrate, hairy both sides: fls. 1½ in. or less across, pink or white, before the lvs., usually double in cult.: fr. about ½ in. diam., red, pubescent. China.—Cult. mostly in double-fld. forms, worked on plum stocks. *P. Arnoldiana* is a hybrid between this species and *P. cerasifera:* differs from *P. triloba* in its white fls. that appear with the lvs. and on longer pedicels.

umbellàta. Plum, bush or small tree, the branchlets glabrous or becoming so: lvs. narrowly elliptic-acuminate, 1½–3 in. long, closely serrate, more or less pubescent underneath: fls. white, few together in advance of lvs.: fr. ½–¾ in. across, yellow to purple. S. C. to Fla. Var. **injucúnda** (*P. injucunda*), N. C. to Miss., has pubescent twigs and stone more pointed at either end.

Veìtchii: see *P. cerasifera*; also applied to a form of *P. serrulata.*

virginiàna. Choke-Cherry. Shrub, sometimes tree-like: lvs. elliptic to obovate, short-acuminate, finely serrate, glabrous or nearly so underneath: fls. about ⅓ in. across, white and somewhat fragrant, in racemes with the lvs.: fr. ⅓ or ¼ in. diam., red sometimes yellow. Newf. to Sask., N. C. and Kans. Var. **demíssa** (*P. demissa*)., Wash. to Calif., has lvs. pubescent underneath. Var. **melanocárpa** (*P. melanocarpa*), N. D. to B. C. and New Mex., lvs. mostly smaller, fr. nearly black, petioles glandless.

Wátereri: *P. Sieboldii.*

Wátsonii: *P. angustifolia* var.

xanthocárpa: yellow-fruited state of *P. virginiana.*

yedoénsis. Like *P. serrulata*, but lvs. hairy or pubescent at least on veins underneath: fls. single, white or pink, pedicels and perhaps calyx pubescent, calyx-lobes sharp-serrate. Japan.

PSAMMÓPHORA. *Aizoaceæ.* Low woody succulents from S. Afr., having short thick gummy lvs. and solitary terminal violet or white fls. with linear petals.

Píllansii. To 6 in.: lvs. to 1 in. long and ⅙ in. wide and thick: fls. pink, 1 in. across.

PSEDERA: *Parthenocissus.*

PSEUDERÁNTHEMUM. *Acanthaceæ.* Herbs and shrubs of world-wide tropics with opposite lvs. and tubular 5-lobed fls. subtended by linear bracts, in spikes or racemes; grown in the greenhouse, and in the open in warm countries. Propagated by cuttings.

atropurpùreum (*Eranthemum atropurpureum*). Shrub to 4 ft.: lvs. ovate or oval, obtuse or nearly so, to 6 in. long, entire, purple or sometimes green spotted with yellow: fls. white with purple center or purplish, ⅓ in. long and to 1 in. across, in narrow clusters, corolla-lobes broad and mostly blunt. Polynesia.—Now commonly planted in the American tropics.

bícolor (*Eranthemum bicolor*). Shrub to 3 ft.: lvs. ovate, to 8 in. long, entire, dark green: fls. white spotted purple, salverform, to 1½ in. long and 1 in. across. Polynesia.

kewénse. Another plant described and figured as *atropurpureum* but differing in narrower and acuminate lvs., terminal spikes rather dense and broad, corolla-lobes narrow, ciliate, white with rose at base. Solomon Isls.—Probably not planted within our area.

reticulàtum (*Eranthemum reticulatum*). Shrub to 3 ft.: lvs. ovate-lanceolate, to 10 in. long, wavy-margined, dark green veined with yellow: fls. white spotted purple, ½ in. long and 1½ in. across. Polynesia.

tuberculàtum (*Eranthemum tuberculatum*). Small shrub, branches with many small rough elevations: lvs. elliptic, to 1 in. long: fls. white, to 1½ in. long and 1 in. across, solitary. Polynesia.

PSEUDOBULB: the thickened or bulb-form stems of certain orchids, the part being solid and borne above ground.

PSEUDOCASSIA: *Cassia spectabilis.*

PSEUDOCYCAS. A genus of fossil plants. For the living plant known as *P. Micholitzii*, see *Cycas.*

PSEUDOCYDONIA: *Chænomeles sinensis.*

PSEUDOCYMÓPTERIS. *Umbelliferæ.* Short-stemmed or stemless W. American plants having bipinnate lvs., and a non-involucrate infl. of white, yellow or purple fls.: fr. an oblong glabrous schizocarp with prominent dorsal and intermediate ribs and no stylopodium.

anisàtus. To 1 ft., stemless tufted per. from much branched rootstock: lvs. long-petioled, with segms. slender, linear and sharply acute: fls. white or yellow: fr. to ⅙ in. long. N. W. U. S.

montànus. St. to 2 ft. high: lvs. few, segms. ovate to lanceolate: fls. pale yellow, in 6–12-rayed umbels. Colo. to Ariz. and New Mex.

PSEUDOESPOSTOA: *Haageocereus chosicensis.*

PSEUDOLÀRIX. *Pinaceæ.* One deciduous tree native in China, **P. amábilis** (*P. Fortunei. P. Kaempferi*). Golden-Larch. To 130 ft.: lvs. in dense clusters, linear, to 3 in. long, light green turning bright yellow in autumn: cones hanging, ovate, to 3 in. long, the scales deciduous and thus differing from Larix as well as in the clustered staminate fls. Var. **nàna** is a dwarf form. For cult. see *Conifers.*

PSEUDOLOBIVIA: although this generic name appears in the trade for certain cacti, it has no known botanical standing. Plants so listed are probably referable to *Echinopsis.*

PSEUDÓPANAX. *Araliaceæ.* Shrubs or small trees in New Zeal. and S. Amer., with variable (dimorphous) simple or compound lvs., diœcious fls. in umbels, and drupaceous frs.; grown under glass or out-of-doors in mild climates, as Calif. For cult. see *Polyscias.*

chathámicum. To 25 ft.: lvs. simple, of two forms, the mature lvs. linear-obovate, to 8 in. long, slightly wavy-toothed: fr. globose. New Zeal.

crassifòlium (*Aralia crassifolia. Panax crassifolium*). Tree to 50 ft.: lvs. of young unbranched plants very narrow-linear and rigid, toothed, to 3 ft. long, those of mature plants often of 3 or 5 broader lfts.: fls. in terminal compound umbels: fr. globose. New Zeal. Var. **trifoliolàtum** has 3–5 lfts.

díscolor. To 15 ft., much branched: lvs. of 3–5 obovate lfts. to 3 in. long, sharp-toothed, yellowish-green or bronzy, leathery: fr. oblong. New Zeal.

fèrox (*Panax ferox*); To 20 ft.: lvs. simple but variable, very thick and stiff, from narrow-linear to obovate, on young plants 12–18 in. long and 1 in. or less broad and strongly toothed, those on old plants shorter and entire except perhaps near tip: fr. oblong. New Zeal.

Léssonii (*Panax Lessonii*). To 20 ft., much branched: lvs. of 3–5 obovate lfts. to 4 in. long, entire or wavy-toothed. shining and leathery: fr. oblong. New Zeal.

PSEUDOPHŒ̀NIX. Cherry Palms. *Palmaceæ.* Unarmed feather-palms, with staminate and hermaphrodite fls. in the same infl., spadices among the lvs. and branching, 1 species on certain of the Fla. Keys, the Bahamas, and southward; and there are a few other species: fls. on slender pedicels; stamens 6, the expanded filaments somewhat united at base: fr. a globose 2- or 3-lobed orange-scarlet drupe. See *Palm.*

Sárgentii. Slow-growing palm to 25 ft., but in open ground likely to be lower and not straight, top of the bole narrow and tapering: lvs. long and regularly pinnate: fr.-clusters declined from the axils, nearly or quite as broad as long, or even broader, the branchlets wide-spreading; fr. cherry-red to orange-scarlet, pyriform, sometimes double or triple, nearly or quite ¾ in. long. Sparingly planted in S. Fla. from the Keys.—The related *P. vinifera* from Hispaniola is apparently not planted in our area; it is a taller tree with much larger fr. in elongated clusters and branches not divaricate.

PSEUDOSÁSA. *Gramineæ.* Shrub having creeping rootstocks, hollow round sts. and the branches usually solitary at the nodes. The genus is now segregated from Sasa, differing in the st.-nodes scarcely raised, lf.-sheaths with flexuous bristles or glabrous, and the fls. with usually 3 stamens; 3 species have been described, all E. Asiatic. See *Bamboo.*

japónica (*Arundinaria, Bambusa* and *Sasa japonica. A.* and *B. Metake*). To 15 ft., the st.-sheaths bristly-hairy: lvs. to 10 in. long and 1½ in. wide, finely toothed, shining above, glaucous beneath. Japan.

PSEUDOTSÙGA. *Pinaceæ.* Several tall evergreen coniferous trees with flat linear lvs. having 2 white bands below, and drooping cones with deciduous scales and conspicuous exserted bracts; native in W. N. Amer. and E. Asia. For cult. see *Conifers.*

Doúglasii: *P. taxifolia.*

glaùca: *P. taxifolia* var.

japónica. Lvs. notched at apex, glossy: cones to 2 in. long. Japan.

macrocárpa. Bigcone-Spruce. Branches usually drooping: lvs. acute, bluish-green: cones to 7 in. long. S. Calif.

mucronàta: *P. taxifolia.*

sinénsis. Lvs. to 1¼ in. long, notched at apex: cones to 2½ in. long. W. China.

taxifòlia (*P. Douglasii. P. mucronata. Picea Douglasii. Abies taxifolia*). Douglas-Fir. Lvs. obtuse, dark or bluish-green: cones to 4½ in. long. B. C. to Mex. and Tex.—A major timber tree in the regions of its best development. The Rocky Mt. form, which is sometimes considered a separate species, is hardy and adaptable for ornament in N. Y. and Cent. New England. Some of the hort. vars. are: **argéntea,** lvs. silvery-white; **brevibracteàta,** smaller tree with bracts of cone shorter; **cæ̀sia,** lvs. bluish-green; **compácta,** compact form with shorter lvs.; **dénsa,** dwarf and flat-topped; **fastigiàta,** pyramidal form; **Frétsii,** lvs. shorter and broader; **glaùca** (*P. glauca*), with smaller lvs. and cones, the Rocky Mt. form, and **glaùca péndula** with drooping branchlets and bluish lvs.; **globòsa,** dwarf and globose; **péndula,** branches drooping, lvs. dark green; **pyramidàta,** of conical habit but partially dwarf; **víridis,** lvs. green, cones larger.—Recent investigations have revealed new evidence indicating the correctness of the name *P. taxifolia* and not its synomym *P. Douglasii.*

PSÍDIUM. Guava. *Myrtaceæ.* Trees and shrubs of trop. Amer. with opposite simple lvs., large white fls. with many stamens, and berry-like fr. crowned with the persistent calyx-lobes; grown in Fla. and tropics for the edible frs., from which jellies and conserves are also made.

Guavas require tropical temperatures, although they withstand a few degrees of frost. The strawberry guava grows wherever the orange thrives, and the requirements are simple. Any soil is satisfactory. Trees should be set 10 to 15 feet apart. Propagated by seeds sown in flats or pans of light sandy loam; seedlings should be kept in pots until transplanted permanently. Shield- and patch-budding should be employed for choice varieties. Cuttings may also be taken.

Aràca: *P. guineense.*

Cattleiànum. Strawberry G. To 25 ft., the bark smooth: lvs. to 3 in. long, glabrous: fls. 1 in. across, solitary: fr. purplish-red, to 1½ in. long, with white flesh. Brazil. Var. **lùcidum** has sulfur-yellow frs.

chinénse: an unidentified hort. name.

Friedrichsthaliànum. Costa Rican G. To 25 ft., the branchlets 4-angled: lvs. to 3 in. long, glossy above, pubescent below: fls. 1 in. across, solitary: fr. sulfur-yellow, to 2½ in. long, with white flesh. Cent. Amer.

Guajàva. Common G. To 30 ft., with scaly bark and 4-angled branchlets: lvs. to 6 in. long, pubescent beneath, the veins prominent: fls. 1 in. across, solitary or few together: fr. yellow, to 4 in. long, with white, yellow or pink flesh. Trop. Amer.

guinéense (*P. Araca*). Brazilian G. Shrub: lvs. to 5 in. long, pubescent below: fls. 2–3 together: fr. greenish-yellow, 1½ in. long, with white flesh. S. Amer. but once supposed to be Guinean (African).—The plants known to the trade under this name are usually forms of *P. Guajava.*

PSILOCAÙLON. *Aizoaceæ.* Shrubs with small cylindrical lvs., differing from Mesembryanthemum in petals united at base into short tube, and technical fr. characters.

granulicaùle (*M. granulicaule*). To 16 in., much branched, sts. rough-hairy: lvs. to ½ in. long, soon deciduous: fls. whitish, ¼ in. across, 1–2 at tips of branches; styles 5. S. Afr.

PSILOSTEMON: *Trachystemon.*

PSOPHOCÁRPUS. *Leguminosæ.* Twining herbs making tuberous roots, lvs. of 3 lfts., papilionaceous fls. in racemes, and 4-angled winged pods; one species grown in warm regions for the edible roots and pods.

tetragonólobus. Goa Bean. Asparagus-Pea. Ann.: lfts. ovate, to 6 in. long: fls. bright blue, 1¼ in. long: pods to 9 in. long, with jagged wings. India.

PSORÀLEA. Scurfy-Pea. *Leguminosæ.* Scented herbs or shrubs with pellucid dots, usually pinnate lvs., papilionaceous fls. in racemes or spikes, and short 1-seeded pods: one species has an edible root and others may be grown for ornament. Propagated by division.

aphýlla. Tall shrub with rod-like branches usually leafless and bearing subulate scales: lfts. (when present) 1–3, narrow-linear: fls. pale blue. S. Afr.

bituminòsa. Per. to 3 ft.: lfts. 3, ovate: fls. in dense heads, in spring and early summer. Arabia.

cuspidàta. To 2 ft., with tuberous roots: lfts. 5, oval: fls. bluish, in dense oblong spikes. May–June. S. D. to Tex.

esculénta (*Pediomelum esculentum*). Pomme Blanche. Indian Breadroot. Per. to 1½ ft., with edible tuberous root: lfts. 5, obovate: fls. bluish, in dense head-like spikes. May–June. Sask. to Mont.

glandulòsa. Shrubby, to 5 ft.: lfts. 3, ovate-lanceolate: fls. blue and white, in racemes. Chile, Peru.

hypogæ̀a. Nearly stemless, with tuberous roots: lfts. 5, linear or oblanceolate: fls. blue, in dense spikes. May–June. Neb. to New Mex.

macrostàchya. Leather-Root. Per. to 10 ft.: lfts. ovate: fls. purple, in broad spikes. Calif.

Onóbrychis (*Orbexilum Onobrychis*). Per. to 4½ ft.: lfts. 3, lanceolate, to 4 in. long, glabrous above, pubescent beneath: fls. pale purple, in narrow spike-like racemes to 6 in. long; pod ½ in. long, rugose. Ohio to Ia. south to Tenn. and Mo.

pinnàta. Shrub to 12 ft.: lfts. 7–11, linear or linear-lanceolate: fls. blue and white, solitary or clustered. S. Afr.

PSÝCHÒTRIA. Wild-Coffee. *Rubiaceæ.* Many shrubs or trees in the tropics with mostly opposite lvs., white, yellow or rose somewhat Ixora-like fls. in corymbs, having short tube and 4–6-lobed limb, and fr. a drupe; a few of them rarely planted in extreme S. U. S., and sometimes seen under glass.

bacterióphila. Shrub to 10 ft.: lvs. elliptic or ovate-oblong, to 3 in. long, shining above, fleshy: fls. greenish-white, about ⅛ in. long, stamens exserted: fr. reddish, ¼ in. across. Comoro Isls.

capénsis. Evergreen: lvs. obovate, to 5 in. long, shining: fls. yellow, ¼ in. long: fr. black, shining. S. Afr.

jasminiflòra. Evergreen shrub with white bark: lvs. oblong-ovate, to 3 in. long, pale beneath: fls. white, to 1¼ in. long, stamens exserted. Brazil.

Súlzneri. Shrub: lvs. oblong to elliptic-lanceolate, to 6 in. long, pubescent beneath: fls. white. Fla.

undàta. Similar to *P. Sulzneri* but glabrous and corolla-lobes shorter rather than as long as tube. Fla., W. Indies.

PTÈLEA. Hop-Tree. *Rutaceæ.* Small trees and shrubs of N. Amer., with usually alternate trifoliolate lvs., small greenish-white polygamous fls. in short dense clusters, and fr. an orbicular or oblong or cordate samara.

Hop-trees thrive in somewhat shady positions in porous soil and are hardy North. Propagated by seeds sown in autumn, budding in summer, layering or grafting in spring under glass. They are ornamental tree-like shrubs of secondary importance. The species are confused, and several kinds are native in United States.

isophýlla. Shrub or small tree: lfts. 5, terminal one rhombic-ovate, to 2½ in. long, blue-green, glabrous or nearly so: fr. suborbicular, to 1 in. across. Mo.—Perhaps not distinct from the following species.

trifoliàta. Shrub or tree to 25 ft.: lfts. to 5 in. long: fr. circular, about 1 in. across, dry, winged all around. N. Y. to Fla. and west. Var. **aùrea** has yellow lvs.

PTERÈTIS (*Matteuccia*). Ostrich-Fern. *Polypodiaceæ.* Large ferns of N. Amer., Eu. and Asia, 3 species, the sterile fronds deeply 2-pinnatifid and borne in a circle surrounding the fertile fronds which have segms. contracted into pod-like bodies around the sori. The American and European plants have been regarded until recently as a single species, and the synonyms properly belonging to *P. Struthiopteris* may be applied in lists to *P. nodulosa.* They are bold strong subjects for outdoor planting. See *Ferns.*

nodulòsa (*Onoclea nodulosa*). Fronds 6–10 ft. long, margins of pinnæ often revolute, on stipes to 14 in. long. N. S. to Va. and Ia.

Struthiópteris (*Matteuccia* and *Onoclea Struthiopteris. Struthiopteris germanica*). Differs from *P. nodulosa* in less erect habit, shorter fronds 3–5 ft. long, on stipes to 5 in. long. Eu.

PTERÍDIUM. Bracken. Brake. *Polypodiaceæ.* Coarse ferns with triangular 3–4-pinnate fronds; sori borne in a marginal line, with double indusium. Useful as background in the rock-garden or wherever large masses of ferns are desired; hardy and durable.

aquilìnum (*Pteris aquilina*). Fronds to 4 ft. long and 3 ft. wide, 3-pinnate into oblong or lanceolate segms., densely pubescent below, on stalks to 3 ft. long, the indusium ciliate. Cosmopolitan. Var. **lanuginòsum** has the fronds with the segms. linear-oblong, strongly pubescent beneath and sometimes hairy above. W. N. Amer., Mich., Ont., E. Que. Var. **latiúsculum** (*P. latiusculum*), the common form in E. N. Amer., has segms. thinly pubescent along veins beneath and indusium not ciliate.

latiúsculum: *P. aquilinum* var.

PTERIDOPHÝLLUM. *Papaveraceæ.* Monotypic genus from the mts. of Cent. Japan, distinguished from other cult. genera of Papaveraceæ and Fumariaceæ by its pinnatisect fern-like lvs. which form a basal rosette from which arise the taller and naked peduncles. **P. racemòsum.** Stemless per. to 10 in.: lvs. to 6 in. long and 1 in. wide: fls. white, to ½ in. across: fr. a 2-valved silicoid caps. about ¾ in. long. Prefers moist soil in shade, not hardy far N.

PTÈRIS. Brake. *Polypodiaceæ.* Large genus of mostly trop. ferns (omitting Pteridium), a few of which are used for table decoration in fern-dishes, in the window-garden and in conservatories: fronds 1–4-pinnate; sori in a marginal line with indusia formed of the revolute edge of frond. *P. cretica* and *P. serrulata* and their many forms are well-known subjects for pans and fern-dishes, used in table decorations, and of easy management. See *Ferns.*

adiantoìdes: *Pellæa viridis.*

Alexándræ: hort. form of *P. cretica.*

aquilìna: *Pteridium aquilinum.*

argyræ̀a: *P. quadriaurita* var.

Chárlesworthii: hort. var. of *P. serrulata.*

Chìldsii: a modified form of *P. cretica.*

crenàta: *P. ensiformis.*

crética. Fronds to 1 ft. long, on slender straw-colored stipes, 1-pinnate, pinnæ to ¼ in. across, the lower often pinnatifid. Tropics and subtropics. Var. **álbo-lineàta** has lvs. white along center. Cristate, divided or larger forms are vars. *cristata, magnifica, major, nobilis.*

Drínkwateri: hort. form of *P. cretica.*

Dútrei: modified form of *P. cretica.*

ensifórmis (*P. crenata*). Sword B. Very slender: fertile fronds erect, to 20 in. long, 1-pinnate, pinnæ to ¼ in. across; sterile fronds shorter, segms. broader, to ¾ in. long and to ½ in. wide. E. Asia, Malaya, Australia. Var. **Victòriæ** (*P. Victoriæ*) has segms. banded with white.

Gaùtheri: hort. form of *P. cretica.*

hastàta: *Pellæa viridis.*

heterophýlla: *Anopteris hexagona.*

longifòlia. Fronds to 2½ ft. long and 1 ft. wide, 1-pinnate, pinnæ to 6 in. long and ⅓ in. wide, the fertile narrower. Tropics. Var. **Marièsii** has shorter lvs.

marginàta: *P. tripartita.*

Màyii: hort. form of *P. cretica.*

múlticeps: hort. form with striking variegation.

multífida: *P. serrulata.*

nodulòsa: see *Pteretis nodulosa.*

Oùvardii: hort. form of *P. serrulata.*

Párkeri: a robust form with broad green fronds.

quadriaurìta. Rather coarse: fronds to 3 ft. long and 1½ ft. wide, 2-pinnate or lower 3-pinnate, segms. ¼ in. across, entire. Tropics. Usually grown in the var. **argyræ̀a** with segms. banded with whitish. Var. **trícolor** has whitish and reddish bands.

Rivertoniàna: a modified form of *P. cretica.*

serrulàta (*P. multifida*). Slender: fronds to 1½ ft. long and 10 in. wide, 1-pinnate into very narrow long segms., lower segms. 2–3-forked, rachis winged. China, Japan. There are many crested and other vars. as *angustata, corymbifera, cristata, nana, variegata, voluta.*

Sièboldii: hort. form of *P. ensiformis.*

trémula. Australian B. Fronds bright green, to 3 ft. long and 2 ft. wide, 2–4-pinnate, segms. linear, to 1½ in. long, wavy-toothed. New Zeal., Australia.

tripartìta (*P. marginata*). Fronds 3-parted, each branch pinnate, segms. oblong, to 1 in. long, rachis winged. Trop. Asia, Afr., Australia, Pacific Isls.

umbròsa. Fronds to 3 ft. long, 1-pinnate or lower 2-pinnate, segms. linear-lanceolate, to 6 in. long, entire or sterile toothed. Australia.

Victòriæ: *P. ensiformis* var.

Wílsonii: hort. form of *P. cretica.*

Wímsettii: a cristate form of *P. cretica.*

PTEROCÀRYA. Wing-Nut. *Juglandaceæ.* Deciduous monœcious trees of Asia with alternate pinnate lvs., unisexual fls. in drooping catkins, and fr. a winged nutlet. Of rapid growth, but some of them require protection in the N. when young. Propagated by seeds, layers or suckers.

caucásica: *P. fraxinifolia.*

fraxinifòlia (*P. caucasica*). Caucasian W. To 100 ft.: lvs. of 11–20 ovate-oblong or oblong-lanceolate lfts. to 5 in. long: fr. with nearly orbicular wings, in racemes to 1½ ft. long. Caucasus to Persia.

japónica: *P. stenoptera.*

Rehderiàna. Hybrid between *P. fraxinifolia* and *P. stenoptera.*

rhoifòlia. To 100 ft.: lvs. of 11–21 ovate-oblong lfts. to 5 in. long: fr. with wing broader than long, in racemes to 1 ft. long. Japan.

sinénsis: *P. stenoptera.*

stenóptera (*P. japonica. P. sinensis*). To 100 ft.: lvs. with a winged rachis, of 11–23 oblong lfts. to 4 in. or more long: fr. with oblong wings, in racemes to 1 ft. long. China.

PTEROCASSIA: *Cassia polyantha.*

PTEROCÉPHALUS. *Dipsaceæ.* Ann. and per. herbs, sometimes subshrubs, in the Medit. region and eastward, differing from Scabiosa in the calyx being represented in fr. by pappus-like awns.

parnássi (*Scabiosa pterocephala*). Spreading deep-rooted per. 3 or 4 in. high but making broad patches: lvs. more or less lyrate-pinnatifid, to 1½ in. long, scalloped, densely pubescent: fls. purplish-pink, in composite-like heads about 1 in. across standing above foliage. Mts. of Greece.

PTEROSPÉRMUM. *Sterculiaceæ.* Trees or shrubs of trop. Asia, the growing parts scaly or tomentose, having alternate leathery lvs., large fls., and large leathery or woody capsular frs. One species is planted sparingly in Fla. and probably elsewhere. Propagated by cuttings of the side shoots.

acerifòlium. Large tree: lvs. peltate, palmately nerved and usually lobed, to 1 ft. across, thick rusty-pubescent beneath: fls. white, fragrant, to 6 in. across: caps. to 6 in. long. India to Java.

PTERÓSTYRAX. Epaulette-Tree. *Styracaceæ.* Deciduous trees or shrubs native in Asia, with alternate toothed lvs., white fls. in panicles, and fr. a small ribbed or winged drupe. These plants thrive in rather moist sandy loam. Propagated by seeds, layers, and cuttings of young wood under glass.

corymbòsa. Shrub or tree: lvs. oval or ovate, to 5 in. long: fls. in corymbose panicles to 5 in. long: fr. 5-winged, tomentose. Japan, China.

híspida (*Halesia hispida*). To 50 ft.: lvs. oblong, to 7 in. long: fls. fragrant, in drooping panicles to 10 in. long: fr. 10-ribbed, densely bristly. China, Japan; hardy N.

PTERYGÒTA. *Sterculiaceæ.* E. Indian trees differing from Sterculia and Brachychiton chiefly in the winged seeds; one species intro. in Calif. and Fla.

alàta (*Sterculia alata*). Large tree with ash-colored bark: lvs. clustered at ends of branches, cordate-ovate, to 10 in. long and 7 in. wide: fls. unisexual or bisexual, 1 in. across, rusty-tomentose, in few-fld. racemes: fr. a woody pubescent globose follicle to 5 in. across; seed with large corky wing.

PTYCHORÀPHIS. *Palmaceæ.* Malayan and Philippine unarmed monœcious feather-palms, none of which is regularly planted in our territory. Trunks ringed, usually slender: spadix below the lvs., branched; fls. spirally arranged, pistillate between 2 staminate and all staminate toward the top of the branches; stamens 6: fr. small, ovoid, drupe-like, 1 in. or less long. See *Palm.*

PTÝCHOSPÉRMA. *Palmaceæ.* About 12 or 15 species of ringed unarmed monœcious feather-palms in New Guinea and other isls., Australia: lvs. mostly gracefully curved; pinnæ usually broadened at the apex and toothed or jagged: spadices below the lvs., branched; fls. spirally disposed in 3's, the outer ones staminate; stamens 20–30: fr. small, ovoid or ellipsoid, sometimes beaked, 1-seeded, stigmatic point terminal; seed sulcate or furrowed; albumen ruminate. See *Palm* for cult.

Alexándræ: *Archontophœnix Alexandræ.*

Cunninghamiàna: *Archontophœnix Cunninghamiana.*

élegans. Slender palm with solitary trunk to 20 ft., and relatively few lvs. 3 ft. and more long, bright green and paler underneath; pinnæ to 2 ft. long and 1½–3 in. broad, contracted at base, oblique or truncate and toothed or jagged at apex: spadix about 20 in. long, on a very short peduncle; staminate fl.-buds oblong: fr. about ¾ in. long. E. Australia (Queensland); common in S. Fla.—This plant is the true *Seaforthia elegans,* but the palm known to planters under that name is *Archontophœnix Alexandræ;* Seaforthia is not the oldest name.

Macárthuri: *Actinophlœus Macarthuri.*

Nórmanbyi: *Normanbya Normanbyi.*

PUBERULENT: somewhat or minutely pubescent.

PUBESCENT: covered with short soft hairs; downy.

PUCCOON: *Lithospermum canescens.*

PUDDING-PIPE-TREE: *Cassia Fistula.*

PUERÀRIA. *Leguminosæ.* Herbaceous or woody twiners with trifoliolate lvs., blue or purple papilionaceous fls. in axillary racemes, and linear more or less flattened pods; native in Asia and Pacific Isls.

The roots of many species yield economic and medicinal products. One species is grown for ornament and is hardy in mid-northern United States, although the vine may be killed back to the ground each winter and may not reach blooming stage. Propagated by root-division, seeds, or cuttings.

hirsùta: *P. Thunbergiana.*

Thunbergiàna (*P. hirsuta. Dolichos japonicus*). Kudzu-Vine. Hairy vine to 60 ft.: lfts. broadly ovate, entire or with shallow lobes: fls. purple, fragrant, in late summer: pods hairy. China, Japan.

PUKA: *Meryta Sinclairi.*

PULICÀRIA. *Compositæ.* Herbs of the Old World with alternate lvs. and yellow heads of ray- and disk-fls. solitary or clustered; pappus of scales and bristles. Plants of somewhat weedy aspect, sometimes planted for ornament and interest.

dysentérica (*Inula dysenterica*). Per. to 2 ft., gray-tomentose: lvs. oblong-cordate, wavy-margined, clasping: heads 1 in. across. Medit. region.

odòra (*Inula odora*). Per. to 2 ft., gray-hairy to hoary: lvs. oval or oblong, entire, the upper clasping: heads 2–4, to 1 in. across. Medit. region.

PULMONÀRIA. Lungwort. *Boraginaceæ.* Per. more or less pubescent herbs with long-stalked basal sometimes mottled lvs., few alternate st.-lvs. and blue or purplish fls. in terminal cymes; corolla funnelform, the throat hairy or naked, stamens included; allied to Myosotis; European. Suitable for the flower-garden and border. Of easy cult. Propagated by division.

angustifòlia. To 1 ft.: lvs. oblong to linear-lanceolate: fls. blue. Eu. Vars. **aùrea, azùrea, cærùlea** and **rùbra** are listed.

arvernénsis is a hort. form with purple-blue fls.

azùrea: probably *P. angustifolia* var.

Lággeri: listed name of unknown botanical standing.

maculàta: *P. officinalis.*

móllis: *P. montana.*

montàna (*P. mollis. P. rubra*). To 1½ ft.: lvs. broadly elliptic-lanceolate: fls. violet. Cent. Eu.

officinàlis (*P. maculata*). To 1 ft.: lvs. ovate-oblong to linear, spotted with white: fls. red fading to violet. Eu.

rùbra: *P. montana.*

saccharàta. Bethlehem-Sage. To 1½ ft.: lvs. oval to ovate-oblong, spotted with white: fls. whitish or reddish-violet. Eu. Vars. **maculàta** and **pícta** are listed.

PULSATILLA: *Anemone.*

PULTENÆA. *Leguminosæ.* Shrubs in Australia with simple prevailingly alternate lvs., yellow, orange or tinged purple papilionaceous fls. solitary or in terminal heads, and ovate pods; intro. in Calif. Propagated by seeds or cuttings of the tips of shoots.

daphnoìdes. To 6 ft.: lvs. oblong, to 1½ in. long, pale beneath: fls. in dense sessile heads surrounded by an involucre of lvs.: pods flat, ¼ in. long.

PUMMELO: *Citrus maxima;* see *Citrus Fruits* (page 183).

PUMPKIN and **SQUASH** are terms employed popularly to designate the edible fruits of *Cucurbita Pepo*, *C. moschata*, *C. maxima*. See *Cucurbita*, *Squash*. The words are not applied with precision, and it is important to accord them more definite meaning. The term *Pumpkin* is sometimes applied, in a classificatory way, to the fruits and plants of both *C. Pepo* and *C. moschata*, and *Squash* reserved to *C. maxima*. Of *C. Pepo*, there are three well-marked classes: the common running field or pie and stock-feed pumpkins, and the vegetable marrows; the summer and early autumn bush varieties, as the various scallops, pattypans and cymlins, the crooknecks, and certain other forms as the Cocozelle, all of which are commonly known as squashes; the hard-shelled yellow-flowered gourds grown for ornament. *Cucurbita moschata* yields the winter (not warty) crooknecks, the Cushaws, Japanese Pie, Tennessee Sweet Potato, Cheese, and many forms grown in the tropics. Examples of squashes, *C. maxima*, are Marblehead, Plymouth Rock, Bay State, Warren, Delicious, Essex, Mammoth, Hubbard, and the turbans. The three species remain distinct in the field. See *Gourd*.

All the pumpkins and squashes are similar in their cultural requirements. They are sappy rapid-growing frost-tender annuals. Seeds are commonly planted directly where the plants are to stand, although they may be started indoors, if desired, in pots, berry-boxes or knock-down boxes or on inverted sods, for they may not transplant very readily otherwise. The running kinds need plenty of room, the hills or stands 8–12 feet apart either way if possible. The bush squashes should be 4 or 5 feet apart if land is available. If the land is not in good heart, well-rotted manure may be forked into the hills, and chemical fertilizer added. The plants should make good headway early, in the northern states, to insure a crop before frost.

In garden operations, the squash-bugs or stink-bugs may be killed by trapping them under boards laid about the vines. Aphis is controlled by spraying or dusting with nicotine preparations. Striped cucumber beetles are driven away or poisoned by bordeaux mixture with arsenate of lead as well as by nicotine dust; this beetle is the carrier of bacterial wilt.

The fruits of the summer bush varieties, as the scallops and warty crooknecks, are eaten when immature, but other kinds are used when ripe. The squashes and some of the pumpkins can be kept in winter if mature and not injured in handling, in a fairly warm and dryish storeroom.

PUNCTATE: with translucent or colored dots or depressions or pits, as in leaves.

PUNCTILLARIA: *Pleiospilos.*

PUNCTURE VINE: *Tribulus terrestris.*

PUNGENT: ending in a stiff sharp point or tip; also acrid (to the taste).

PÙNICA. *Punicaceæ.* Trees or shrubs in S. Eu. and Asia, one widely grown for the edible frs. and as an ornamental. **P. Granàtum.** Pomegranate. To 20 ft. and more: lvs. lanceolate to oblong, to 3 in. long, shining: fls. orange-red, to 1½ in. across, solitary or clustered toward ends of branchlets: fr. brownish-yellow to red, about size of orange, with hard rind and many seeds and reddish juicy pulp and persistent calyx. S. Asia, widely nat. Var. **nàna** is a dwarf form grown in greenhouses and about yards far S. There are double-fld. races and color variations, as vars. **álba, rùbra, variegàta,** and **Legréllei** with double fls. striped with red and yellow outside.—The pomegranate is adapted to trop. and subtrop. climates and succeeds on deep rather heavy loam. For orchards, bushes should be set 12–18 ft. apart and for hedges 6–8 ft. Propagated mostly by hardwood cuttings in spring, also by seeds and layers.

PUNICÀCEÆ. Pomegranate Family. Only 1 genus, Punica, and two species, characterized by mostly opposite simple lvs., bisexual fls. having 5–7 sepals and petals, numerous stamens, inferior and many-celled ovary, and fr. a hard-shelled berry.

PUNK-TREE: *Melaleuca Leucadendra.*

PURPLE WREATH: *Petrea.*

PÚRSHIA (*Kunzia*). Antelope-Brush. *Rosaceæ.* W. American cragged bushes of 1 or 2 species, sometimes transferred to grounds: lvs. small, stiff and clustered, simple: fls. small, yellowish, not showy. **P. tridentàta** is a gray or silvery deciduous shrub to 6 ft. or more: lvs. ¼–¾ in. long, linear toward base but broadened and 3-toothed at apex: petals thin, less than ½ in. long. Arid lands, Rocky Mts., Ore., Calif. Var. **glandulòsa,** separated as a species by some authors, is more or less evergreen and the lvs. punctate-glandular.

PURSLANE: *Portulaca.* **Winter:** *Montia perfoliata.*

PUSCHKÍNIA. *Liliaceæ.* Two spring-blooming bulbous herbs from Asia Minor, one sometimes grown in rock-gardens or borders. For cult. see *Scilla.*

libanótica: *P. scilloides* var.

scilloìdes. To 1 ft.: lvs. basal, to 1 ft. long and 1 in. wide: fls. bluish, ½ in. long, in racemes terminating the scape, the perianth-segms. partially united. Var. **libanótica** (*P. libanotica*) has longer perianth-lobes.

PUSLEY: *Portulaca oleracea.*

PUSSYS-PAWS: *Spragnea multiceps.* **Toes:** *Antennaria.*

PUTÒRIA. *Rubiaceæ.* A small genus in the Medit region, of low much branched shrubs. **P. calábrica** is cult. To 8 in. or less, branches velvety-hairy: lvs. linear-oblong, to ½ in. long or more, somewhat fleshy, opposite, short-petioled, with scabrous margins: fls. red to reddish-purple, tubular, to 1 in. long, 4-lobed, in terminal few-fld. corymbs, calyx tubular and 4-toothed: fr. a small drupe. Propagated by seeds or division; does well in full sun in sandy soil; perhaps not hardy N.

PUTTY-ROOT: *Aplectrum.*

PÙYA. *Bromeliaceæ.* Terrestrial stiff mostly giant herbs native in dry parts of S. Amer., having spiny-margined lvs. in dense rosettes and blue, purple or yellow fls. in spikes or racemes; planted occasionally in the hothouse. Cult. as for *Bromelia*; out-of-doors in Calif. They thrive without special treatment.

alpéstris. Sts. short: lvs. to 2 ft. long and 1 in. wide, pale beneath: fls. dull metallic blue, 1½ in. long, anthers bright orange, the infl. much branched. Chile.

cærùlea. To 4 ft.: lvs. 2 ft. long, narrow: fls. blue, the infl. somewhat branched. Chile.

chilénsis (*Pourretia chilensis*). To 5 ft.: lvs. to 4 ft. long, very narrow, glaucous: fls. greenish-yellow, in a branching infl. Chile.

PÝCNÁNTHEMUM (*Koellia*). Mountain-Mint. *Labiatæ.* N. American per. herbs with opposite entire lvs. and small white or purplish fls. in heads or cymes in late summer or fall; sometimes transplanted. Of easy cult.

flexuòsum. To 2½ ft.: lvs. to 2 in. long and 1/12 in. wide: fls. in dense heads ½ in. across. Me. to Fla. and Tex.

incànum. To 3 ft.: lvs. to 3 in. long and 1½ in. wide, white-pubescent beneath: fls. in loose clusters to 1½ in. across. Me. to Fla. and Mo.

lanceolàtum: *P. virginianum.*

mùticum. To 3½ ft., finely pubescent: lvs. ovate to lanceolate, to 1½ in. long, serrate: fls. in dense heads, calyx-lobes short and mucronate. Me. to Fla. and Mo.

virginiànum (*P. lanceolatum*). To 3 ft.: lvs. to 2 in. long and ⅓ in. wide, fragrant: fls. in dense heads ½ in. across, calyx-lobes triangular. Que. to Ga. and Ala.

PÝCNÓSTACHYS. *Labiatæ.* African per. herbs with opposite lvs. and blue or violet 2-lipped fls. in whorls in dense terminal spikes; grown under glass, and in the open far S.

Dàwei. To 6 ft.: lvs. lanceolate, to 1 ft. long, toothed, pubescent: fls. cobalt-blue, ¾ in. long, spikes to 5 in. long, calyx-teeth becoming spinescent. Trop. Afr.

thyrsiflòra: listed name of form said to have spikes of blue fls. to 3 ft.

urticifòlia. To 7 ft.: lvs. ovate, to 4 in. long, acute, long-petioled, deeply incised-crenate and densely pubescent: fls. bright blue, in dense spikes to 3 in. long. Trop. Afr.

PÝRACÁNTHA. Firethorn. *Rosaceæ.* Evergreen usually thorny shrubs with alternate simple lvs., white fls. in corymbs, and fr. a small red or orange pome; native in S. Eu. and Asia; related to Cratægus.

Firethorns are planted for ornament and hedges. The fruit is showy. *P. coccinea* is fairly hardy in middle states but the other species can be grown only in the South and California. Propagated by seeds, by cuttings of ripe wood under glass, by layers, and rare kinds by grafting on cratægus or cotoneaster.

angustifòlia (*Cotoneaster angustifolia*). To 12 ft., the branches often prostrate: lvs. narrow-oblong, to 2 in. long, nearly entire, gray-tomentose beneath: corymbs tomentose. China.

atalantioìdes (*P. discolor*). To 10 ft.: lvs. ovate-elliptic to oblong, to 2⅓ in. long, entire or nearly so, glabrous, indistinctly veined beneath: fls. white, many in corymbs to 1½ in. across: fr. reddish. China.

chamelioìdes: hort. name of no botanical standing.

coccínea (*Cotoneaster* and *Cratægus Pyracantha*). To 20 ft.: lvs. oval to oblanceolate, to 1½ in. long, finely toothed, becoming glabrous: corymbs pubescent. S. Eu., W. Asia. Var. **Lalándii** is a more vigorous form with orange-red fr. Var. **pauciflòra** is said to have smaller corymbs.

crenàto-serràta (*P. crenulata* var. *yunnanensis. P. Gibbsii* var. *yunnanensis. P. yunnanensis. Photinia crenato-serrata*). Differs from *P. atalantioides* in lvs. crenate-serrate and broadest above middle. China. Vars. **Gràberi, macrocárpa** and **prostràta** are listed.

crenulàta (*Cotoneaster* and *Cratægus crenulata*). To 20 ft.: lvs. oblong to oblanceolate, to 2 in. long, wavy-toothed, glabrous, shining above: corymbs glabrous. Himalayas. Var. **flàva** (var. *aurantiaca*), a form of var. *Rogersiana* with yellow fr. Var. **kansuénsis** (*P. kansuensis*) has narrower lvs. to 1 in. long and smaller fr. N. W. China. Var. **Rogersiàna** is lower, with oblanceolate lvs.

díscolor: *P. atalantioides.*

Duvàlii: a hort. form listed as of spreading habit to 10 ft. tall and fr. bright red; perhaps of hybrid origin.

formosàna: *P. Koidzumii.*

Gíbbsii: may be either *P. crenato-serrata* or *P. atalantioides.*

kansuénsis: *P. crenulata* var.

Koidzùmii (*P. formosana*). Lvs. clustered at tips of branchlets, oblong-obovate, 1 in. long, entire, pale and pubescent beneath: corymbs nearly glabrous. Formosa. Varietal names listed under *P. formosana* include **Mílleri** and **splendéns.**

Rogersiàna: *P. crenulata* var.

spléndens: hort. name.

yunnanénsis: *P. crenato-serrata.*

PÝRÈTHRUM. *Compositæ.* An old genus modernly combined with Chrysanthemum. The florists' pyrethrum is *Chrysanthemum coccineum* (*C. roseum*); it is a spring- or early summer-blooming per. with long erect sts. bearing a large brilliant crimson, lilac or white head and finely cut lvs. Another plant still known in gardens as pyrethrum is the feverfew, *C. Parthenium;* and *C. uliginosum* is also sometimes named in that genus. *P. inodorum* is *Matricaria inodora; P. Tchihatchewii* is a Matricaria. For other names see *Chrysanthemum.*

PYRIFORM: pear-formed or -shaped.

PÝROLA. Shinleaf. *Pyrolaceæ.* Per. herbs having rootstocks, clusters of evergreen lvs. and white, greenish or purplish fls. in racemes terminating a scape, in summer: sometimes transplanted to the wild-garden or colonized in woods but they do not thrive in usual garden soil. Sometimes called wintergreen: see *Gaultheria.*

americàna: *P. rotundifolia* var.

asarifòlia. To 1 ft.: lvs. kidney-shaped or orbicular, to 2 in. long, blade about as long as petiole, rather thick, shining: fls. pink or purplish. N. B. to B. C. and New Mex. Var. **incarnàta,** fls. pink or rose, lvs. subcordate to obovate. Swamps.

bracteàta: *P. rotundifolia.*

chlorántha. To 8 in.: lvs. orbicular, to 1¼ in. long, shorter than petiole, thick, glossy: fls. greenish-white, calyx-lobes ovate-triangular. N. Amer., Eu.

ellíptica. To 10 in.: lvs. oval or oblong-elliptic, to 3 in. long, thin, dull: fls. white, calyx-lobes ovate-triangular. N. Amer.

incarnàta: plants so listed are referable to *P. rotundifolia* or *P. uliginosa.*

mìnor (*Erxlebenia minor*). To 8 in.: lvs. oval or orbicular, to 1½ in. long: fls. white or pinkish. N. Amer., Eu., Asia.

pícta. Lvs. ovate to rhombic, to 2½ in. long, acute, blotched white above and purple beneath, denticulate: fls. green to purplish, about ¼ in. long. B. C. to Mont. south to Calif. and Ariz. Var. **dentàta** is listed as having more dentate lvs. The true *P. dentata* is not known in cult. and does not have mottled lvs.

rotundifòlia (*P. bracteata*). To 10 in.: lvs. nearly round, to 2 in. long, thick, glossy: fls. white, calyx-lobes oblong. Eu. Var. **americàna** (*P. americana*) differs only in being slightly larger in all respects. N. S. to N. C. and Ky.

secúnda. To 10 in.: lvs. ovate to nearly orbicular, to 2 in. long: fls. white or greenish-white. N. Amer.—Differs from other species here enumerated in having the style straight rather than declined, petals not spreading and fls. in a secund raceme.

uliginòsa. To 1 ft.: lvs. broadly ovate to orbicular, to 3 in. long, obtuse, finely crenulate, glossy: fls. pink to purplish, about ¼ in. long. N. S. to Minn., B. C. to Calif. and Colo.

uniflòra: *Moneses uniflora.*

PYROLÀCEÆ (sometimes written *Pirolaceæ*). Shinleaf Family. Low mostly evergreen herbaceous or scarcely woody plants of northern regions, sometimes included in Ericaceæ. Three genera are characteristic of the family, Pyrola, Chimaphila, Moneses; these are plants with small nearly regular bisexual fls. in which the corolla is comprised of separate petals. Some authors include the saprophytic genera, like Monotropa, Pterospora and Sarcodes in this family, others separate them in the family Monotropaceæ and still others retain them in Ericaceæ; they are not cultivated plants but Monotropa and Sarcodes are sometimes planted.

PYROLÍRION. Fire-Lily. *Amaryllidaceæ.* Bulbous herbs with linear lvs., scape single-fld., spathe tubular below, equilaterally bifid above; fl. erect, funnelform, yellow to deep orange with cylindrical tube expanded upward, stigmas trifid, spatulate; Bolivia–Peru.

aùreum (*Zephyranthes aurea*). Lvs linear, green, somewhat falcate: scape stout at base, tapering upward; fls. deep orange, erect, opening flat 1½–2 in. diam.; stigmas markedly spatulate. Peru.

PÝROSTÈGIA. *Bignoniaceæ.* S. American woody evergreen climbers with lvs. of 2–3 lfts. and 3-parted tendrils, tubular fls. in terminal panicles, the stamens exserted, and long linear frs.; commonly planted as an arbor and roof vine in S. U. S., making a brilliant display when in bloom; sometimes grown in conservatories. Propagated by cuttings.

ígnea (*P.* and *Bignonia venusta*). Lfts. ovate, to 3 in. long: fls. reddish-orange, to 3 in. long, with reflexed lobes margined with white hairs: fr. to 1 ft. long. Brazil.

índica: *Oroxylon indicum.*

venústa: *P. ignea.*

PÝRRHOCÁCTUS. *Cactaceæ.* A small genus combined by some authors with Malacocarpus but separated by its scaly ovary in the axils of whose scales are bristles and a white-woolly tomentum: fls. reddish-yellow.

centetèrius (*Echinocactus centeterius* and *mammillarioides. Malocacarpus mammillarioides*). Nearly globose; ribs 14–16 and strongly tubercled with large felted areoles; spines about 7: fls. yellowish-red. Chile.

curvispìnus (*Echinocactus curvispinus*). Solitary, globose to subcylindric, to 7 in. diam., gray-green; ribs 16, to 1¼ in. high, rounded, somewhat tubercled; spines similar, usually 14–18, lowest to 1¼ in. long, middle ones curved upwards and shorter, yellow to gray: fls. reddish-yellow. Chile.

Froehlichiànus (*Echinocactus Froehlichianus. Gymnocalycium Froehlichianum*). Globose to subcylindrical, to 7½ in. high and 6 in. diam., usually spineless on top; ribs 16, to 1¼ in. high, obtuse, straight or spiralled, tubercled; spines to 17, the lowest to 1¼ in. long, others shorter, yellow to gray: fls. yellow. Chile.—By some authors believed to represent a variant of *P. curvispinus.*

hórridus: probably *P. tuberisulcatus.*

mammillarioìdes: *P. centeterius.*

Soehrénsii: *P. tuberisulcatus.*

Strausiànus (*Echinocactus* and *Malacocarpus Strausianus*). Solitary, globose to ovoid, gray-green, to 6 in. tall and 3½ in. diam.; ribs 13, somewhat spiralled, rounded, thick, tubercled; spines all similar, usually 9–20, the 4 inner ones larger and to 1¼ in. long, others stout and awl-shaped: fls. salmon-pink, to ⅝ in. long. W. Argentina.

tuberisulcàtus (*Echinocactus Soehrensii* and *tuberisulcatus. P. Soehrensii*). Solitary, depressed-globose but not concave on top, covered with spines, to 6 in. diam. or more; ribs 16–20, about ¾ in. high, straight, prominently tubercled; spines brown to gray, radials 10–12 or less when young, to about ⅝ in. long, centrals 4–5, to 1 in. long, stiff: fls. brownish-yellow, striped red, to nearly 2 in. long. Chile.

umadeàve (*Echinocactus* and *Friesia umadeave*). To 4 in. high and broad; ribs about 18, areoles large and white-woolly; spines 30–35, to 1 in. and more long, curved upwards, white or brownish: fls. pale yellow, 1½ in. long. Argentina.

PÝRUS. Pear. *Rosaceæ.* About a score of trees and large shrubs in the northern hemisphere, commonly deciduous, a few species grown for the edible frs. and others somewhat for ornament and interest: fls. showy, bisexual, in umbel-like clusters in advance of foliage or with it, white or nearly so; petals 5, on rim of calyx-cup; stamens many; styles 3–5, free to base: fr. a pome, with core of 5 carpels, the flesh of the edible kinds containing hard or grit cells. See *Malus.*

The species and their varieties of Pyrus are hardy plants of simple culture in any ordinary soil and garden location. Like the species of Malus they propagate readily from seeds sown or preferably stratified in autumn, and kinds not yet producing fruit may be grafted or budded on closely related stocks. See *Pear.*

adstríngens: *Malus adstringens.*

aldenhaménsis: *Malus sylvestris* var.

americàna: *Sorbus americana.*

amygdalifórmis. Almond Pear. Shrub or tree, in several vars., to 20 ft. or more, grown for ornament in differing forms: lvs. thick, oblong to narrow-obovate, entire or nearly so, glaucescent and becoming nearly or quite glabrous underneath: fls. about 1 in. across, white: fr. 1 in. more or less diam., yellowish-green and hard. France to Asia Minor. Var. **pérsica** (*P. persica. P. sinaica*). Lvs. oblong and fr. depressed endwise.

angustifòlia: *Malus angustifolia.*

arbutifòlia: *Aronia arbutifolia.*

Ària: *Sorbus Aria.*

Arnoldiàna: *Malus floribunda* var.

astracánica: *Malus sylvestris* var.

atropurpùrea: *Aronia atropurpurea.*

atrosanguínea: *Malus Halliana.*

Aucupària: *Sorbus Aucuparia.*

auriculàris: *Sorbopyrus auricularis.*

baccàta: *Malus baccata.*

betulæfòlia. Tree to 20 ft. or more, branchlets tomentose: lvs. mostly ovate-acuminate, sharp-serrate, shining above and tomentose or becoming nearly glabrous underneath: fls. ⅔ in. across, white: fr. about ½ in. diam., brown and dotted, calyx-lobes falling. N. China; hardy N.—Free-flowering and suggested as experimental stock for the pear.

Bollwylleriàna: *Sorbopyrus auricularis.*

Bretschneìderi. One of the oriental pears, distinguished by ovate or elliptic-ovate lvs. with a mostly acuminate base, yellow subglobose fr. about 1 in. long, calyx falling. N. China; hardy N.

brévipes: *Malus brevipes.*

Calleryàna. Glabrous tree: lvs. ovate or broader, short-pointed, crenate (not sharp-serrate): fls. 1 in. or less across, white, styles 2 or 3: fr. about ½ in. or less diam., globular, dotted brown. China; hardy N.—Attracts attention as a pear stock. Var. **graciliflòra**, fls. smaller and pedicels more slender. Var. **tomentélla** has young branchlets and young lvs. tomentose or floccose, pedicels villous.

cerasífera: see *Malus baccata.*

commùnis. Pear. Large long-lived tree: lvs. oval to oblong-ovate, hard in texture, short-pointed, crenate-serrulate to nearly entire, glabrous or becoming so: fls. 1 in. or more across, white sometimes tinged pink, appearing with first foliage: fr. mostly pyriform, variable, with gritty cells. Eu. and W. Asia.—Cult. as an orchard fr. in many vars.

coronària: *Malus coronaria.*

cratægifòlia: *Malus florentina.*

Cydònia: *Cydonia oblonga.*

Dawsoniàna: *Malus Dawsoniana.*

Delavàyi: *Docynia Delavayi.*

doméstica: *Sorbus domestica.*

elæagrifòlia. Small commonly thorny tree tomentose on twigs and both sides or under side of lvs., the latter lanceolate to very narrow-obovate and entire: fls. about 1 in. across, white, on tomentose pedicels: fr. about 1 in. diam., green, short-pedicelled. Asia Minor.

Èleyi: *Malus sylvestris* var.

florentìna: *Malus florentina.*

floribúnda: *Malus floribunda.*

formosàna: *Malus formosana.*

fúsca: *Malus fusca.*

germánica: *Mespilus germanica.*

glabràta: *Malus glabrata.*

glaucéscens: *Malus glaucescens.*

Halliàna: *Malus Halliana.*

heterophýlla: see *Malus heterophylla.*

Hòpa: see *Malus adstringens.*

hupehénsis: *Malus hupehensis.*

ioénsis: *Malus ioensis.*

japónica: *Chænomeles japonica.*

Kàido: *Malus micromalus.*

kansuénsis: *Malus kansuensis.*

lancifòlia: *Malus lancifolia.*

Lecóntei. Hybrid race between *P. communis* and *P. pyrifolia*, represented by LeConte, Kieffer and other pomological vars.: frs. more firm or hard in substance as a rule than those of *P. communis*, calyx persistent.

Lemòinei: *Malus sylvestris* var.

lóngipes (*P. communis* var. *longipes*). Small tree: lvs. ovate or broader, acute or nearly obtuse, rounded or subcordate at base, becoming glabrous underneath, petiole long: fls. about 1 in. across, white: fr. about ½ in. diam., globose, calyx deciduous. Algeria.

Màlus: *Malus sylvestris.*

Maùlei: *Chænomeles japonica.*

melanocárpa: *Aronia melanocarpa.*

micromàlus: *Malus micromalus.*

Niedzwetzkyàna: *Malus sylvestris* var.

nìgra: *Aronia melanocarpa.*

nivàlis. Snow Pear. Small tree, white-tomentose on many parts, thornless: lvs. oval to obovate, acute, narrowed to base, entire or essentially so, tomentum remaining on under surface: fls. about 1½ in. across, white: fr. 1–2 in. diam., globose. E. Eu.—Useful for ornament, and fr. for perry (pear cider).

ovoídea: *P. ussuriensis* var.

Párkmanii: *Malus Halliana* var.

Páshia. Tree to 30 ft. or more, usually spiny: lvs. ovate to ovate-lanceolate, acuminate, crenate, becoming nearly or quite glabrous, often lobed and sharp-serrate on shoots: fls. 1 in. across, white: fr. about ¾ in. across, subglobose, brown. Himalayas to China; hardy N.

pérsica: *P. amygdaliformis* var.

phæocárpa. Tree of medium size, most parts becoming glabrous: lvs. elliptic to ovate, long-attenuate, base mostly broad-cuneate, open-serrate: fls. about 1 in. across, white: fr. about 1 in. long, pyriform, brown. N. China; hardy N.

pinnatífida: *Sorbus hybrida.*

platycárpa: *Malus platycarpa.*

Pollvèria: *Sorbopyrus auricularis.*

Práttii: *Malus Prattii.*

prunifòlia: *Malus prunifolia.*

pulchérrima: *Malus floribunda.*

purpùrea: *Malus purpurea.*

pyrifòlia (*P. serotina*). Sand Pear. Tree to 50 ft., glabrous or becoming so: lvs. ovate or somewhat longer, long-acuminate, setose-serrate: fls. 1½ in. across, white, with lvs. or just in advance of them, styles 5: fr. mostly apple-shaped, very hard, brown, calyx-lobes falling. China. —Cult. (in var. **cúlta**) for its fr. LeConte, Kieffer and other orchard vars. are hybrids with the common pear: see *P. Lecontei.*

Ríngo, Rínkii: *Malus prunifolia* var. *Rinkii.*

Ríversii: *Malus spectabilis* var.

rivulàris: *Malus fusca.*

robústa: see *Malus baccata.*

salicifòlia. Often spiny tree to 30 ft.: lvs. willow-like, ¾ in. or less broad, tapering at both ends, entire, tomentose when young but becoming glabrous: fls. ¾ in. across, white: fr. about 1 in. long, pyriform, yellowish, calyx persistent. S. E. Eu., Caucasus, Armenia; hardy N.

Sárgentii: *Malus Sargentii.*

Scheìdeckeri: *Malus floribunda* var.

serótina: *P. pyrifolia.*

serrulàta. Small tree differing from *P. pyrifolia* by shorter lvs. without setose serratures, smaller fls., with styles 3 or 4, subglobose fr. about ¾ in. long, and calyx persistent or often so. China; hardy N.

Sièboldii: *Malus Sieboldii.*

sinàica: *P. amygdaliformis* var. *persica.*

sinénsis (Decne.): *P. ussuriensis.*

Sórbus: *Sorbus domestica.*

Soulárdii: *Malus Soulardii.*

spectábilis: *Malus spectabilis.*

sublobàta: *Malus sublobata.*

theífera: *Malus hupehensis.*

Toríngo: *Malus Sieboldii.*

toringoìdes: *Malus toringoides.*

torminàlis: *Sorbus torminalis.*

transcéndens: *Malus transcendens.*

transitòria: *Malus transitoria.*

trilobàta: *Malus trilobata.*

Tschonóskii: *Malus Tschonoskii.*

ussuriénsis. Tree: lvs. nearly orbicular to ovate, broad or subcordate at base, acuminate, strongly setose-serrate, nearly or quite glabrous: fls. 1 in. and more across, white, on short pedicels: fr. to 1½ in. diam., nearly globose, greenish-yellow, calyx persistent. N. E. Asia; hardy N., and has been tried experimentally as pear stock. Var. **ovoídea** (*P. ovoidea*) has ovate to oblong-ovate lvs. and more ovoid long-stemmed frs. N. E. Asia.—*P. sinensis*, in part, belongs here.

Veìtchii: *Malus yunnanensis* var.

yunnanénsis: *Malus yunnanensis.*

Zùmi: *Malus Zumi.*

PÝXIDANTHÈRA. *Diapensiaceæ.* Creeping evergreen shrublets forming cushion-like masses, native in pine-barrens from N. J. to N. C., and sometimes transplanted to the rock-garden and similar places.

barbulàta. Pyxie. Flowering Moss. Pine-Barren Beauty. Branches to 1 ft. long, covered with very small lvs.: fls. white, about ⅓ in. across, solitary but many at ends of branches. Mar.–May.

brevifòlia. Separated from *P. barbulata* by smaller hoary lvs., ciliate calyx-lobes, and lobes of corolla cuneate rather than nearly orbicular. N. C.

PYXIE: *Pyxidanthera barbulata.*

Q

QUAIL-BUSH: *Atriplex lentiformis.*

QUAMASIA: *Camassia.*

QUAMOCLIDION: *Mirabilis multiflora.*

QUÁMOCLIT. Star-Glory. *Convolvulaceæ.* Trop. herbaceous vines with alternate, simple or compound lvs. and salverform red or yellow fls. in long-stalked axillary clusters, the stamens and style exserted; cult. as for *Ipomœa,* from which it is distinguished by the small slender fls. and protruding stamens and style. Often grown from seed as summer-flowering vines.

coccínea (*Ipomœa coccinea*). Star Ipomœa. Ann. to 10 ft.: lvs. cordate-ovate, to 6 in. long, entire or angular-lobed: fls. scarlet with yellow throat, to 1½ in. long. Trop. Amer.; nat. in N. Amer. Var. **hederifòlia** (*Ipomœa hederifolia*) has 3–5-lobed or -parted lvs. Var. **lutèola** has yellow or orange fls. 1 in. long.

lobàta (*Mina lobata*). Per. to 20 ft.: lvs. cordate, 3 in. across, deeply 3-lobed: fls. crimson becoming pale yellow, with short tube and cylindrical limb ¾ in. long, the stamens long-exserted. Mex.

pennàta (*Ipomœa Quamoclit*). Cypress-Vine. Ann. to 20 ft.: lvs. pinnately cut into thread-like segms.: fls. scarlet, to 1½ in. long. Trop. Amer., S. U. S. Var. **álba** has white fls.

Slòteri (*Ipomœa cardinalis*). Cardinal-Climber. Hybrid between *Q. coccinea* and *Q. pennata:* ann.: lvs. to 4½ in. across, palmately lobed nearly to base into 7–15 segms. to ½ in. across: fls. crimson with white throat, to 2 in. long.

QUÁSSIA. *Simarubaceæ.* Trees with bitter white wood having medicinal properties, and sometimes grown for ornament in the tropics: lvs. pinnate: fls. diœcious, in terminal racemes or panicles: fr. of 5 spreading drupes. One species is sometimes planted in the warmest parts of the country for interest, it being a medicinal plant with a bitter principle; also worth growing for ornament.

amàra. To 10 ft. and more: lvs. of 5 elliptic-oblong lfts., the petioles winged: fls. crimson, to 1½ in. long, in racemes. Trop. Amer.

QUEEN-CUP: *Clintonia uniflora.* **-of-the-Meadow:** *Filipendula Ulmaria.* **-of-the-Prairie:** *Filipendula rubra.*

QUEENS DELIGHT: *Stillingia sylvatica.*

QUEENSLAND NUT: *Macadamia ternifolia.*

QUÉRCUS. Oak. *Fagaceæ.* Hardwood trees and bushes mostly of the northern hemisphere with alternate lvs., staminate fls. in slender drooping catkins, pistillate in 1–many-fld. spikes, and nut or acorn inclosed or surrounded at base by a cup-like involucre; grown for ornament and timber, commonly with striking colors in autumn. The acorns are employed as feed for hogs and the bark of some species yields medicinal products, cork and tanning materials; major trees in hort. literature.

Oaks thrive on rich rather moist soil for the most part, although the scrub oaks inhabit dry barren lands. Most of the deciduous species are hardy North, while the evergreen kinds are adapted only to the southern and warmer parts of the country. Propagated by seeds sown in autumn or stratified and the evergreen species also by cuttings and layers; protect the seed-acorns from vermin. Varieties may be grafted on seedling stocks under glass in early spring or sometimes in August.

acùta. Japanese Evergreen O. Small tree: lvs. persistent, oblong, to 5 in. long, entire and wavy-margined: cup pubescent, about ¼ length of nut. Japan.

acutíssima. To 50 ft.: lvs. deciduous, oblong, to 7 in. long, with bristle-like teeth, shining above: cup with spreading scales, ⅔ length of nut. Asia.—Formerly known as *Q. serrata* but this name is properly a synonym of *Q. glandulifera.*

Ǽgilops (*Q. ventricosa*). To 80 ft.: lvs. deciduous, elliptic to oblong, to 4 in. long, with 9–13 entire bristle-tipped lobes, yellowish-tomentose beneath: cup ⅓–½ length of nut. S. Eu., W. Asia.

agrifòlia. Coast Live O. To 100 ft.: lvs. persistent, elliptic, to 3 in. long, spiny-toothed, light green and glossy beneath: cup pubescent, ¼–⅓ length of nut. Calif.

álba (*Q. ramosa*). White O. To 100 ft.: lvs. deciduous, obovate, to 9 in. long, with 5–9 entire obtuse lobes, glaucescent beneath: cup about ¼ length of nut. Me. to Fla. and Tex. Var. **repánda** has lvs. with shallow sinuses.

alièna. Oriental White O. To 70 ft.: lvs. deciduous, oblong-obovate, to 8 in. long, coarsely toothed, gray-tomentose beneath: cup gray-tomentose, about ⅓ length of nut. Japan, Korea, China.

ambígua: *Q. borealis.*

aquática: *Q. nigra.*

arkansàna. Like *Q. marilandica* but lvs. pale underneath, and the scales on cup of acorn erect and in a single row: lvs. deciduous, broad-obovate, broad at apex, little if at all lobed, to 4 or 5 in. long: cup shallow and flat. Ark.

Ballòta: *Q. Ilex* var. *rotundifolia.*

bícolor. Swamp White O. To 70 ft.: lvs. deciduous, obovate, to 6 in. long, coarsely toothed or lobed, dark green above, whitish-tomentose beneath: cup about ⅓ length of nut. Que. to Ga. and Ark.

boreàlis (*Q. ambigua. Q. rubra* var. *ambigua*). Northern Red O. To 80 ft.: lvs. deciduous, oblong, to 9 in. long, 7–11-lobed halfway to middle, pale beneath: cup about ⅓ length of nut. N. S. to Pa. and Ia. Var. **máxima** is a taller tree with larger acorns. N. S. to Fla. and Tex.

brùtia: *Q. Robur.*

camàta péndula: *Q. pyrenaica* var.

canariénsis (*Q. Mirbeckii*). Tree to 100 ft.: lvs. deciduous, ovate-oblong, to 5 in. long, coarsely toothed, shining above: cup about ½ length of nut. Spain, N. Afr.

castànea: *Q. Muhlenbergii.*

Cátesbæi: *Q. lævis.*

Cérris. Turkey O. To 100 ft.: lvs. deciduous, oblong, to 5 in. long, with 3–8 pairs of entire or toothed lobes, grayish-pubescent beneath when young: cup mossy, about ½ length of nut. S. Eu., W. Asia. Var. **austrìaca,** Austrian Turkey Oak, has shallowly lobed lvs. Var. **laciniàta** has pinnatifid lvs. Var. **péndula** has drooping branches and pinnatifid lvs.

chrysólepis. Cañon or Maul O. To 90 ft.: lvs. persistent, elliptic, to 4 in. long, spiny-toothed or with entire revolute margins, glaucous and tomentose beneath: cup tomentose, about ¼ length of nut. Ore. to Lower Calif.

cleistocárpa: see *Lithocarpus cleistocarpa.*

coccífera. Kermes O. Shrub: lvs. persistent, broad-elliptic, to 1¾ in. long, with few spiny teeth, shining: cup about ½ length of nut. S. Eu., N. Afr., W. Asia.

coccínea. Scarlet O. To 80 ft.: lvs. deciduous, oblong or elliptic, to 6 in. long, with 7–9 very deep lobes, bright green: cup ⅓–½ length of nut. Me. to Fla. and Mo.

conférta: *Q. Frainetto.*

córnea: *Lithocarpus cornea.*

críspula: *Q. mongolica* var. *grosseserrata.*

cupressoìdes: *Q. Robur.*

cuspidàta: *Castanopsis cuspidata.*

Darlingtònia: *Q. laurifolia* var.

densiflòra: *Lithocarpus densiflora.*

dentàta (*Q. Diamio*). To 80 ft.: lvs. deciduous, obovate, to 1 ft. long, with 4–9 pairs of rounded lobes or teeth, pubescent beneath: cup with spreading scales, ½ or more length of nut. Japan, Korea, China. Var. **pinnatífida** has lvs. divided almost to midrib.

Diàmio: *Q. dentata.*

dumòsa. California Scrub O. Shrub to 8 ft.: lvs. persistent, oblong to elliptic, to 1 in. long, spiny-toothed or entire, glossy dark green above, pale and pubescent beneath: cup about ½ length of nut. Calif.

duràta. Leather O. Spreading shrub to 5 ft., branchlets densely tomentose: lvs. oval, to 1 in. long, dark green above, coriaceous, margins with sharp dentate teeth, persistent: cup to ¾ in. across and nearly ½ in. deep. Calif.

ellipsoidàlis. To 80 ft. or more: lvs. deciduous, elliptic to 4 or 5 in. long, with deep narrow lobes bearing pointed teeth, becoming glabrous underneath except in axils of veins: cup ⅓ or ½ length of nut. Man. to Mich. and Ia.

Éngelmannii. To 60 ft.: lvs. persistent, oblong, about 2 in. long, entire or sometimes toothed, pale beneath: cup ½ length of nut. S. Calif.

falcàta (*Q. rubra*). Spanish Red O. To 80 ft. or more:

lvs. deciduous, obovate, to 8 in. long, with 3–7 deep acute lobes, pubescent beneath: cup ¼–⅓ length of nut. N. J. to Fla. and Tex.—Formerly the name *Q. falcata* was considered a synonym of *Q. rubra*, and both were mistakenly applied to the tree now known as *Q. borealis*.

Frainétto (*Q. conferta. Q. pannonica*). Italian O. To 120 ft.: lvs. deciduous, obovate, to 7 in. long, with usually 7 very deep lobes, dark green above, pale and pubescent beneath: cup ⅓–½ length of nut. S. Eu.

Gámbelii. Shrub to 15 ft.: lvs. deciduous, broad-obovate, divided about half way into rounded lobes, glossy above, slightly pubescent beneath: cup about ½ length of nut. Colo. to New Mex.

Garryàna. Oregon O. To 100 ft.: lvs. deciduous, oblong-obovate, to 6 in. long, divided about half way into 3–5 pairs of entire or toothed lobes: cup pubescent, about ⅓ length of nut. B. C. to Calif.

georgiàna. Shrub or tree to 40 ft.: lvs. deciduous, obovate, 2½ in. long, lobed halfway to midrib or sometimes pinnatifid, shining above, pale beneath: cup ⅓–½ length of nut. Ga.

glàbra: *Lithocarpus glabra.*

glandulífera (*Q. serrata*). To 50 ft.: lvs. deciduous, oblong-obovate, to 6 in. long, sharply toothed, shining above, grayish-pubescent beneath: cup about ⅓ length of nut. Japan, Korea, China.—Some of the material known as *Q. serrata* is *Q. acutissima*.

glaùca. To 50 ft.: lvs. persistent, oblong, to 5 in. long, toothed above middle, silky and glaucous beneath when young: cup pubescent, about ⅓ length of nut. Asia.

Havárdii. Shinnery O. Low shrub to 2½ ft.: lvs. deciduous, oblong, to 2½ in. long, coarsely lobed or toothed, bright green, pubescent beneath: acorns to 1 in. long. Tex., New Mex.

heterophýlla. Hybrid between *Q. Phellos* and either *Q. borealis* var. *maxima* or *Q. velutina*. N. J. to Tex.

Ìlex. Holly or Holm O. To 60 ft.: lvs. persistent, ovate to lanceolate, to 3 in. long, toothed or entire, shining dark green above, yellowish- or whitish-tomentose beneath: cup about ½ length of nut. S. Eu. Var. **rotundifòlia** (*Q. Ballota*) has smaller ovate lvs. Var. **Fórdii** is of pyramidal habit.

ilicifòlia. Scrub O. Much branched shrub to 10 ft. or more: lvs. deciduous, obovate, to 4½ in. long, with 2 pairs of broad entire or bristly-toothed lobes, whitish-tomentose beneath: cup ½ length of nut. Me. to Va. and Ky.

imbricària. Shingle O. To 60 ft.: lvs. deciduous, oblong, to 6 in. long, entire, pale and pubescent beneath: cup ⅓–½ length of nut. Pa. to Ga. and Ark.

Kélloggii. California Black O. To 80 ft. or more: lvs. deciduous, oblong, to 6 in. long, with narrow sharp-dentate lobes half way to middle, pubescent or sometimes becoming glabrous underneath: cup ⅓ or more as long as nut. Calif., Ore.

lævigàta. Lvs. thick and glabrous, oblong-lanceolate, to 7 in. long, entire or slightly toothed. Japan.

læ̀vis (*Q. Catesbæi*). To 50 ft. and more: related to *Q. falcata*, with lvs. glabrous and shining underneath and petioles very short, deciduous: cup deeper, with scales over edge and down inside. N. C. to Fla. and west.

lanuginòsa: *Q. pubescens.*

laurifòlia. Laurel O. To 60 ft.: lvs. deciduous or somewhat persistent, oblong, to 6 in. long, entire or sometimes slightly lobed, shining dark green above, light green beneath: cup ¼ length of nut. Va. to Fla. and La. Var. **Darlingtònia** (*Q. Darlingtonia*), Darlington O., is listed as being of more compact habit and lvs. more persistent.

lobàta. Valley O. To 100 ft.: lvs. deciduous, obovate, to 3 in. long, with 7–11 obtuse lobes, grayish-tomentose beneath: cup ¼–⅓ length of nut. Calif.

longifòlia: *Q. Robur* var. *holophylla.*

Louéttei: *Q. petræa* var. *mespilifolia.*

lyràta. Overcup O. To 100 ft.: lvs. deciduous, obovate-oblong, to 8 in. long, deeply pinnatifid with a large terminal lobe, white-tomentose beneath or green and pubescent: cup usually inclosing the nut. N. J. to Fla. and Tex.

macranthèra. To 60 ft.: lvs. deciduous, obovate, to 7 in. long, with 8–10 pairs of broad lobes, grayish-tomentose beneath: cup about ½ length of nut. W. Asia.

macrocárpa. Burr or Mossy-Cup O. To 80 ft. or more: lvs. deciduous, obovate, to 10 in. long, pinnatifid with large terminal lobe, grayish-pubescent beneath: cup with fringe-like border, about ½ length of nut. N. S. to Pa. and Tex. Var. **olivæfórmis** has smaller and more deeply lobed lvs., nut smaller and usually ½ or more inclosed by cup.

marilándica. Blackjack O. To 50 ft. but mostly less: lvs. deciduous, broader upward or toward apex, to 6 or 8 in. long, shallowly lobed at top, tomentose underneath: cup ⅓ or more length of nut, the rim scales recurving. N. Y. south and west.

máxima: *Q. borealis* var.

Michaùxii: *Q. Prinus.*

Mírbeckii: *Q. canariensis.*

mongólica. Mongolian O. To 100 ft.: lvs. deciduous, short-stalked and clustered at ends of branches, obovate, to 8 in. long, with 7–10 broad teeth: cup with short fringe, about ⅓ length of cup. China, Korea, Japan. Var. **grosseserràta** (*Q. crispula*) has smaller lvs. with acute teeth.

montàna. Chestnut O. Often confused with *Q. Prinus*, but lvs. yellow-green above and only slightly pubescent beneath when young, turning dull orange instead of crimson in autumn. Me. to S. C. and Ala.

Muhlenbérgii (*Q. castanea* of cult.). Yellow Chestnut O. To 100 ft. and more: lvs. deciduous, oblong to lance-oblong, to 6 in. long, with incurved coarse teeth along sides, pubescent underneath: cup nearly half length of nut. New England west and south.

myrsinæfòlia (*Q. Vibreyana*). To 60 ft.: lvs. persistent, lanceolate, to 5 in. long, acuminate, toothed, shining above, glaucous beneath: cup about ⅓ length of nut. Japan, E. China.

nìgra (*Q. aquatica*). Water O. To 80 ft.: lvs. mostly deciduous or in some regions reported persistent, obovate, to 3 in. long, 3-lobed at apex or entire, bluish-green above: cut ¼–⅓ length of nut. Del. to Fla. and Tex.

olivæfórmis: *Q. macrocarpa* var.

palústris. Pin O. To 80 ft. or more: lvs. deciduous, elliptic, to 5 in. long, with 5–7 oblong toothed lobes, bright green: cup about ⅓ length of nut. Mass. to Del. and Ark. Var. **aùrea** is listed.—Planted as a street or avenue tree.

pannónica: *Q. Frainetto.*

pectinàta: *Q. Robur* var.

pedunculàta: *Q. Robur.*

petræ̀a (*Q. sessiliflora*). Durmast O. Very similar to *Q. Robur*, differing chiefly in the longer petioles and almost sessile frs. Eu., W. Asia. Var. **mespilifòlia** (*Q. Louettei*) has narrow nearly entire lvs.

Phéllos. Willow O. To 60 ft.: lvs. deciduous, linear-oblong, to 4 in. long, entire, light green and shining above: cup about ¼ length of nut. N. Y. to Fla. and Tex.

phillyræoìdes. To 30 ft.: lvs. persistent, elliptic or obovate, to 2½ in. long, wavy-toothed: cup tomentose. Japan, China.

prinoìdes. Chinquapin O. Shrub to 6 ft. or rarely small tree: lvs. deciduous, oblong, to 5 in. long, toothed, grayish-pubescent beneath: cup about ½ length of nut. Me. to Ala. and Tex.

Prìnus (*Q. Michauxii*). Basket O. To 100 ft.: lvs. deciduous, obovate, to 7 in. long, coarsely toothed, shining bright green above, grayish-pubescent beneath: cup ⅓–½ length of nut. Del. to Fla. and Tex.

pubéscens (*Q. lanuginosa* of cult.). Pubescent O. Shrub or tree to 45 ft.: lvs. deciduous, obovate, to 4 in. long, with 4–8 pairs of rounded lobes, grayish-pubescent beneath: cup tomentose, ⅓–½ length of nut. S. Eu., W. Asia.

pyrenàica (*Q. Toza*). To 60 ft., suckering: lvs. deciduous, obovate, to 6 in. long, with 5–6 pairs of acute deep lobes, yellowish-tomentose beneath: cup tomentose, ⅓–½ length of nut. S. Eu. Var. **péndula** (*Q. camata pendula*) has drooping branches.

ramòsa: *Q. alba.*

repánda: *Q. alba* var.

Ròbur (*Q. pedunculata. Q. brutia. Q. cupressoides*). English O. To 80 ft. or more: lvs. deciduous, obovate, to 5 in. long, with 3–7 pairs of rounded lobes: cup about ⅓ length of nut. Eu., N. Afr., W. Asia. Some of the hort. vars. are: **atropurpùrea,** lvs. purple; **Concòrdia,** lvs. bright yellow; **fastigiàta,** of columnar habit; **filicifòlia,** lvs. deeply cut into linear crisped lobes; **holophýlla** (*Q. pedunculata* var. *longifolia*), lvs. entire; **pectinàta,** lvs. deeply cut into narrow lobes; **péndula** (var. *Dauvessei*), branches drooping; **variegàta,** lvs. margined or variegated white.

rùbra: a confused name; the Northern Red O. to which this name has been referred is *Q. borealis* while the Southern or Spanish Red O. is *Q. falcata*; the var. **ambígua** is *Q. borealis.*

sempérvirens: *Q. virginiana.*

serràta: *Q. glandulifera*; see also *Q. acutissima.*

sessiliflòra: *Q. petræa.*

Shumárdii. Tree to 130 ft.: lvs. deciduous, elliptical to obovate, to 7 in. long, with 7–9 coarse sharp-pointed lobes, under surface green and glabrous except in axils of larger veins: nut to 1¼ in. long in wide saucer-shaped cup. N. C. to Fla., Kans. and S. Mich.

stellàta. Post O. To 100 ft. but usually much less: lvs. deciduous, obovate, lyrate-lobed, 6–8 in. long, lobes obtuse, grayish or whitish underneath: cup ⅓ or more length of nut. Mass. south and west.

Sùber. Cork O. To 60 ft., with thick bark yielding the cork of commerce: lvs. ovate, to 3 in. long, toothed, shining dark green above, grayish-tomentose beneath: cup ⅓–½ length of nut. S. Eu., N. Afr.

texàna. Tree to 35 ft.: lvs. elliptical to obovate, to 3½ in. long, with 5 sharp-pointed lobes, infrequently with minute axillary tufts of hair on lower surface: nut to ¾ in. long. Tex.—Similar to *Q. Shumardii* but of questionable hardiness in the N.

tinctòria: *Q. velutina.*

Tòza: *Q. pyrenaica.*

Túrneri. Hybrid between *Q. Robur* and probably *Q. Ilex*, half-evergreen tree to 50 ft. with toothed lvs.

undulàta. To 30 ft.: lvs. deciduous, elliptic-oblong, to 3 in. long, coarsely toothed or lobed, bluish-green and pubescent: cup about ½ length of nut. Colo. to Mex. and Tex.

utahénsis. To 50 ft.: lvs. deciduous, oblong, to 5 in. long, with 3–5 pairs of deep broad lobes, shining dark green, pale and pubescent beneath: cup pubescent, about ⅓ length of nut. Colo. to New Mex. and Tex.

variábilis. To 80 ft.: lvs. deciduous, oblong, to 6 in. long, with bristle-like teeth, white-tomentose beneath: cup with curved scales, ½ or more length of nut. China, Korea, Japan.

velùtina (*Q. tinctoria*). Black O. To 100 ft. or more: lvs. deciduous, ovate to oblong, to 10 in. long, with 7–9 broad toothed lobes, shining dark green above: cup pubescent, with fringe-like border, about ½ length of nut. Me. to Fla. and Tex.

ventricòsa: *Q. Ægilops.*

Vibreyàna: *Q. myrsinæfolia.*

vìrens: *Q. virginiana.*

virginiàna (*Q. sempervirens. Q. virens*). Live O. To 60 ft.: lvs. persistent, elliptic to oblong, to 5 in. long, usually entire, shining dark green above, whitish-tomentose beneath: cup tomentose, about ¼ length of nut. Va. to Fla. and Mex.

Wìlsonii: *Lithocarpus cleistocarpa.*

Wíslizenii. To 75 ft.: lvs. persistent, usually oblong, to 4 in. long, glossy above, yellowish beneath, margins entire or spiny-toothed: nut cylindrical and tapering to apex or conical, to 1⅝ in. long, cup inclosing ¼–½ of nut. Calif.

QUILLÀJA. *Rosaceæ.* Evergreen trees of S. Amer., the bark often with soap-like and medicinal properties, having alternate simple lvs., unisexual fls. in clusters, and fr. of 5 leathery follicles united at base; grown out-of-doors in the S. and Calif. Propagated by cuttings under glass.

Saponària. Soap-Bark Tree. To 60 ft.: lvs. ovate, to 2 in. long, sparingly toothed, shining: fls. white, about ½ in. across. Chile.

QUINCE. The pomological quinces are two, the common or true quince, *Cydonia oblonga*, and the Chinese quince, *Chænomeles sinensis*. The latter is little known in North America although long ago introduced. It will stand on the seaboard as far north as Long Island, but is not generally hardy north of Philadelphia in the East. The fruits become 6 inches or more long, and have been recommended for culinary purposes. Several related plants are known as quince, grown for the ornamental early spring bloom and for the edible fruit. The ornamental or "flowering" quinces may be found under the entry *Chænomeles*.

The common orchard quince, *Cydonia oblonga*, is a small crooked-branched tree native in Asia, grown in temperate climates for its fruit which is used in preserves and cookery. It is a slow-growing shallow-rooted tree, requiring a rather heavy moist deep soil for best results, but very heavy lands are likely to produce green fruit of poor quality. The trees may be set one rod apart both ways which is greater than the usual full height of large specimens. The quince propagates readily from long hardwood cuttings. Nursery practice is to bud named varieties on rooted Angers quince cuttings or more rarely on seedlings. Plants are set when one or two years old; the second or third year thereafter a few fruits should be produced and then the crop should be steady for any number of years. The quince is but little hardier than the peach in its wood and may be severely injured at temperatures of 15° to 20° below zero. In the warmer parts of the country where the humidity is high, fire-blight is the limiting factor. Commercial quince culture is therefore largely restricted to the favored fruit regions of California, Ohio, Pennsylvania, New York and Ontario. In home planting it is worth attention over a much wider area.

The fruit is hand-picked when mature and well colored. Although a hard fruit, the quince shows bruises very readily and must, therefore, be handled with great care. In the East, quinces go to the general market in bushels. Fancy grades may be packed in smaller baskets. The fruit may be kept for a relatively short time as compared with the apple at 30° to 32°. Usually however, the crop is used at once. In some parts of the world quinces of much higher quality have been developed than any grown in North America. Here the one variety is the Orange, outstanding for its earliness, quality and color. Other varieties sometimes grown are the Champion, Meech, Fuller and Smyrna.

Fire-blight, the worst disease of the quince, can be kept in check by avoiding over-stimulation of the trees and by cutting out the diseased twigs as with the pear. Borers, often a serious pest, can be dug out as in the case of the apple. The codlin-moth and quince curculio may be combatted with powdered arsenate of lead, 2 pounds to 50 gallons of water, applied when the petals fall and again three weeks later. There are other insects and diseases of lesser although often great importance.

QUÍNCULA. *Solanaceæ.* Spreading or prostrate per. herb suitable for dry sunny places in the rock-garden. **Q. lobàta** (*Physalis lobata*). Lvs. spatulate to oblong, sinuate or pinnatifid: fls. purplish, to 1¼ in. across, wheel-shaped, usually in pairs. Kans. to Mex.

QUININE: see *Cinchona.*

QUINOA: *Chenopodium Quinoa.*

QUINTıNIA. *Saxifragaceæ.* Shrubs or trees native in Australia and New Zeal., having alternate leathery lvs. and small fls. in many-fld. racemes; intro. in Calif.

serràta. Tree to 30 ft., covered with minute scales: lvs. linear-lanceolate to oblong, to 6 in. long, toothed: fls. pale lilac, ¼ in. across, in erect axillary racemes to 4 in. long. New Zeal.

QUISQUÀLIS. *Combretaceæ.* Climbing or clambering shrubs with opposite simple lvs., showy fls. in spikes, and 5-angled or -winged fr.; grown out-of-doors far S. and sometimes under glass. Propagated by softwood cuttings over heat.

índica. Rangoon-Creeper. More or less climbing or lopping, without tendrils: lvs. to 5 in. long, deciduous: fls. fragrant, with slender green calyx-tube to 3 in. long and petals white changing to pink and red, in terminal drooping spikes. Burma, Malaya, Philippines.

R

RABIÈA. *Aizoaceæ.* Stemless succulents from S. Afr., of the Mesembryanthemum group: lvs. in dense rosettes, united at base, 3-angled: fls. solitary, with numerous petals in several series and stamens in a cylindric mass.

albinòta (*M. albinotum. Nananthus albinotus*). Lvs. about 1 in. long and ⅓ in. broad, covered with whitish dots: fls. yellow, 1½ in. across.

albipúncta (*M. albipunctum*). Lvs. 1 in. long and ⅙ in. broad, covered with whitish dots: fls. yellow, 1 in. across.

Jàmesii. Lvs. to 2 in. long and ½ in. broad and thick, glaucous, with conspicuous warts: fls. yellow.—First named in the genus Nananthus.

RACEME: a simple, elongated, indeterminate cluster with stalked flowers.

RACHIS: axis bearing flowers or leaflets; petiole of a fern frond.

RADERMÁCHIA. *Bignoniaceæ.* Trees in Asia with opposite pinnate lvs., large bell-shaped fls. in terminal panicles, and linear capsular frs.; grown in subtrop. climates. Propagated by seeds, cuttings and air-layering.

pentándra (*Oroxylon flavum*). To 20 ft., evergreen: lvs. bipinnate into oblong entire lfts. to 7 in. long: fls. yellow, 2 in. long and 3 in. across, in panicles 1 ft. long: frs. to 3 ft. long. China.

RADIATE: standing on and spreading from a common center; also, with ray-flowers, as in the Compositæ.

RADICAL: belonging or pertaining to the root. Radical leaves are those that arise from the root or crown, i. e., basal.

RADICULA ARMORACIA: *Armoracia rusticana.* **Nasturtium-aquaticum:** see *Cress.*

RADISH (*Raphanus sativus* and varieties). The small tuber-like roots of radish are eaten with us as a relish and an accessory, but the harder larger summer and autumn varieties are used freely in Europe, and in the Far East the durable winter radishes are important articles of food. These various races, with roots of many sizes, shapes and colors, are accounted as forms of one species, *Raphanus sativus*; and this species is unknown as an indigenous plant and is supposed to be a development from the weedy charlock, *R. Raphanistrum.* Another very different race is the rat-tailed radish, in which the seed-pods are highly developed and the root spindling and hard; these pods are often 1 foot or more long, soft and thick, and are eaten either raw as are radishes or used in pickles; this plant is *R. sativus* var. *caudatus;* it has been called "aërial radish." See *Raphanus.*

The small radishes so much used as table delicacies should be grown quickly in order to develop crispness; seeds may be sown as early in the spring as the ground is fit. Of quick-growing varieties in good soil and the best conditions, edible roots may be had in four to six weeks. Seeds may be sown every week up to midspring for succession. If the small seeds are sifted out and only the large ones planted, better results are to be expected. Radishes also force readily, for which certain varieties are specially adapted. They may be grown in hotbeds and in frames. The seeds germinate quickly. They are sown in drills 6–12 inches apart, and the plants are thinned to 1–3 inches as they grow.

For main summer use, another set of varieties is adapted, requiring a longer time, although the spring kinds may be grown on ground sufficiently cool and moist.

The common spring radishes run to seed the same season, but the oriental winter kinds make deep hard roots, sometimes 2 feet long, and bloom the following year.

The most serious radish pest is the root-maggot. Rotation is to be practiced if the maggot is abundant. In frames, the plants may be screened with cheesecloth to keep the parent fly away. Aphis may be combated by a spray of Black-Leaf 40.

RAFFIA: *Raphia Ruffia.*

RAGGED ROBIN: *Lychnis Flos-cuculi.*

RAGWORT: *Senecio.*

RAIMANNIA: *Œnothera.*

RAINIÈRA. *Compositæ.* A milky-juiced herb to 2 ft., **R. stricta,** native on Mt. Rainier, Wash.: lvs. oblong-lanceolate, to 10 in. long, tapering to winged petiole: heads in dense racemes to 6 in. long, of 4–6 tubular fls.; pappus of pale brownish bristles. The genus is much like Luina.

RAIN-TREE: *Samanea Saman.*

RAISIN: see *Grape.* **-Tree, Japanese:** *Hovenia dulcis.*

RAJÀNIA. *Dioscoreaceæ.* Twining per. vines of W. Indies with alternate lvs. and small greenish diœcious fls. in racemes; one species sometimes grown for ornament; it has a winged 1-carpelled fr.; tubers of some species said to be eatable.

pleioneùra. Cockscomb Yam. Aërial tubers large and very irregular: lvs. ovate, 6 in. across, heart-shaped at base and sharply pointed at tip. Cuba.

RAMBUTAN, SMOOTH: *Alectryon subcinereum.*

RAMIE: *Bœhmeria nivea.*

RAMONA: *Salvia.*

RAMÓNDA. *Gesneriaceæ.* Small herbs with basal lvs. and broad-campanulate fls. borne in few-fld. clusters on leafless scapes: native in mts. of Eu. and grown in rock-gardens. Hardy in the N. with winter protection. Propagated by seeds or old plants by division.—The original spelling is followed here, although the name is often misspelled Ramondia.

Heldreìchii (*Jankæa Heldreichii*). Lvs. oval, entire, white-hairy above and hairs reddish-brown beneath: fls. violet, on 1–2-fld. scapes, corolla 4-lobed, more concave than in *R. pyrenaica.* Thessaly.

Natháliæ (*R. serbica* var. *Nathaliæ*). Lvs. oval, wavy-toothed, hairy: fls. lavender-blue with golden center, 4-parted. Serbia, Bulgaria.

pyrenàica. Per. to 3 in.: lvs. ovate, deeply toothed, hairy: fls. purple or white in var. **álba,** 1 in. across, 5-parted, in spring. Pyrenees. Var. **ròsea** is listed.

sérbica. Per.: lvs. in basal rosettes, obovate, coarsely toothed, rusty-hairy: fls. violet, ¾ in. across, 5-parted. Rocks, S. E. Eu.

RAMONTCHI: *Flacourtia indica.*

RAMPION: *Campanula Rapunculus.* **Horned:** *Phyteuma.*

RANGOON-CREEPER: *Quisqualis indica.*

RANUNCULÀCEÆ. Crowfoot or Buttercup Family. Herbs or sometimes shrubs of about 50 genera in the north temp. zone, with alternate or opposite lvs., mostly bisexual fls. with 2–many sepals and petals or sometimes petals wanting, numerous stamens, few or many superior pistils, and fr. an achene, follicle or berry. The family contains many ornamental and flower-garden subjects as well as medicinal plants. Most of the species are hardy in the northern states and Canada. Many of the kinds are alpine or boreal and are prized in rock-gardens. Genera cult. are Aconitum, Actæa, Adonis, Anemone, Anemonella, Anemonopsis, Aquilegia, Caltha, Cimicifuga, Clematis, Coptis, Delphinium, Eranthis, Glaucidium, Helleborus, Hepatica, Hydrastis, Isopyrum, Leptopyrum, Nigella, Pæonia, Ranunculus, Thalictrum, Trautvetteria, Trollius, Xanthorhiza.

RANÚNCULUS. Buttercup. Crowfoot. *Ranunculaceæ*. Many herbs of wide distribution, having alternate simple or compound lvs., yellow, white or red fls. with mostly 5 sepals and petals and many stamens, and fr. a head of achenes; grown in the flower-garden and borders.

The florists' ranunculus is *R. asiaticus* (and sometimes *R. aconitifolius*), and is propagated by the tuberous roots which should be taken up and stored over winter. It may be grown out-of-doors in the summer and in the greenhouse. Other buttercups are propagated by seeds or division of the plants in spring. Most of the crowfoots are yellow-flowered, but there are a number of white kinds particularly in the section (or genus) Batrachium which includes aquatic and bog plants useful for colonizing in ponds and about the margins. Many of the crowfoots are alpine and boreal and well adapted to rock-gardens. Only two or three species have been much modified under domestication into color forms and doubles. The following species are perennial unless otherwise stated.

abortìvus. Bien., to 2 ft.: basal lvs. broad-ovate and toothed, st.-lvs. divided into linear or oblong lobes: fls. yellow, ¼ in. across. N. Amer.

àcer: *R. acris.*

acerifòlia: listed name.

aconitifòlius (*R. platanifolius*). To 3 ft., much branched, the roots tuberous: lvs. palmately 3–5-parted into broad toothed segms.: fls. several to many, white, ¾–1 in. across, sepals glabrous. Eu. Var. **flòre-plèno** has double fls. and **lùteo-plènus** double golden-yellow fls.

acrifórmis. Erect to 20 in.: lvs. 2–3-ternately cleft, segms. lanceolate to linear, strigose: fls. yellow, to ⅓ in. long, petals broadly obovate, sepals slightly shorter, elliptic, strigose. Bogs, Mont., Ida. to Colo.

àcris. To 3 ft., much branched, the roots fibrous: lvs. palmately 3–7-parted into narrow toothed or lobed segms.: fls. many, golden-yellow, ¾–1 in. across, sepals hairy. Eu.; nat. in N. Amer. Var. **flòre-plèno** has double fls.

adonèus. To 8 in.: lvs. 2–3-ternately parted into linear lobes: fls. 1–2, golden-yellow, 1 in. across, sepals hairy. Mts., Colo., Wyo.

alismæfòlius. Per. to 1 ft.: lvs. oval to lanceolate, entire or toothed: fls. yellow, ½ in. across. Wash. to Colo.

alpéstris. To 6 in.: lvs. palmately 3-lobed: fls. usually solitary, white, ¾ in. across; sepals glabrous. Mts. of Eu.

amplexicaùlis. To 1 ft.: lvs. simple, oval-lanceolate, st.-clasping, glaucous: fls. 2–3, white, 1 in. or more across, sepals glabrous. Mts. of Eu.

anemonoìdes. To 6 in.: lvs. 3-pinnate into finely divided segms., glaucous: fls. white or pinkish, to 1½ in. across. Alps.

asiáticus. Turban and Persian B. To 1½ ft., simple or slightly branched, the roots tuberous: lvs. ternate or biternate into narrow toothed segms.: fls. 1-4, long-stalked, bright yellow, to 1½ in. across, in the hort. forms very double, sepals hairy. S. E. Eu., S. W. Asia. Var. **Ragionièri** is listed as a strain having large double fls. of mixed colors. Var. **superbíssimus** is taller with larger fls.

Bròteri. To 2 ft., branching, the roots slightly bulbous: lvs. deeply 3-parted into roundish toothed segms.: fls. several, yellow, about 1 in. across, sepals hairy. Spain.

bulbòsus. To 1 ft., the roots bulbous: lvs. 3–5-parted into lobed or cut segms., the terminal stalked, the lateral sessile: fls. solitary or few, bright yellow, about 1 in. across, sepals reflexed, hairy. Eu.; nat. in E. U. S. Var. **flòre-plèno** has double fls.

califórnicus. Per. to 2 ft.: lvs. ternate into lobed or divided linear or lanceolate segms.: fls. yellow, ¾ in. across, sepals reflexed. Calif., Ore.

caucásicus. To 2 ft.: lvs. broadly-ovate, 2–3-pinnatisect, segms. laciniate or dentate: fls. yellow, usually 3–5, to 1 in. across, sepals hairy. S. E. Russia to Caucasus.

chinénsis: *R. pensylvanicus.*

crenàtus. Per. to 4 in.: basal lvs. round-cordate, wavy-toothed: fls. white, 1 in. across. Eu.

créticus. Per. to 2 in., soft-hairy: basal lvs. orbicular, to 4 in. across, obtusely palmately lobed: fls. golden-yellow, in spikes ½ in. long. Crete.

Cymbalària (*Halerpestes Cymbalaria*). To 8 in., with rooting stolons: lvs. mostly basal, oval to reniform, cordate, crenate, to ¾ in. long: fls. 1–3, yellow, to ½ in. across, sepals glabrous. N. Amer., S. Amer., Asia.

delphinifòlius (*R. multifidus*). Plant of variable habit; when growing submerged in water the immersed lvs. are finely dissected into capillary or filiform segms., the floating and aërial lvs. narrower with longer petioles and linear segms., and lvs. of plants not submerged but growing in mud are shorter with segms. lanceolate to ovate: fls. of all forms yellow, to ¾ in. across: fr.-head globose to somewhat oblong. Shallow water or mud, preferring at least partial shade, Me. to N. C. west to B. C. and Utah.

Eschschóltzii. Tufted per. to 6 in.: lvs. unequally 3-lobed or -parted, broader than long: fls. golden-yellow, ¾ in. across. Mts., Alaska to Calif. and Nev.

exímius. To 10 in.: basal lvs. few or solitary, cauline lvs. sessile: fls. golden-yellow, 1 in. across. Mts. of Colo., Wyo., Ida.

fasciculàris. Tufted per. to 1 ft.: lvs. 3–5-parted into oblong or linear lobes: fls. yellow, 1 in. across. Ont. to Tex.

Ficària (*Ficaria Ficaria*). Sts. decumbent, roots fleshy: lvs. ovate-cordate, to 2 in. long: fls. solitary on scapes to 5 in. high, golden-yellow, 1 in. across, petals 8 or 9, sepals 3. Eu.; nat. in E. N. Amer.

gargánicus: *R. millefoliatus.*

glabérrimus. Per. to 7 in.: lvs. oval, 3-lobed at apex or entire: fls. 1–3, golden-yellow, to 1¼ in. across. B. C. to Calif. and Colo.

glaciàlis. To 6 in.: lvs. palmately 3–5-parted into lobed segms.: fls. 1–3, white or reddish, to 1 in. across; sepals very hairy. Mts. of Eu., Greenland.

gramíneus (*R. graminifolius*). To 1 ft.: lvs. linear, entire, grass-like: fls. 1–7, yellow, to 1 in. across, sepals glabrous. Eu., Morocco.

graminifòlius: *R. gramineus.*

Haàstii. Leathery glaucous per. to 6 in., rootstock milky: basal lvs. with long fleshy petioles, reniform to orbicular, to 4 in. across, with 5–7 palmate lobes; st.-lvs. sessile, linear-lobed, few: fls. yellow, to 1½ in. across, mostly solitary on fleshy scapes, sepals oblong, glabrous. New Zeal.

híspidus: probably *R. repens.*

illýricus. To 1½ ft., white-silky-hairy: lvs. deeply 2–3-parted into linear-lanceolate segms.: fls. 1–3, yellow. S. E. Eu.

laxicaùlis: *R. obtusiusculus.*

Língua. To 3 ft. and more, the roots fibrous: lvs. lanceolate, to 10 in. long, sessile, entire or slightly toothed: fls. in loose panicles, yellow, 1½ in. across, sepals hairy. Eu., Asia.

Lỳallii. Erect showy plant 1–4 ft.: lower lvs. large, peltate, simple, crenate; st.-lvs. few: fls. white or cream-color, 2–3 in. across, sepals hairy. New Zeal., and there sometimes called "Mountain lily."

Macaùleyi. Lvs. mostly entire, tongue-shaped, apex truncate, 3-toothed; basal lvs. long-petioled, st.-lvs. sessile: fls. light yellow. July. Colo.

macrophýllus: listed name whose botanical standing, as used in the trade, is unknown.

millefoliàtus (*R. garganicus*). Per. to 1 ft., erect, somewhat branched: lvs. tripinnatisect, segms. acute, mostly basal: fls. yellow, to 1 in. across, sepals glabrous: fr. carpels hooked at apex. Medit. region.

monspelìacus. To 16 in.: lvs. mostly basal, petioled, ternate or 3-lobed, segms. more or less deeply toothed: fls. yellow, to 1½ in. across, not solitary: achenes tipped with long beak. Apr.–June. Eu.

montànus. Per. to 6 in., with creeping rootstocks: lvs. 3–5-parted into linear-oblong segms.: fls. usually solitary, bright yellow, 1 in. across. Mts., Eu.

multífidus: *R. delphinifolius.*

Nélsonii. To 2 ft.: lvs. all petioled, deeply 3-cleft, divisions broad, acute, toothed: fls. light yellow: achenes tipped with recurved beak, pilose. Spring. Ore. to Alaska.

nemoròsus. To 1 ft.: lvs. palmately 3-parted into lobed segms.: fls. several, yellow, ¾–1 in. across, sepals hairy. Mts. of Eu.

nissànus. To 1½ ft.: lower lvs. 3-lobed, upper lvs. linear: fls. bright yellow, 2 in. across, abundant. May. Jugoslavia.

obtusiúsculus (*R. laxicaulis*). Per. to 3 ft.: lvs. lanceolate, denticulate or entire, lower ones on broad petioles which clasp the st.: fls. yellow, petals much longer than sepals. June–Aug. Swamps, E. U. S.

occidentàlis. Per. to 1 ft.: lvs. deeply 3-parted into ovate toothed or cut segms.: fls. bright yellow, 1 in. across. Alaska to Ore.

ophioglossifòlius (*R. ophioglossoides*). Ann. with hollow st.: lvs. undivided, the lower cordate-ovate and upper oblong-lanceolate: fls. small, pale yellow, sepals glabrous: achene slightly tuberculate. Medit. region.

orthorhýnchus. Lvs. bipinnatifid, lfts. deeply cleft, linear-acute: fls. yellow, ½ in. across, solitary on branched scapes. Wyo. to B. C. and Ore.

ovàlis. To 1½ ft.: basal lvs. oval to ovate-oblong, 1 in. or more long, toothed; st.-lvs. divided into narrow lobes: fls. yellow, 1 in. across. Lab. to Alta. and Colo.

parnassifòlius. To 8 in.: basal lvs. long-stalked, ovate or cordate, shiny above, white-hairy below: fls. 1–6, white or rarely purplish, about 1 in. across; sepals hairy. Alps, Pyrenees.

parviflòrus. Ann. to 1 ft.: lvs. 3-parted into oval toothed or cut lobes: fls. yellow, ⅙ in. across. Medit. region; nat. in N. Amer.

pensylvánicus (*R. chinensis*). Bristly B. Pilose-hispid per. to 2 ft.: lvs. trifoliolate, lfts. 3-fid, lobes lanceolate, incised: fls. yellow, to ⅓ in. across, sepals lanceolate, reflexed, about as long as petals. N. S. to Ga. west to B. C. and Calif.

platanifòlius: *R. aconitifolius.*

Pumìlio: considered to be synonymous with *R. parviflorus.*

pyrenæ̀us. To 1 ft.: lvs. basal, linear or lanceolate, entire: fls. 1–4, white, to 1 in. across, sepals glabrous. S. Eu.

Ragionièri: *R. asiaticus* var.

rèpens. Creeping B. To 2 ft., with runners rooting at joints: lvs. long-stalked, 3-parted into broad toothed or lobed segms.: fls. yellow, ¾–1 in. across, sepals slightly hairy. Eu., N. Amer. The common form in gardens is var. **pleniflòrus** (var. *flore-pleno*, *R. speciosus*) with double fls.

rutæfòlius. To 6 in.: lvs. all basal, bipinnate, segms. 3-lobed: fls. white, reddish on outside, solitary. June–July. Mts. of Eu. and Asia.

Seguièri. Very similar to *R. glacialis* but distinguished by the glabrous sepals. Mts. of Eu.

septentrionàlis. To 3 ft., some of the sts. procumbent: lvs. 3-parted into lobed segms.: fls. bright yellow, 1 in. across. Swamps, N. B. to Ga. and Kans.

speciòsus: *R. repens* var. *pleniflorus.*

Súksdorfii. Per. to 4 in.: lvs. deeply 3–5-parted: fls. yellow, 1 in. across. Wash. to Mont.

triternàtus. Per. to 6 in.: lvs. 3-ternate into linear segms.: fls. bright yellow, to 1 in. across, the peduncles recurved. Wash.

RAOÙLIA. *Compositæ.* Small tufted or creeping per. herbs of New Zeal. and Australia, having alternate entire lvs. and small solitary heads of disk-fls.; pappus of hairs; adapted to the sunny rockery and grown in Calif.

austràlis. Sts. prostrate and matted, to 6 in. long: lvs. imbricated, to ⅛ in. long, white- or yellowish-tomentose: heads to ¼ in. long, the inner bracts of involucre pale yellow and shining. New Zeal.

exímia. Sts. as above, to 2 ft. high and 4 ft. long: lvs. linear-spatulate, to ¼ in. long, imbricated, 1-nerved, densely tufted-hairy on distal end: heads numerous, small, at distal ends of sts. New Zeal.

glàbra. Prostrate: lvs. loosely imbricated, to ⅕ in. long, pale yellow-green, glabrous or nearly so: heads to ⅓ in. across, the inner bracts of involucre with white radiating tips. New Zeal.

subserícea. Prostrate, sts. stout, closely branched: lvs. linear-oblong, to ¼ in. long, laxly imbricated, usually silvery-tomentose: heads to ⅓ in. across. New Zeal.

tenuicaùlis. Sts. prostrate, to 10 in. long: lvs. loosely imbricated, to ⅒ in. long, grayish-tomentose or nearly glabrous: heads to ⅙ in. long, the inner bracts of involucre dry and brown-tipped. New Zeal.

RAPE (*Brassica Napus*). In North America, primarily a forage crop for late autumn and early spring pasturing; the seed is sown late, as for rutabagas, sometimes following a grain crop; if the land is good and rains are sufficient, excellent late forage is secured, and as the plants withstand the winter they also give good spring pasturage if not previously grazed too close; it soon runs to seed. Hogs and lambs, as well as other animals, are sometimes pastured or soiled on rape. Dwarf Essex is the prevailing variety. It is sown either broadcast or in drills in June or July or sometimes even in May in the North; better results are to be expected in drills far enough apart to allow of tillage; about 3 pounds of seed are required for an acre of drills.

Annual or summer races of rape, presumably of the same species, are grown in some countries for the seed, used for oil and as birdseed.

RÁPHANUS. *Cruciferæ.* Ann., bien. and per. branching tall herbs of Eurasia, of a few species, interesting to hort. because it includes the radish: lvs. mostly lyrate-lobed or pinnatifid: fls. white to purplish to yellowish, in racemes: fr. a terete spongy indehiscent long-beaked pod or silique, commonly constricted between the seeds. See *Radish.*

caudàtus: *R. sativus* var.

satìvus. Radish. Root developed into an edible short or long tuber-like body: st. produced first or second year from seeds, bearing white or lilac veined fls. Var. **caudàtus** (*R. caudatus*). Rat-tailed Radish. Root not tuberous: pods 8–12 in. long, thick, used for pickles. Var. **longipinnàtus.** Lvs. to 2 ft. long, deeply pinnatifid: root usually long and durable: known mostly as Chinese radish; much grown in the Orient.

RÁPHIA. *Palmàceæ.* About a score of monœcious feather-palms, all but one native in Afr., with gigantic erect and arching lvs., unarmed except perhaps on the sheaths, monocarpic (dying after the first fruiting): trunk short and stout, sometimes branched: spadices among the lvs., 3–4 ft. long, much branched, pendulous, the short ultimate branchlets thick and arranged comb-fashion on the branches, bearing many cup-shaped bracts covering the fls. which are pistillate at apex of branchlet and staminate at base, very heavy in fr.; stamens 6–16: fr. oblong or ellipsoid or turbinate, beaked, covered with imbricated scales. For cult. see *Palm.*

Rúffia. Raffia, yielding a familiar fiber from the lvs. Trunk to 25 or 30 ft.: lvs. to 65 ft. long, standing nearly erect; pinnæ very numerous, 2–5 ft. long, broad-linear and long-pointed, rather rigid, green above and whitish-powdery underneath: fr. 1–2 in. long. British E. Afr. to Madagascar; once planted in S. Fla.

RAPHIÓLEPIS. *Rosaceæ.* Evergreen oriental shrubs with alternate, leathery and shining lvs., white or pink fls. in racemes or panicles, and fr. a small purple or black drupe-like pome.

Raphiolepis is grown out-of-doors in warm climates, as southern states and California. Propagated by seeds, by cuttings under glass late in summer of ripe wood, by layers, and rare sorts sometimes by grafting on cratægus.

Delacoùri. Hybrid between *R. indica* and *R. umbellata*, with toothed lvs. and pink fls.

hýbrida: hort. name.

índica. India-Hawthorn. To 5 ft.: lvs. oblong-lanceolate, to 3 in. long, bluntly toothed: fls. pinkish, about ½ in. across, in loose glabrous panicles. S. China. Var. **ròsea** is listed.

japónica: *R. umbellata.*

ovàta: *R. umbellata* var.

umbellàta (*R. japonica*). Yeddo-Hawthorn. To 12 ft., but often low and spreading: lvs. obovate, to 3 in. long, slightly toothed, very thick and with revolute margins: fls. white, ¾ in. across, fragrant, in dense pubescent panicles. Japan. Var. **ovàta** (var. *integerrima*, *R. ovata*) has broad nearly entire lvs.

RAPHIONÁCME. *Asclepiadaceæ.* Low or twining per. tuberous- or fleshy-rooted herbs of trop. and S. Afr., having milky juice, opposite lvs. and rather small greenish, white or purple campanulate fls. in subaxillary or terminal cymose clusters: fr. a follicle containing comose seeds. Propagated by seeds or division and may be grown under glass or in warm climates.

divaricàta. Much branched, to 8 in. high, tuber to 15 in. diam., sts. hairy: lvs. elliptic to obovate or orbicular, to 1¼ in. long, pubescent beneath: fls. purple, to ½ in. long, in cymes of 5–25: fr. solitary, to 2½ in. long, puberulous.

RASPBERRY. The cultivated raspberries of North America are of three groups: (1) red raspberries, *Rubus idæus*, native in Europe, Asia and America, and var. *strigosus* which is the commonest form of the species in the fields and woodsides of the United States; (2) black raspberries or blackcaps, *Rubus occidentalis*, native in North America; (3) purple-canes, a range of probable hybrids between the two. All of them have biennial canes: the shoots that bear fruit this year arose from the root last year. The canes bear but once, their second year, and are then cut away at the ground, the new shoots or canes in the meantime coming on to take their places. A few strong shoots or canes should be allowed to remain each year after the plant is established, and the superfluous and weak ones removed.

The red raspberry is one of the hardiest of fruits, growing well in most of the northern United States, in a large part of Canada and in parts of Alaska. The black raspberry is not as hardy, its range extending little north of the Great Lakes. The purple-cane raspberry is scarcely more hardy than the black. None of these fruits is tolerant of heat or drought and hence they cannot be grown to advantage south of northern Virginia and Tennessee. Deep and well-drained lands of good moisture-holding capacity are favorable. Black raspberries thrive on light soils better than the red sorts.

The black and most of the purple-cane raspberries propagate by means of "tips," which are the young plants formed when the ends of first-year canes strike the ground and take root. To insure a good stock of new plants, the tips may be laid in the ground and covered in midsummer; that autumn roots will have formed and the tip or layer may be separated, in fall or spring, for planting. Red raspberries are increased from the suckers that naturally arise from the crown or root.

In the North raspberries are commonly planted in spring. The blackcap raspberries should be set 3 to 4 feet apart, the rows 6 or 7 feet; the red varieties 3 feet apart, the rows 5 feet apart. For extra quality and yield, plants may be set in "hills" 5 by 5 feet, or 6 by 6 feet. The first year after the plants are set the blacks may be pinched back when they reach the height of 30 inches. If a very vigorous growth has been made the first season two canes may be left for fruiting, but in the case of weak growth only one cane should be allowed to fruit; the third season from setting, a good crop should be produced. In case of low-growing plants—those that have been pinched back short—a cover of straw or grass around the plants at fruiting time will help to hold the moisture, and also serve to keep the fruits clean in case of heavy rains. In the case of red raspberries, it is well to cut the cane back to within 6 inches of the ground when it is set to force new canes from the crown.

Thorough but shallow tillage is necessary to keep down weeds and to conserve moisture. Heavy mulching with straw or other litter may be of value especially in the home planting where cultivation is impossible. Manure has proved to be the best fertilizer. A blackcap plantation should remain in good bearing condition three to five years if not diseased. Red raspberries should last considerably longer.

Pruning, in the case of the red sorts, consists in cutting out the fruiting canes immediately after picking and thinning out the weaker canes of the new growth the following spring. The new canes of the black- and purple-cane varieties are topped in the early summer at the height of about 30 inches to force branching. These branches are cut back to stubs 4–6 inches long early the next spring. Old canes are removed soon after picking the fruit, as with the red raspberry.

Fruits are picked when ripe but still firm, into pint or quart berry boxes in which they are to be marketed. For drying, the black sorts are knocked from the bushes with a bat into a large container. All raspberries are very perishable and must be rushed to market. Yields of 1,200 to 2,500 quarts to the acre may be expected.

Varieties are many. In this list the most desirable kinds are starred.

Hardy red varieties: *Herbert, Sunbeam, King, Loudon, Ohta, *Latham.

General list of red varieties: *Cuthbert, *June, *Latham, Indian Summer (everbearing), Ontario, Newburgh, Viking, Marcy, Taylor.

Purple-cane varieties: *Columbian, Royal Purple, Sodus.

Black varieties: *Cumberland, Naples, Bristol, Dundee, Ohio, *Plum Farmer.

Pests and diseases are likely to take heavy toll. Planting disease-free stock helps to prevent damage from anthracnose, orange-rust, mosaic and crown-gall, four of the most serious diseases. Plants having any of these maladies might better be destroyed immediately. Raspberries can usually be grown for home use without spraying, but commercial plantations may be sprayed with lime-sulfur or bordeaux mixture for anthracnose. There is no remedy for orange-rust. Short rotations—fruiting the plants only two or three years—and burning the old canes and trimmings, will do much to keep raspberry plantations healthy.

RATA: *Metrosideros robusta.*

RATAMA: *Parkinsonia aculeata.*

RATHBÙNIA. *Cactaceæ.* Simple or bushy and rather slender, the sts. weak and often clambering, ribs 4–8 and prominent, spines awl-like: fls. solitary and mostly at upper areoles, narrowly tubular and the tube bearing long scales more or less united with it. Two species of W. Mex. See *Cacti.*

alamosénsis (*Cereus alamosensis. C. sonorensis. R. sonorensis*). Columnar to 10 ft. and 3 in. diam., erect at first but becoming bent and rooting at tips; radial spines 11–18; centrals 1–4 and stouter: fls. scarlet, to 4 in. long, diurnal.

sonorénsis: *R. alamosensis.*

RATIBIDA: *Lepachys.*

RATTLE-BOX: *Crotalaria, Ludwigia alternifolia, Rhinanthus Crista-gallii.*

RATTLESNAKE MASTER: *Eryngium aquaticum.* **Root:** *Prenanthes.*

RAVENÀLA. *Musaceæ.* Large and tree-like plants with palm-like trunks and large lvs. which are two-ranked toward top of st. resulting in a fan-shaped aspect: fls. bisexual, with elongated sepals, petals and stamens, borne in stiff boat-like bracts on spikes shorter than lvs. Only two species, the one commonly cult. in the tropics being **R. madagascariénsis**, Travelers-Tree, from Madagascar, to 30 ft. in clumps, and bearing Musa-like lvs.; the great fl.-bracts and lf.-sheaths hold rainwater; a striking object when mature.

RAY: outer modified florets of some composites, with an extended or strap-like part to the corolla; also the branches of an umbel or umbel-like cluster.

RAZOUMOFSKYA: see *Loranthaceæ.*

REBÙTIA. *Cactaceæ.* About 40 species of S. American cacti, small and globose or short-cylindric, simple or cespitose, tubercled but not ribbed: fls. small, from old tubercles at base or side of plant. See *Cacti.*

aureiflòra: *Mediolobivia aureiflora.*

auréscens: *R. senilis* var.

chrysacántha. Usually solitary, subcylindrical, to 2½ in. high and 2 in. diam., glossy, green; tubercles spiralled; spines 25–30, white becoming yellow, bristly, the centrals to ½ in. long, base somewhat swollen: fls. yellowish-orange, to 2 in. long. Argentina.

citracárpa: *R. xanthocarpa* var.

deminùta: *Aylostera deminuta.*

Duursmaiàna: *Mediolobivia Duursmaiana.*

Eìnsteinii: listed name.

élegans: *Mediolobivia elegans.*

Fièbrigii: *Aylostera Fiebrigii.*

grandiflòra. Globose to depressed-globose, to 2 in. high and to 3 in. diam.; tubercles in about 26 rows, spiralled; radial spines about 25, short, bristly, white to yellowish; centrals about 4: fls. carmine to brick-red, to 2½ in. long. Argentina.

Haàgei. Cespitose, globose to subcylindrical, to 1¾ in. diam.; tubercles in 10 rows, spiralled; spines 4–12, about ¼ in. long, all radial, bristly, spreading: fls. rose-pink, to 1½ in. long. N. Argentina.

Knuthiàna. Depressed-globose, to 1¾ in. diam., areoles brown-hairy: fls. carmine-red, to 2 in. long. Argentina.

Kupperiàna: *Aylostera Kupperiana.*

minúscula (*Echinocactus minusculus*). Globular, to 2 in. diam.; tubercles in many spirals; spines in clusters of 25–30: fls. funnelform and slightly bent near base, bright crimson, about 1 in. long, diurnal. N. W. Argentina. Vars. **cristàta** and **setòsa** are listed.

orurénsis: perhaps *Lobivia orurensis.*

pseudodeminùta: *Aylostera pseudodeminuta.*

pseudominúscula. Cespitose, subcylindric, to 1¼ in. diam.; tubercles in 12–16 rows, dark green flushed red; spines yellowish tipped brown, about ⅙ in. long, radials 7–10, bristly, centrals 1–4: fls. brilliant red, to 1¼ in. long, stamens and pistil white. N. Argentina.

pygmæa. Usually solitary and occasionally branched, ovoid to subcylindric, to ¾ in. diam.; tubercles in 8–12 rows, spiralled; spines 9–11, all radial, to ⅛ in. long, appressed, base swollen: fls. rose-purple, to 1 in. long. Bolivia and N. W. Argentina.

salmònea: *R. xanthocarpa* var.

senìlis. Depressed-globose, to 10 in. high but usually only to 3 in. and 3½ in. diam.; tubercles spiralled,; spines 35–40, to 1¼ in. long, bristly, similar: fls. bright carmine, to 2 in. long. Argentina. Var. **auréscens,** spines long bristly and dense, the central ones yellow. Var. **brevisèta** has more compressed sides, stiffer, more compressed, and shorter bristles, some of which are yellowish. Var. **Steumeriàna,** fls. bright yellowish-orange, throat yellow. Listed vars. include **càna, élegans** and **luteiròsea.**

Spegazziniàna: *Aylostera Spegazziniana.*

spinosíssima: *Aylostera spinosissima.*

Steìnmannii: *Lobivia Steinmannii.*

violaciflòra. Solitary, depressed-globose, to ¾ in. diam.; spines about 20, amber-colored, the centrals darker: fls. rose-violet, to 1¼ in. across, stamens and stigma white. N. Argentina.

xanthocárpa. Globose to 2 in. diam.; spines to ¼ in. long, dull straw-colored, slender: fls. red, to ¾ in. long, campanulate. Argentina. Listed vars. are **cæruléscens, citracárpa, luteiròsea** and **salmònea.**

RECEPTACLE: torus; the more or less enlarged or elongated end of the stem or flower-axis on which some or all of the flower-parts are borne; sometimes the receptacle is greatly expanded, as in the Compositæ; sometimes it assumes capsule-like forms, as in the hypanthium of the rose; at other times it is fleshy, as in the edible part of the strawberry.

RECURVED: bent or curved downward or backward.

RED-BERRY: *Rhamnus crocea.* **Maids:** *Calandrinia ciliata* var. *Menziesii.* **Ribbons:** *Clarkia concinna.* **Robin:** *Geranium Robertianum.* **Root:** *Amaranthus retroflexus, Lachnanthes tinctoria.*

REDBUD: *Cercis.*

REDTOP: *Agrostis alba.*

REDWOOD: *Sequoia sempervirens.*

REED, CANE: *Arundinaria gigantea.* **Giant:** *Arundo Donax.* **Sand:** *Ammophila arenaria.*

REFLEXED: abruptly recurved or bent downward or backward.

REGÈLIA. *Myrtaceæ.* Stiff Australian shrubs of the Calothamnus relationship, with small opposite lvs. and sessile fls. forming terminal heads; one species somewhat planted in S. Calif.

ciliàta. Straggling shrub to 5 ft., white-hairy: lvs. overlapping and densely clothing st., orbicular, ⅙ in. across: fls. rose-purple, in globose heads ¾ in. across.

pileàta: catalogue name.

REGULAR FLOWER: the parts in each series or set alike; as stamens all like each other, petals all like each other.

REHDERODÉNDRON. *Styracaceæ.* Chinese trees having alternate exstipulate serrulate lvs. and solitary or paired woody indehiscent frs. **R. macrocárpum.** To 40 ft., branchlets reddish-brown: lvs. elliptic to nearly ovate, to 4 in. long, acute to acuminate, reddish-green with red midrib and lateral veins which are stellate-pilose beneath: fr. oblong, to 3 in. long and half as thick, crowned with persistent calyx, outer shell about ⅝ in. thick. Szechuan, China.

REHMÁNNIA. *Scrophulariaceæ.* Per. usually sticky-hairy herbs suitable for a cool greenhouse or outdoors in Calif. and the S., the large tubular 2-lipped fls. axillary or borne in terminal racemes: lvs. alternate and coarsely toothed or lobed; native in China and Japan. The name Rehmannia is retained by the International Lists as against Sparmannia.

Rehmannias are propagated by cuttings of growing wood or by seeds which produce blooming plants by the second year.

álba: listed name.

angulàta. To 3 ft.: lvs. deeply toothed: fls. 2 in. long, red with band of scarlet at margin of upper lip and orange dots inside the lower lip. China. Var. **tigrìna,** fls. spotted. Var. **trícolor,** fls. bright purple at first, then violet-rose, throat whitish.

elàta. To 6 ft.: lvs. lobed, the lobes entire: fls. bright rosy purple on the lips, throat yellow dotted with red, to 3 in. long. China.

glutinòsa. To 1 ft., sts. weak: lvs. coarsely toothed: fls. yellowish or purplish with purple throat and veins, about 1 in. long. China.

REICHÁRDIA. *Compositæ.* Ann. or per. herbs of the Medit. region with alternate or basal lvs. and long-stalked yellow heads of ligulate fls.; pappus of white bristles. Somewhat like Sonchus; sometimes planted for ornament.

picroìdes (*Picridium vulgare*). Per. to 2 ft., glabrous: lvs. spatulate, clasping, toothed, the lower often pinnate: heads ½ in. long, bracts of involucre margined with white.

REINÉCKIA. *Liliaceæ.* Per. herb of China and Japan with creeping underground sts. **R. cárnea.** Lvs. basal, to 1½ ft. long and ½ in. across: fls. flesh-colored, about ½ in. long, sessile, in racemes on scapes only few in. high, the perianth-segms. partially united. Var. **variegàta** is listed as having lvs. striped pale yellow.—Sometimes grown as a pot-plant, and in the open in mild climates. Propagated by division. Likely to be confused with the Ophiopogons.

REINWÁRDTIA. *Linaceæ.* Subshrubs bearing alternate lvs., yellow fls. with fugacious petals, 3–4-celled ovary with 2 ovules in each cell, and 3–4 styles; 2 Indian species.

Grown under glass; they require a temperature of 55–60°. Propagated by cuttings from strong growths in spring in sandy loam. Frequent pinching back to induce compact habit should be practiced. Adapted to outdoor culture far South and in California.

índica (*R. trigyna. Linum trigynum*). Yellow Flax. To 4 ft.: lvs. obovate, entire: fls. 1–2 in. across, styles 3.—Sometimes grown erroneously as *Linum flavum.*

tetrágyna. Lvs. serrulate: styles mostly or often 4.

trígyna: *R. indica.*

RENANTHÈRA. *Orchidaceæ.* Old World epiphytes with leafy non-pseudobulbous sts. and fls. in many-fld. racemes or panicles, the sepals and petals spreading, lateral sepals usually much larger, the lip very small, spurred. Grown in a warm greenhouse; see *Orchids*.

coccínea. Sts. stout, to 10 ft. long: lvs. to 5 in. long and 1¼ in. wide: fls. to 3 in. long, in many-fld. loose panicles to 3 ft. high; dorsal sepals and petals orange spotted with scarlet; lateral sepals scarlet or crimson; lip yellow striped with red. Apr.–Sept. Cochin-China, Hainan.

Imschootiàna. Sts. to 1 ft. long: lvs. to 4 in. long and 1 in. wide: infl. loosely paniculate, many-fld., to about 2 ft. long; fls. to about 2½ in. long; dorsal sepals and petals dull yellow spotted with scarlet; lateral sepals scarlet; lip light yellow spotted and barred with red. May–June. Assam, Burma, Indo-China.

Lòwii: *Arachnis Lowii.*

Màingayi. Spider Orchid. Sts. to 6 ft. long: lvs. linear-oblong, to 5 in. long, tapering, apex notched: fls. to 2 in. across, in racemes or short-branched panicles to 3 ft. long; sepals and petals white, thickly barred with dark pink, lip white closely striped with crimson or entirely crimson with buff-colored spot on each lateral lobe. Malacca Isls.

Stòriei. St. to 12 ft. long: lvs. distichous, oblong, fleshy, to 10 in. long: infl. about 2 ft. long, loosely many-fld.; fls. to 3 in. long; dorsal sepal and petals linear-spatulate, orange-red mottled with crimson; lateral sepals spatulate-obovate, crimson with red blotches; lip red with yellow at base of lobes. Mar.–June, Sept.–Oct. Philippines.

RENEALMIA NUTANS: *Alpinia speciosa.*

RENIFORM: kidney-shaped.

RESÈDA. Mignonette. *Resedaceæ.* Herbs grown under glass and out-of-doors for the small fls. in terminal spikes, ornamental or fragrant.

The species mostly grown is known for its very fragrant bloom; the plant thrives in cool moderately rich soil in partially shaded positions. In the greenhouse the night temperature should be about 48°. Seeds should be sown where the plants are to grow, or else handled in pots, as they do not transplant well. Often seen in the flower-garden.

álba. White Upright M. Ann. or bien. to 3 ft.: lvs. pinnate or deeply cut: fls. greenish-white, not fragrant. S. Eu.; nat. in N. Amer.

crystállina. Ann.: lvs. 3-parted or entire near base: fls. deep yellow. Canary Isls.

odoràta. Common M. Ann., becoming decumbent: lvs. entire or only notched: fls. yellowish-white, very fragrant. N. Afr. Var. **grandiflòra arbòrea** is a large garden form.

RESEDÀCEÆ. Mignonette Family. Six herbaceous genera native in Medit. region, characterized by bisexual irregular fls. with 4–7 sepals and petals, 3–40 stamens, ovary of 2–6 free or united carpels, and fr. a caps. or berry. Reseda is grown for ornament.

REST-HARROW: *Ononis.*

RESTRÈPIA. *Orchidaceæ.* Small trop. American epiphytic orchids with tufted sts. each bearing a solitary lf. and 1-fld. axillary peduncles; lateral sepals united, dorsal sepal and petals prolonged into filiform tails. See *Orchids*.

antennífera (*R. maculata*). Sts. to 8 in. high, covered by loose membranaceous sheaths: lf. elliptic or oval, erect, to 3½ in. long: peduncles 1–3; dorsal sepal and petals white or pale yellow with purple veins; lateral sepals ochraceous-yellow densely spotted with brown-purple; lip similar to lateral sepals but much shorter with an emarginate tip. Venezuela, Colombia, Ecuador.

maculàta: *R. antennifera.*

RESURRECTION PLANT: *Anastatica hierochuntica, Selaginella lepidophylla.*

RETINISPORA, RETINOSPORA: *Chamæcyparis, Thuja.*

REVOLUTE: rolled backwards, margin rolled toward lower side.

RHABDOTHÁMNUS. *Gesneriaceæ.* Much branched shrub to 5 ft., native in New Zeal. **R. Solándri.** Lvs. opposite, ovate or orbicular, ½–2 in. long, coarsely toothed, rough: fls. orange striped with red, to 1 in. long, solitary in the axils: caps. ⅓ in. long. Listed in Calif.

RHAGÒDIA. *Chenopodiaceæ.* Australian shrubs or rarely herbs, one planted for ornament in Calif.: lvs. alternate or opposite, entire: fls. polygamous, small, in terminal spikes or panicles: fr. a small berry.

nùtans. Herb to 2 ft., prostrate or procumbent: lvs. hastate to lanceolate, 1 in. or less long: infl. to 1 in. long, often nodding.

RHAMNÀCEÆ. Buckthorn Family. Widely distributed temp. and trop. trees and shrubs, climbing plants, rarely herbs, some 45–50 genera, with mainly alternate simple lvs., small, regular, bisexual or polygamous whitish or greenish fls. of 4–5 sepals, petals and stamens or sometimes without petals, 2–4-celled ovary, and fr. a drupe or caps., sometimes winged. The following genera are grown for ornament and two (Hovenia, Zizyphus) also for edible frs.: Alphitonia, Berchemia, Ceanothus, Colletia, Condalia, Discaria, Hovenia, Noltea, Paliurus, Phylica, Pomaderris, Rhamnus, Sageretia, Spyridium, Trevoa, Zizyphus.

RHÁMNUS. Buckthorn. *Rhamnaceæ.* Many shrubs and small trees, mostly deciduous, with commonly alternate simple lvs., small greenish fls. in axillary clusters, umbels and racemes followed by berry-like frs.

Rhamnus furnishes considerable ornamental material suitable for shrubberies. Several species have medicinal properties. Propagated by seeds sown in autumn or stratified, by cuttings and grafting; the evergreen kinds by cuttings of mature wood under glass.

Alatérnus. To 20 ft., evergreen or partially so: lvs. ovate, to 2 in. long, toothed: fls. in short racemes: fr. bluish-black. S. Eu.; adaptable south of Washington. Var. **argénteo-variegàta** (var. *variegata*), lvs. margined with creamy-white.

alnifòlia. To 3 ft., deciduous: lvs. ovate, to 4 in. long, toothed: fls. 2–3 together: fr. black. N. Amer.

alpìna. To 10 ft., deciduous: lvs. elliptic, to 4 in. long, toothed: fls. in clusters: fr. black. S. W. Eu.

califórnica (*R. Purshiana* var. *californica*). Coffee-Berry. To 6 ft., evergreen: lvs. oblong, to 2½ in. long, finely toothed: fls. in umbels: fr. red turning black when ripe. Calif.; not to be grown in the N. Var. **crassifòlia** is listed.

caroliniàna. Indian-Cherry. To 30 ft., deciduous: lvs. elliptic or oblong, to 6 in. long, finely toothed or entire: fls in umbels: fr. red turning black when ripe. Va. to Tex.; hardy to New England.

cathártica (*R. Wicklia*). Common B. To 12 ft., deciduous, often with spines at ends of branchlets: lvs. ovate, to 3 in. long, toothed: fls. diœcious, in clusters: fr. black. Eu., Asia; escaped in E. U. S.; hardy far N.

Chádwickii: listed name of form said to have glossy lvs.

chloróphora: probably referable to *R. utilis.*

corymbòsa: name of uncertain application.

crenàta. To 10 ft., deciduous: lvs. oblong, to 4 in. long, finely toothed: fls. in umbels: fr. from red to purplish-black. Japan, China; hardy to New England.

cròcea. Red-Berry. To 3 ft., evergreen: lvs. elliptic, about ½ in. long, finely toothed: fls. polygamous, without petals, in clusters: fr. bright red. Calif. Var. **ilicifòlia** (*R. ilicifolia*) is a tree to 20 ft. with larger spiny-toothed lvs. Calif. to Ariz.

davùrica. To 30 ft., deciduous: lvs. oblong, to 4 in. long, finely toothed: fls. diœcious, in clusters: fr. black. Siberia to N. China; hardy in S. New England. Var. **nippónica** has narrower longer lvs.

dumetòrum. To 6 ft., deciduous, with spiny branchlets: lvs. obovate, ¾–1½ in. long, remotely toothed: fls. without petals. China; hardy N. Var. **crenoserràta** has lvs. to 2¾ in. long, wavy-toothed.

fállax. Carniolian B. To 10 ft., deciduous: lvs. oblong, to 5½ in. long, finely toothed: fls. in clusters: fr. black. Mts. of S. and Cent. Eu.; hardy to New England.

Frángula. Alder B. To 12 ft., deciduous: lvs. obovate, to 2½ in. long, entire: fls. in umbels: fr. red turning black when ripe. Eu., N. Afr., Asia; escaped in E. U. S.; hardy far N. Var. **aspleniifòlia** is a feathery form with linear wavy lvs.

ilicifòlia: *R. crocea* var.

imeretìna. To 10 ft., deciduous: lvs. oblong to oval, to 8 in. long, finely toothed, turning bronzy in autumn: fls. in clusters: fr. black. Caucasus; hardy to New England.

infectòria. Avignon Berry. To 6 ft., spiny, deciduous: lvs. elliptic, to 1½ in. long, toothed: fr. black. S. Eu.

koraiénsis. Tree with fine thorns: lvs. oval, finely toothed, pubescent on both sides: fls. in clusters. Korea.

lanceolàta. To 6 ft., deciduous: lvs. ovate-lanceolate, to 3 in. long, finely toothed: fr. black. Pa. to Tex.

Purshiàna. Cascara Sagrada. To 20 ft., deciduous: lvs. oblong, to 8 in. long, finely toothed: fls. in umbels: fr. black. Wash. to Calif.; adaptable south of Philadelphia.

speciòsa: listed name of unknown botanical application.

tinctòria. To 5 ft., deciduous: lvs. elliptic, to 2 in. long, toothed, pubescent beneath. S. E. Eu.

tomentélla. Similar to *R. californica* but lvs. yellow- or gray-tomentose beneath. Calif. to Ariz.

ùtilis. To 10 ft., deciduous: lvs. oblong, to 5 in. long, finely toothed, yellowish-green: fr. black. China; probably adaptable south of N. Y.

Wícklia: *R. cathartica.*

Wìlsonii. To 6 ft., somewhat spiny: lvs. opposite, ovate-lanceolate, to 4 in. long, acuminate, glabrous, serrate-dentate: fr. probably black. China.

RHAPHITHÁMNUS. *Verbenaceæ.* Spiny trees of Chile, one sometimes planted in S. U. S.: lvs. opposite, entire: fls. lilac, tubular, solitary or paired in the axils: drupes bright blue, fleshy.

cyanocárpus. To 20 ft., with slender spines to 1 in. long: lvs. ovate, to ¾ in. long: fls. ½ in. long: fr. globose, to ½ in. across.

RHAPIDOPHÝLLUM. Needle Palm. *Palmaceæ.* One low fan-palm on the coastal plain S. C. to Fla. and Miss., mostly in low grounds, remarkable for the long sharp erect needles of the lf.-sheaths: polygamo-diœcious or hermaphrodite: spadices short and condensed, head-like, buried in the lf.-sheaths and needles at the base of the plant; stamens 5–7: fr. ovoid, 1 in. or less long, drupe-like, red.

Hýstrix. Cespitose or stoloniferous, crown or caudex rising a few in., the spines 6–16 in. long: petioles long and slender, unarmed; lf.-blade 1½–2½ ft. across, parted nearly to base into 5 to a dozen or more spreading narrow strongly ribbed stiffish segms. 1½ in. or less broad that are bifid or toothed at apex, glaucous and finely pubescent underneath.

RHÀPIS. Lady Palms. *Palmaceæ.* Low reed-like or bamboo-like diœcious or polygamous cespitose fan-palms, of 9 described species in S. China; two of them long grown as tub specimens and for clumps in the open in regions as mild as S. Calif. and S. Fla.: lvs. 1–2 ft. across, divided nearly to the base; sheaths fibrous: spadices among the lvs., long-stalked, branched; fls. yellowish; stamens 6: fr. a small 1-seeded berry with a soft exterior, seldom produced outside the tropics. For cult. see *Palm.*

excélsa (*R. flabelliformis*). Sts. several to many, 5–10 ft., covered with coarse fiber: some or many of the lvs. only 3–7-parted, others to 10-parted, green both sides, the segms. uniformly curving or drooping, broad and notched at the end, 1½–3 in. broad at middle, cross-wrinkled or puckered.

flabellifórmis: *R. excelsa.*

hùmilis. Sts. more slender with finely-fibrous sheaths: segms. narrow, mostly 9 or more, the rear ones usually spreading or directed somewhat backward, usually not exceeding 1 in. broad and surface not puckered, apex very narrow.

RHAPONTICUM: *Centaurea cynaroides.*

RHÀZYA. *Apocynaceæ.* Shrubs of the Medit. region, akin to Amsonia, with alternate lvs. and white or blue fls. in terminal cymes.

orientàlis. Lvs. ovate-lanceolate, 2 in. long: fls. white, ½ in. long. S. E. Eu., Asia Minor.

RHEKTOPHÝLLUM. *Araceæ.* One or two tall-climbing herbs rooting at the nodes, native in W. Afr., of which one is sometimes grown in hothouses.

mirábile (*Nephthytis picturata*). Lvs. arrow-shaped, to 6 ft. long and 2 ft. broad, green variegated with pale green between the nerves, the margins deeply wavy, the petioles to 3 ft. long: spathes to 4 in. long, green outside, reddish-purple inside.

RHÈUM. Rhubarb. *Polygonaceæ.* Stout per. herbs of Asia, with clumps of large basal lvs., small greenish, whitish or reddish fls. in panicled clusters or racemes on tall hollow sts., and fr. a winged achene; one species grown for the edible lf.-stalks and others for bold foliage effects. See *Rhubarb.*

acuminàtum. Similar to *R. emodi* but only to 3 ft. high and fls. larger: sts. and infl. red-purple. Himalayas.

austràle. Lvs. almost orbicular, 5–9-veined, with broad cordate bases: infl. without foliaceous bracts; fls. small, greenish-white, to dark red in fr. Cent. Asia.

Colliniànum. Perhaps a hybrid: lvs. with broad much cut lobes: fls. red. China.

compáctum. Lvs. broad-ovate, cordate, undulate and obscurely lobed: infl. with drooping branches. Siberia.

emòdi. Lvs. cordate-ovate, wavy-margined, somewhat copper-colored: fls. dark purple, stalks to 10 ft. high. Himalayas.

nóbile. To 4 ft., sts. densely covered with straw-colored bracts 6 in. across which conceal the short axillary panicles: lvs. ovate-oblong, 1 ft. across, leathery, entire. Himalayas.

officinàlis. Lvs. round-oval, 3–7-lobed, the lobes notched, to 3 ft. across: fl.-stalks to 10 ft. high. W. China.

palmàtum. Lvs. nearly orbicular, heart-shaped at base, deeply palmately lobed, the lobes sometimes again divided: fl.-stalks to 6 ft. high. N. E. Asia. Var. **atrosanguíneum** has dark red panicles and var. **tangùticum** longer lvs. not so deeply lobed. Vars. **coccíneum** and **rùbrum** are also listed.

Rhapónticum. Garden R. Pie-Plant. Wine-Plant. Lvs. ovate, heart-shaped at base, the margins entire but wavy, to 1½ ft. long: fl.-stalk to 6 ft. high. Siberia.

Rìbes. To 5 ft.: lvs. thick, almost leathery, cordate to reniform, with the margins crisped or undulate and the blades puckered or blistered: infl. with foliaceous bracts; fls. green, drooping: frs. about 1 in. long, blood-red, showy. Asia Minor to Persia.

spicifórme. Lvs. orbicular or cordate, very leathery, reticulated beneath: fl.-stalk to 2 ft. high. Himalayas.

tatáricum. Lvs. roundish, 3-veined, weakly cordate: infl. without foliaceous bracts. W. Asia.

undulàtum. To 5 ft.: lvs. ovate-cordate and strongly undulate: infl. with foliaceous bracts; fls. with the pedicels jointed near the base. Asia.

RHÉXIA. Meadow-Beauty. *Melastomaceæ.* Per. herbs native in N. Amer., with opposite simple 3–5-nerved lvs., terminal fls. solitary or in cymes, and capsular frs.; cult. in borders and wild-gardens in moist situations. Propagated by tubers and seeds.

lanceolàta. To 18 in., hairy, sts. terete: lvs. oblanceolate to linear-lanceolate, to 1 in. long: fls. white to pale purple, to 1½ in. across. Blue Ridge Mts., Ga.

lùtea. To 1 ft., sts. angled, much branched: lvs. obovate to lanceolate, serrulate, glabrous: fls. yellow, small, in cymes. N. C. to Fla. and west.

mariàna. To 2 ft., sts. cylindric, very hairy-pubescent: lvs. narrow, oblong or linear-oblong, to 1½ in. long: fls. pale purple, about 1 in. across, in loose cymes. L. I. to Fla. and Tex.

Náshii. To 2 ft., sts. densely yellow-hairy: lvs. narrowly elliptic-lanceolate, to 2 in. long: fls. purple, to 1¼ in. across. Swamps of Fla. to La.

virgínica. To 1½ ft., the roots bearing tubers, sts. square, somewhat pubescent: lvs. ovate, to 2 in. long: fls. rosy-purple, 1½ in. across, in cymes. Me. to Fla. west to Ia. and La.

RHINÁNTHUS. *Scrophulariaceæ.* Ann. herbs of the northern hemisphere, with opposite lvs., yellow, blue or violet 2-lipped tubular fls., sometimes parti-colored, and capsular frs.; sometimes placed in the rock-garden or elsewhere.

Crísta-gálli. Rattle-Box. To 1½ ft.: lvs. lanceolate, to 2 in. long, toothed: fls. yellow with purple spots on lips, about ½ in. long. Mts., Eu., Asia, northern part of N. Amer.

RHINEPHÝLLUM. *Aizoaceæ.* Stemless succulent perennials with opposite lvs. and solitary terminal fls., the petals in one row; stigmas 5. S. Afr., allied to Mesembryanthemum.

Cómptonii. Lvs. several, thick, keeled, expanded at end, toothed: petals comparatively broad, filaments papillate, stigmas slender.

macradènium (*M. macradenium. Peersia macradenia*). Branches decumbent: lvs. to 2 in. long and ¼ in. thick, united at base, bright green: fls. yellow, 1 in. across.

RHIPÓGONUM (or *Ripogonum*). *Liliaceæ.* Climbing shrubs of Australia and New Zeal., with mostly opposite lvs., small fls. with deciduous perianth borne in racemes, and fr. a berry; one species intro. into Calif.

scándens. Lvs. ovate-oblong to oblong-lanceolate, to 5 in. long, leathery: fls. greenish, ⅓ in. across, in axillary racemes to 6 in. long: berries bright red, ⅓ in. across. New Zeal.

RHÍPSALIS. *Cactaceæ.* Epiphytic cacti for the most part, a number of them grown as pot subjects in greenhouses, hanging or clambering or sometimes erect and more or less rooting or emitting aërial roots, the sts. branched, terete, angled, or flattened and leaf-like, sometimes as slender as strings, the areoles on the edges or angles and bearing hairs, wool and bristles: fls. small, with few segms., opening night or day: fr. often resembling that of the mistletoe. Fla. to Argentina, some 60 species. See *Cacti.*

The species of Rhipsalis are interesting pot subjects and are easily grown; propagated by cuttings, and by seeds when available.

capillifórmis. Very slender and weak, the main branches very long and lateral ones short, all cylindrical: fls. many along sides, cream-color, ¼ in. or less across. Brazil.

cassùtha (commonly but not originally spelled *cassytha*). Mistletoe Cactus. Growing on trees or rocks hanging in many strands to 30 ft., the branches terete and very slender, somewhat bristly when young but becoming naked: fls. cream-color, solitary, about ¼ in. across. Fla. to Brazil and Peru, also Ceylon and trop. Afr.

cavernòsa: *Lepismium cruciforme.*

cereifórmis: *Pfeiffera ianothele.*

cereúscula (*R. Saglionis*). Parts terete, slender and mostly long, sometimes to 2 ft. high and terminated by cluster of short branches: fls. pinkish to white with yellowish midrib, about ½ in. or more across. Cent. Brazil to Uruguay.

chrysocárpa: *R. puniceo-discus.*

commùnis: see *R. squamulosa.*

cribràta (*R. penduliflora*). Sts. becoming hanging, terminal branches in whorls and 1 in. long: fls. white or cream-colored, ⅓ in. long, pendulous. Brazil.

crispàta (*Epiphyllum crispatum*). Joints elongate to ovate, to 4 in. long, somewhat crenate: fls. pale yellow, 1–4 at an areole, but usually solitary: fr. white. Brazil.

dissímilis. Sts. erect or hanging, naked or hairy, the latter with 9 low obtuse ribs and areoles white-bristled: fl.-buds red, fls. pink with numerous white stamens: fr. white. Brazil.

funàlis: probably *R. grandiflora.*

grandiflòra. Branches cylindrical and rather stout, to 3 ft. high and nearly ½ in. diam.: fls. scattered, rose or cream-color, about ¾ in. across. Brazil.

heteróclada. Sts. erect, dark green with purple zones around areoles and branch tips, slender, areoles often only 1-bristled: fls. greenish-white, to ⅓ in. across. Brazil.

Houlletiàna. Much branched, to 6 ft., branches leaf-like, flat and thin, to 2 in. broad, serrate or notched: fls. cream-color turning yellowish, with red center, about ¾ in. long. Brazil.

lumbricoìdes. Sts. much branched, to 12 ft. long and ⅓ in. thick, rooting freely, areoles with 5–10 white bristles when young: fls. white or cream-colored, ½ in. long. Uruguay, Paraguay.

mesembryanthoìdes (often but not originally spelled *mesembryanthemoides*). Upright with drooping ends, branches of two kinds, some 4–8 in. long and very slender, fruiting branches ¼–nearly ½ in. long and thicker: fls. white or light pink, solitary, ½ in. or more across. Brazil.

pachýptera. Sts. more or less pendent and much jointed, joints to 2 ft. long and nearly 3 in. broad, but sometimes nearly orbicular, crenate: fls. yellowish, solitary, about ⅔ in. long. Brazil.

paradóxa. Hanging in clusters to 3 ft. or more, with many aërial roots, branches 3-winged and zigzag: fls. white, about ¾ in. long. Brazil.

penduliflòra: *R. cribrata.*

pentáptera. Branches stiff and to ½ in. or more diam., strongly 5- or 6-ribbed to almost winged: fls. scattered, cream-color and petals reddish on back, about ¼–⅓ in. long. S. Brazil, Uruguay.

pigmática zanzibària is probably referable to *R. cassutha.*

prismática (*R. Suareziana. R. tetragona*). Much branched, prostrate, upper branches somewhat angled: fls. white. Brazil.

puníceo-díscus (*R. chrysocarpa*). Branches filiform and hanging, rooting freely: fls. white, ½ in. long. Brazil.

rhómbea. Branches flat and thin or sometimes 3-angled, the joints to 1 in. broad and crenate: fls. solitary or in 2's, cream-color with red spot inside. Brazil.

Sagliònis: *R. cereuscula.*

salicornioìdes: *Hatiora salicornioides.*

Schottmùelleri: a form of *Hatiora salicornioides.*

squamulòsa (*Lepismium commune*). Creeping, rooting freely, branches 3-angled, to 1 ft. long and 1 in. wide, green tinged with red, areoles with white wool and bristles: fls. white, to ½ in. long. Brazil, Argentina.

Suareziàna: *R. prismatica.*

tetragòna: *R. prismatica.*

Tónduzii. Sts. to ½ in. diam., usually 4–5-angled, rooting freely, branches 4 in. long and in clusters of 2–6 and hanging, areoles forming notches in branches: fls. white, ½ in. long. Costa Rica.

trígona. Much branched, sts. ½ in. diam. and 3-angled: fls. solitary, white or pinkish, to ¾ in. across. Brazil.

tucumanénsis. Much branched, the sts. pendent, often whorled, to nearly ½ in. diam., becoming angled with age: fls. solitary, pale rose to cream-colored, about ⅝ in. across: fr. white to reddish. Argentina.

RHIZOME: underground stem; rootstock.

RHIZÓPHORA. Mangrove. The only representative in the U. S. of *Rhizophoraceæ*, a family of 17 genera of trees and shrubs in trop. and semi-trop. regions about the world; the plants of this family bear thick leathery mostly opposite entire lvs., bisexual and regular polypetalous fls. in axillary clusters, and indehiscent or tardily splitting leathery fr. **R. Mángle,** American M., is native on tidal shores and shoals and in marshes under sea influence and along streams from the Everglades, S. Fla. to W. Indies, Cent. Amer., S. Amer.: tree commonly to 40 ft. high but sometimes twice or more this height, with thick round and bushy top, forming dense and difficult tangles by the many arching aërial roots that become attached in the mud and form stilts or trunks as well as by the seedlings that arise from the seeds that begin to germinate before the frs. fall from the tree. In regions of its nativity the mangrove protects shores and aids in building land, and affords acceptable background for the development of personal properties; it is one of the most interesting of trees.

RHODANTHE: *Helipterum Manglesii.*

RHODIOLA: *Sedum.*

RHODÓCHITON. *Scrophulariaceæ.* Graceful vine of free-flowering habit, similar to Maurandia but more vigorous and differing in technical characters; 1 species. It blooms the first season if the seed is sown in early spring, and should be treated as a tender ann. **R. volùbile.** Purple Bell-Vine. Lvs. alternate, heart-shaped, to 3 in. long, toothed: fls. purplish-red, over 2 in. long, on red sts., solitary, drooping. Mex.

RHODODÉNDRON (incl. *Azalea* and *Rhodora*). Rose Bay. Azalea. *Ericaceæ.* Shrubs and small trees with alternate entire often leathery lvs., bell-shaped or funnelform fls. mostly in terminal umbel-like racemes, and capsular frs., making prominent autumnal buds. The botanical differences between azaleas and rhododendrons are not constant, but the azaleas are largely deciduous with funnelform fls. and the rhododendrons mostly evergreen with bell-shaped fls.

Rhododendrons do not thrive in clay or limestone soils, but stand best in a mixture of leaf-mold, peat and sandy loam. They should be protected from strong winds and continuous hot sun, and the soil kept moist. Transplanting is easily effected in spring or fall if a good ball of earth is kept around the roots. Most of the species require a mulch as protection from frost. They usually need protection from early spring sun and winds, and are therefore placed where somewhat screened by other plantings.

Rhododendrons and azaleas are propagated by seeds sown in pans or boxes of sandy peat and only slightly covered with sand or sphagnum. Seedlings should be transplanted as soon as they can be handled. The second year they may be taken out. Propagated also by layers which cannot be separated until the second year and slowly by cuttings of half-ripe wood taken with a heel. Named varieties are increased by grafting, particularly veneer-grafting.

Rhododendrons are often forced under glass for the florists' trade. They should be grown in pots and can be brought into bloom in about six weeks with a night temperature of 50–55°.

The varieties and hybrids of *R. catawbiense* are the standard and dependable rhododendrons for planting in the North. Some of the unmodified species also endure northern conditions, particularly if given some protection, as *R. arbutifolium, brachycarpum, campanulatum, carolinianum, caucasicum, dauricum, ferrugineum, hirsutum, Metternichii, micranthum, minus, myrtifolium, Przewalskii, Smirnovii.* The few high northern species are of course very hardy, as *R. lapponicum, maximum, parvifolium.*

As here understood, Rhododendron includes all the azaleas, even though the latter are habitually kept separate by gardeners. The azaleas are commonly assumed to be deciduous, and this is true of the native North American species; but the Indian azaleas and others are evergreen, and some of the rhododendrons are deciduous. Nor is the shape of the corolla or other character a constant mark of separation when the plants of the world are considered. Those who wish to name their plants under Azalea will find the *A* synonym, in the following account, to be the tenable name under that genus. The much-modified garden azaleas are of three main groups: (1) the Indian azaleas (*R. indicum*), evergreen, much grown under glass for florists trade and in the open along the seaboard and in the South and California; (2) the Ghent azaleas (hybrid derivatives from *R. luteum*, known as *R. gandavense*), deciduous, abounding in yellows, forced and also hardy on the seaboard; (3) the kurume and similar classes (forms of *R. obtusum*), evergreen, not hardy North but popular under glass. Some of the dwarf kinds, or taller species that bloom when small, are useful in rock-gardening.

The genus has been divided variously by different authors. The treatment usually accepted by botanists and horticulturists of Europe divides the genus into forty-four series and about as many sub-series. Because these "series" do not represent clearly defined groups and are not each distinct from the other, they are not accepted here. The genus separates rather naturally into four subgenera, each with its respective subsections: *Eurhododendron, Azaleastrum, Anthodendron* and *Therorhodion.*

The subgenus *Eurhododendron* contains the true rhododendrons. It is characterized by leaves usually persistent, smooth, hairy or glandular spotted (lepidote) beneath, and rarely ciliate, with ovary usually glabrous. Sections of *Eurhododendron* are: *Leiorhodion, Lepipherum, Pogonanthum* and *Rhodorastrum.* The first three usually have persistent leaves and the flowers arise from terminal buds. Section *Leiorhodion* has non-lepidote leaves and ovary, the leaves may be glabrous or tomentose beneath. Sections *Lepipherum* and *Pogonanthum* each have lepidote lvs. and ovary. *Lepipherum* has a rotate to funnel-shaped corolla. *Pogonanthum* has a salverform corolla. The section *Rhodorastrum* differs in its leaves usually deciduous and lepidote, flowers solitary or few from lateral buds and 10 stamens.

The remaining three subgenera have leaves usually deciduous, never lepidote, and rarely glabrous; the ovary usually setose. The subgenus *Therorhodion* is characterized by flowers borne on a leafy-bracted peduncle. The flowers of the subgenera *Azaleastrum* and *Anthodendron* arise from leafless buds whose bracts are deciduous. *Azaleastrum* has its flowers solitary or in two's with only 5 stamens, and the flowers of *Anthodendron* are usually many in terminal clusters with 5–10 stamens.

Sections of *Anthodendron* are: *Tsutsutsi, Sciadorhodion, Rhodora* and *Pentanthera.* The flowers and leafy branches of the first two sections arise from the same terminal bud. Section *Tsutsutsi* is characterized by leaves persistent or deciduous, non-lepidote, and the branchlets vestured with appressed setose hairs; stamens 5–10. Section *Sciadorhodion* has leaves deciduous, non-lepidote, usually clustered at branchlet ends, branchlets glabrous or villous and stamens 8–10. In the sections *Rhodora* and *Pentanthera* the flowers arise from terminal buds and the leaves from distinct lateral buds beneath. Section *Rhodora* with a rotate-campanulate corolla has 8–10 stamens, and section *Pentanthera* with a funnelform corolla has 5 stamens.

To economize space in the following brief diagnoses of species, or of plants under Latin names, letters are employed to distinguish the subgenus and section into which the plant falls according to the delimitations given above: E, Eurhododendron; Az, Azaleastrum; An, Anthodendron; Th, Therorhodion; Li, Leiorhodion; Le, Lepipherum; Po, Pogonanthum; Rh, Rhodorastrum; Ts, Tsutsutsi; Sc, Sciadorhodion; Rho, Rhodora; Pe, Pentathera and H, hybrids.

adenógynum. E, Le: to 8 ft.: lvs. lanceolate-ovate, to 3½ in. long and 1¼ in. across, reddish-brown-pubescent beneath: fls. white tinged pink or crimson, to 2½ in. across, fragrant. China.

adenóphorum. E, Le: to 8 ft.: lvs. lanceolate to oblong, to 5 in. long, acute, thick, tawny beneath: fls. rose, to ¾ in. across, corolla-tube cylindric and longer than limb, style as long as corolla. Yunnan.

adenópodum. E, Le: to 10 ft., branchlets gray-tomentose-glandular: lvs. oblong-lanceolate to oblanceolate, to 8 in. long, acute, base cuneate, densely tomentose beneath: fls. pale rose, to 1¾ in. long, on pedicels nearly as long, lobes 5, stamens 10, ovary pubescent, style glabrous, calyx about ⅙ in. long. S. W. China.

æchmophýllum. E, Rh: to 3 ft.: lvs. lanceolate, to 2 in. long, acuminate to mucronate, not strongly pubescent: fls. rose, stamens puberulous, of unequal length. S. W. Szechuan.

æruginòsum. E, Li: to 8 ft.: differs from *R. campanulatum* in its more dwarf habit, lvs. glabrous above with a metallic luster when young and usually stiffer. Himalayas.—Probably merits only a varietal rank and is so considered by some authors.

agástum. E, Li: to 20 ft.: lvs. elliptic-oblong, to 5½ in. long, red-tomentose beneath, mucronate-tipped: fls. rose with crimson blotch within, unspotted without, campanulate, to 2 in. long, ovary glandular. W. Yunnan.

alabaménse (*A. alabamensis*). An, Rho: low shrub, branches irregular, whorled, strigose when young, winter-buds glabrous: lvs. obovate to elliptic, to 2¼ in. long, usually short-villous beneath and above on midrib: fls. white, about 1 in. long, appearing with the lvs., fragrant, in clusters of 6–10, funnelform, tube hairy outside and longer than lobes. Ala.

álbicans (*A. albicans*). An, Pe: hybrid between *R. molle* and *R. occidentale:* fls. white tinged yellow with orange blotch.

albiflòrum (*A. albiflora*). Az: to 6 ft., deciduous: lvs. to 2⅓ in. long: fls. white, broad bell-shaped, ¾ in. across, solitary and nodding. June–July. B. C. to Ore. and Colo.

Álbrechtii (*A. Albrechtii*). An, Rho: allied to *R. pentaphyllum* from which it differs in growing only to 6 ft. high, the lvs. obovate to oblong-lanceolate, pubescent beneath: fls. magenta in clusters of 3–6 and fr. bristly-glandular. N. Japan.—Distinguished from *R. canadense* in corolla not divided to base.

álbum. E, Le: evergreen: lvs. to 4 in. long, rusty beneath: fls. yellowish-white, bell-shaped. Java.

álbum élegans. Hybrid with *R. catawbiense* as one parent: fls. pale pink changing to white.

álbum grandiflòrum. Hybrid with large pale pink fls. changing to white.

álbum nòvum. Hybrid differing from *album elegans* in fls. clear white and lower habit.

altaclarénse. A *catawbiense* hybrid with *R. arboreum:* fls. crimson.

ambíguum. E, Le: to 7 ft.: lvs. elliptic-lanceolate, to 3 in. long, lepidote beneath: fls. pale yellow spotted green, to 2 in. across, corolla lepidote without. W. Szechuan.

Àmesiæ. E, Le: to 14 ft.: lvs. elliptic to nearly oblong, to 3 in. long, acute, somewhat villous beneath on midrib, petioles setose: fls. dark purple, corolla funnelform, glabrous. W. Szechuan.

amœnum: *R. obtusum* var.

Annelièsiæ. An, Pe, H: hybrid of *R. arborescens* and *R. calendulaceum:* differs from *R. arborescens* in the midrib pubescent beneath and in the yellow blotch on upper lobe of the pale pink fls.; and from the latter parent in the glabrous character of the lvs., and almost glabrous branchlets.

Anthopògon. E, Po: to 2 ft.: lvs. oval or ovate, to 1½ in. long: fls. white or pink, fading to yellow but not yellow when opening, stamens glabrous. W. China.—True yellow-fld. forms ascribed to this species are probably *R. hypenanthum.*

anwhéinse. E, Li: lvs. ovate-lanceolate, to 2½ in. long, glabrous: fls. not seen. W. China.

aperántum. An, Rh: to 8 in.: lvs. ovate to obovate, to 1½ in. long, pale to purplish-green above, lighter and glabrous beneath: fls. rose to bright crimson, unspotted, stamens 10, about ½ as long as corolla. N. E. Burma.

aralioìdes: catalogue name, probably intended for *R. azaleoides.*

arboréscens (*A. arborescens. Azaleastrum arborescens*). An, Pe: to 10 ft. or more, branchlets glabrous: lvs. to 3 in. long: fls. white or pinkish, fragrant, funnelform, 2 in. long, June–July, stamens much exserted, style glabrous. Pa. to Ga. and Ala.

arbòreum. E, Li: to 40 ft.: lvs. to 8 in. long, silvery beneath, base cuneate: fls. red, pink or white and often spotted, bell-shaped, to 1½ in. across. Mar.–May. Himalayas. Var. **Cámpbelliæ** (*R. Campbelliæ*), differs from var. *nilagiricum* in its more purplish fls. Var. **nilagíricum** has rose or crimson spotted fls., and lvs. reddish-brown-pubescent beneath, with obtuse to cordate base. Var. **zeylánicum** (*R. zeylanicum*) has rich pink fls., lvs. bullate above and fulvous beneath.

arbutifòlium (*R. daphnoides*). Hybrid between *R. ferrugineum* and *R. minus:* to 4 ft., evergreen: lvs. to 3 in. long, scaly beneath: fls. pink, bell-shaped, to ¾ in. across. June–July.

argénteum: *R. grande.*

argyrophýllum. E, Li: to 20 ft., branchlets becoming glabrous: lvs. oblong-lanceolate, to 5 in. long, acuminate, white-felted beneath: fls. white often suffused rose, spotted on upper part, about 1½ in. long and narrowed toward base, lobes usually 6–10, ovary white-floccose. S. W. China. Var. **culpàre** has corolla base wider and not funnelform.

Arnoldiànum: *R. obtusum* var.

atlánticum (*A. atlantica*). An, Pe: to 2 ft.: lvs. to 2½ in. long: fls. white or pinkish, funnelform, 1 in. long, appearing before the lvs., fl. bud-scales with stipitate glands, stamens much exserted. Del. to S. C.

atrosanguíneum. A *catawbiense* hybrid with rich blood-red fls.

Aùcklandii: *R. Griffithianum* var.

Augustìnii. E, Le: to 20 ft.: lvs. to 3 in. long, scaly beneath, petioles glabrous: fls. pink spotted with yellow, broad bell-shaped, to 2 in. across. Apr.–May. China.

aùreum: *R. chrysanthum.*

auriculàtum. E, Li: to 20 ft., auriculate at base: lvs. to 1 ft. long, rusty-tomentose beneath: fls. white or pinkish spotted with green or rose, broad-funnelform, to 3½ in. across, Aug., corolla 7-lobed. China.

austrìnum (*A. austrina*). An Pe: to 10 ft.: lvs. to 3½ in. long, pubescent: fls. yellow or orange, funnelform, to 1¼ in. long, early spring, stamens much exserted. Fla.

azaleoìdes (*R. odoratum*). Hybrid between *R. ponticum* and probably *R. nudiflorum:* fls. pale purple, to 2 in. across.

Bàileyi. E, Le: lvs. oblong-oval, to 3½ in. long, dark green above, buff beneath: fls. deep red-purple, to nearly ¾ in. across, usually 10–16 fls. in raceme, style shorter than corolla-tube, stamens 10 as long as tube. S. Tibet.

Balfouriànum. E, Li: to 8 ft.: lvs. ovate to oblong-elliptic, to 3½ in. long, acute, base rounded to cordate, hairy beneath: fls. pale rose with crimson markings, funnel-campanulate, to 1¾ in. long, on glandular pedicels to 1 in. long, lobes 5, stamens 10, ovary glandular and style glandular on basal third, glabrous above, calyx deeply 5-cleft, to ½ in. long. W. Yunnan.

balsaminæflòrum: *R. indicum* var.

barbàtum. E, Li: tree to 60 ft.: lvs. elliptical-lanceolate, to 7 in. long, glabrous beneath, petioles bristly: fls. deep red, bell-shaped, 1½ in. across, Apr., ovary strongly glandular, stamens glabrous. Himalayas.

basílicum. E, Li: tree or shrub to 30 ft., young sts. red-tomentose: lvs. obovate, to 10 in. long, pubescent beneath, base cuneate to obtuse: fls. pale yellow spotted red, to 1½ in. long, stamens 16, ovary tomentose. Yunnan.

bauhiniiflòrum. E, Le: perhaps not distinct from *R. triflorum*, reported to differ in infl. 2-fld. and not 3-fld. and in scales of lower surface of lvs. unequal in size and of uniform color. Assam.

Benigìri: a form of *R. obtusum.*

Blandiànum. A hybrid with *R. catawbiense* as one parent: fls. rosy-crimson.

Bodinièri. E, Le: small shrub: lvs. oblong-lanceolate, to 3 in. long, apex acuminate, glabrous beneath, rarely lepidote above: fls. rose spotted purple, to 1¼ in. long, usually 6–7 in infl., corolla glabrous without. Yunnan.

Boòthii. E, Le: a straggling epiphytic shrub to 10 ft.: lvs. ovate to elliptic, to 5 in. long, apex briefly acuminate, hairy above on margins and midrib: fls. pale yellow, unspotted, to 1¼ in. long, lepidote without, style shorter than stamens, lepidote at base, pedicels to ¾ in. long. Bhutan.

brachyánthum. E, Le: to 5 ft.: lvs. oblong-elliptic, to 1¼ in., lepidote beneath: fls. pale yellow to greenish-yellow, to ¾ in. long, corolla-tube broad bell-shaped, longer than limb, pedicels 1 in. long or more, calyx green to ⅓ in. long. Yunnan.

brachycárpum. E, Li: to 12 ft.: lvs. to 8 in. long, gray-tomentose beneath, base rounded to auriculate: fls. cream-white flushed with pink, spotted brownish-yellow, to 2 in. across, ovary hairy, style glabrous, calyx minute. Japan, Korea. Var. **rosæflòrum** has pink fls.

bracteàtum. E, Le: shrub to 6 ft., twigs not scaly: lvs. ovate-elliptic, to 2 in. long, obtusely mucronate, base rounded, laxly scaly above and densely so beneath: fls. white spotted red, campanulate, tube hairy within and scaly outside, stamens 10, hairy basally. W. Szechuan.

brevístylum. E, Le: to 10 ft.: lvs. glabrous, to 4 in. long: fls. rose with crimson markings, to 1¾ in. across, in terminal clusters, style pubescent on lower half, shorter than stamens, corolla-lobes longer than tube, pedicels to 1 in. long. Yunnan.

bullàtum. E, probably Le: to 8 ft., branchlets densely woolly: lvs. to 4 in. long, brown-tomentose beneath, wrinkled above: fls. white with yellowish-green blotch at base, fragrant, bell-shaped, to 2½ in. across, margins wavy. Yunnan.

Bureàvii. E, Li: to 6 ft.: lvs. to 4½ in. long, rusty-tomentose beneath mixed with glands, base obtuse or rounded: fls. rose marked crimson, ovary red-tomentose and glandular, calyx to ⅜ in. long. Yunnan.

Bylsiànum. A reputed hybrid.

calendulàceum (*A. calendulacea. A. lutea,* in part). FLAME AZALEA. An, Pe: to 10 ft. or more, deciduous: lvs. to 3 in. long, pubescent when young: fls. orange-yellow to scarlet, funnelform, glandular without, 2 in. across, May–June, stamens much exserted. Pa. to Ga. and Ky.

califórnicum: *R. macrophyllum.*

callimórphum. E, Li: to 10 ft.: lvs. broadly elliptic, to 2¾ in. long, apex rounded, glaucous beneath: fls. rose, to 2 in. long, broadly bell-shaped, ovary glandular, stamens 10, glabrous. W. Yunnan.

calophýllum. E, Le: to 3 ft.: lvs. to 5 in. long, scaly and glaucous beneath: fls. white tinged yellowish-green, tubular-bell-shaped, 3 in. across, stamens about 15, not exserted. Himalayas.—Not known to be in cult.; plants under this name are probably *R. Maddenii.*

calóphytum. E, Li: tree to 40 ft.: lvs. oblong, to 1 ft. long: fls. white to rose, broad bell-shaped, 2 in. across. China.

calostròtum. E, Le: to 1 ft., suitable for rock-garden: lvs. oval or elliptical, to 1 in. long, reddish and scaly beneath: fls. pink, solitary or in pairs, to ⅞ in. long, corolla pubescent without, calyx densely scaly, to ¼ in. long. N. E. Burma.

caloxánthum. E, Li: to 5 ft.: lvs. nearly orbicular, to 2½ in. long, glabrous beneath: fls. yellow, to ¾ in. across, ovary densely glandular, stamens 10, glabrous. N. E. Burma.

camelliæflòrum. E, Le: weak often epiphytic shrub to 6 ft.: lvs. narrowly oblong-lanceolate, densely scaly beneath: fls. white tinged pink, to 1½ in. across, terminal in 2's, bell-shaped, style shorter than the 12–16 stamens. Himalayas.

campanulàtum. E, Li: to 16 ft.: lvs. oblong, to 6 in. long, rusty-tomentose beneath: fls. rosy-purple and spotted, broad bell-shaped, 2 in. across, June, ovary glabrous. Himalayas.

Cámpbelliæ: *R. arboreum* var.

campylocárpum. E, Li: to 8 ft.: lvs. ovate to elliptic, to 3 in. long, glabrous beneath: fls. yellow, sometimes with pale crimson blotches, fragrant, to 1¼ in. across, ovary glandular, pedicels about 1 in. long. Himalayas.

campylógynum. E, Le: to 6 ft., less than 1 ft. tall in native habitat at 12,000 ft. altitude: lvs. obovate, to 1 in. long, glabrous beneath, petioles not scaly: fls. rose to dark purple, to ¾ in. across, pedicels 1¼ in. long, corolla-tube longer than lobes. W. Yunnan.

camtscháticum (*R. kamtschaticum. Therorhodion camtschaticum*). Th: to 1 ft., deciduous: lvs. to 2½ in. long, ciliate: fls. rose-purple, rotate-bell-shaped, to 1½ in. across. July–Aug. Alaska to B. C.

canadénse (*Rhodora canadensis*). RHODORA. An, Rho: to 3 ft., much branched: lvs. about 2 in. long, gray-pubescent beneath: fls. rose-purple, 2-lipped, to ¾ in. long, Apr.–May, corolla divided to base. Newf. to Pa.

candidíssimum. A reputed hybrid.

canéscens (*A. canescens*). An, Pe: to 15 ft., deciduous: lvs. to 4 in. long, gray-tomentose beneath: fls. pink or white, funnelform, 1½ in. across, Apr., stamens much exserted, corolla-tube much longer than lobes. N. C. to Fla. and Tex. Var. **ròseum** is listed but the plant may be *R. nudiflorum* var. *roseum.*

cantábile. E, Le: to 3 ft.: lvs. oblong to nearly elliptic, to 1 in. long, densely scaly on both sides: fls. dark violet, to ¾ in. across, stamens 10, longer than tube, style basally pilose. Yunnan.

cardinàle: listed name, probably a form of *R. gandavense* or *R. Mortieri.*

carminàta spléndens: hort. name.

caroliniànum. E, Le: to 6 ft.: lvs. to 3 in. long, rusty-scaly beneath: fls. pale rose-purple to white, narrow bell-shaped, to 1½ in. across, May–June, stamens 10, style glabrous. N. C. Var. **álbum** has white fls.

Cartoniànum. Reputed hybrid: fls. violet, white toward base.

catapástum: *R. desquamatum.*

catawbiénse. MOUNTAIN ROSE BAY. E, Li: to 20 ft., evergreen: lvs. to 5 in. long, shining above, pale beneath: fls. lilac-purple, broad bell-shaped, to 2½ in. across, May–June, ovary tomentose, stamens 10. Mts., Va. to Ga. Var. **álbum** has white fls. Listed varietal names are **compáctum** and **grandiflòrum.**

caucásicum. E, Li: to 2 ft.: lvs. to 4 in. long, brown-tomentose beneath, base cuneate, petioles glabrous, lateral veins visible through tomentum: fls. pink or yellowish-white spotted with green, narrow bell-shaped, 2 in. across. May. Caucasus.

cephalanthoìdes. E, Po: to 4 ft.: lvs. oblong-elliptic, to ¾ in. long, glabrous above, petiole ⅛ in. long, bud-scales deciduous: fls. white, tube yellow, to ⅔ in. long, not scaly, stamens 5–8, glabrous. Yunnan.

cephalánthum. E, Po: differs from *R. cephalanthoides* in persistent bud-scales, fls. white, and stamens basally pubescent. W. China.

Chamæcístus: *Rhodothamnus Chamæcistus.*

chamæùnum. E, Le: to 1 ft.: lvs. oblong-elliptic, to ½ in. long: fls. deep rose-purple marked crimson, to 1 in. long, broadly funnel-shaped, ovary briefly tomentose, stamens 10. W. Yunnan.

chariánthum. E, Le: to 15 ft.: lvs. oblanceolate, to 2 in. long, scaly on both surfaces, glabrous: fls. rose spotted red, to 3½ in. across, not scaly outside, style pubescent at base, longer than stamens. W. China.

chartophýllum. E, Le: to 8 ft. or more: lvs. persistent or deciduous, slightly scaly beneath, to 2½ in. long, glabrous: fls. pale purple, broadly funnel-shaped, to 2 in. across, glabrous outside, in terminal and axillary clusters. Yunnan.

chasmanthoìdes. E, Le: to 5 ft.: lvs. oblong-triangular, to 4 in. long, midrib pubescent beneath, petiole glabrous: fls. rose to lavender with olive-green markings, scaly outside, calyx rim-like, unlobed. S. E. Tibet.

chrysánthum (*R. aureum*). E, Li: typically to 1 ft., occasionally to 3 ft., much branched: lvs. to 3 in. long, glabrous beneath: fls. pale yellow, narrow bell-shaped, 1 in. across, May–June, ovary rusty-tomentose. Siberia to Japan.

chrýseum. E, Le: to 2½ ft.: lvs. ovate-elliptic, to ½ in. long, densely scaly above and below: fls. yellow, to ¾ in. across, scaly, tube much shorter than lobes, style longer than stamens. W. China.

ciliàtum. E, Le: to 6 ft.: lvs. to 4 in. long, hairy above, scaly beneath: fls. white to reddish-purple, bell-shaped, 1½ in. across, not scaly, early spring. Himalayas.

cinnabarìnum. E, Le: to 10 ft.: lvs. to 4 in. long, scaly beneath. fls. brick-red, tubular-bell-shaped, to 2 in. long, not scaly. May–June. Himalayas.

citriniflòrum. E, Li: to 4 ft.: lvs. oblong-obovate to obovate, to 2¼ in. long, obtuse at ends, densely tomentose beneath, petiole to ¼ in. long: fls. lemon-yellow, to 1¾ in. long, on pedicels to 1¼ in. long in umbels of 4–6, lobes 5, stamens 10, ovary glandular-hairy, style glabrous. W. Yunnan.

Clementìnæ. E, Li: to 10 ft.: lvs. oval to oblong, to 5½ in. long, pubescent beneath: fls. yellowish-white to rose with crimson markings, to 1½ in. across, corolla 6–7-lobed, stamens pubescent at base. W. China.

coccínea speciòsa: hort. name for form of *R. gandavense* or *R. Mortieri.*

concínnum (*R. yanthinum*). E, Le: to 10 ft.: lvs. to 2½ in. long and scarcely 1 in. wide, scaly, glabrous beneath: fls. purple, 1½ in. across. May. China. Var. **lepidánthum** is *R. pseudoyanthinum.*

crássum. E, Le: to 20 ft.: lvs. to 5 in. long, rusty-scaly beneath: fls. white, funnelform, to 4 in. across, corolla and style scaly. Himalayas.

crinígerum. E, Li: to 12 ft.: lvs. to 7 in. long, pubescent beneath: fls. white to pink spotted purple or with large basal blotch, to 2 in. across, pedicels to 1¼ in. long, ovary glandular. W. China.

cròceum. E, Li: to 20 ft.: lvs. oblong, to 5½ in. long, sparsely pubescent or glabrous beneath: fls. yellow, with or without crimson blotch, somewhat red-glandular without, to 1¼ in. long, ovary and style glandular. N. W. Yunnan.

cucullàtum. E, Li: to 8 ft.: lvs. obovate to oblanceolate, to 3 in. long, tomentose beneath: fls. white spotted crimson, funnelform, to 1¼ in. long, pedicels to ⅝ in. long, ovary glandular, style glabrous. W. China.

cuneàtum. E, Le: to 4 ft.: lvs. elliptic, to 1 in. long, scaly on both sides: fls. dark rose, to 1 in. across, funnelform, glabrous, style glabrous, longer than stamens. Yunnan.

Cúnninghamii. E, Li: hybrid of *R. maximum* and *R. arboreum:* lvs. brown-tomentose beneath and fls. white spotted purple. Not to be confused with "Cunningham's White," a hybrid of *R. caucasicum* and *R. ponticum album.*

cyanocárpum. E, Li: tree to 20 ft.: lvs. elliptic to orbicular, to 4½ in. long, glabrous beneath: fls. white to rose, to 3½ in. across, in umbels of 8–10, ovary and style glabrous. W. Yunnan.

dahùricum: *R. dauricum.*

Dalhoùsiæ. E, Le: to 8 ft., often epiphytic: lvs. to 5 in. long, rusty-scaly beneath: fls. yellow to white, fragrant, bell-shaped, 4½ in. across; style scaly, longer than stamens. Himalayas.

daphnoìdes: *R. arbutifolium.*

daùricum (*R. dahuricum*). E, Rh: to 6 ft., deciduous or semi-evergreen: lvs. to 2 in. long, scaly beneath: fls. rosy-purple, broad bell-shaped, to 1½ in. across, solitary. Mar.–Apr. Siberia to Japan. Var. **mucronulàtum** is *R. mucronulatum.* Var. **sempérvirens** (var. *atrovirens*) has dark green evergreen lvs.

Davidsoniànum. E, Le: to 10 ft.: lvs. to 2½ in. long, scaly and glaucous beneath: fls. pink, narrow bell-shaped, to 1¼ in. across, May, infl. axillary and terminal, stamens slightly exserted. China.

decòrum. E, Li: lvs. to 5 in. long, glaucous beneath: fls. white or pink, broad bell-shaped, 6–8-lobed, 2 in. across, stamens 12–16. China. Var. **màjus** is listed.—The plant known as *R. vernicosum* differs only in the glands on the style being dark red and *R. rhantum* is not distinct from it.

Delavàyi. E, Li: tree to 40 ft.: lvs. rusty-tomentose beneath, petioles and twigs reddish-tomentose: fls. deep red, broad bell-shaped, 1 in. across, on pedicels to ⅝ in. long, ovary pubescent. China.

deleiénse. E, Le: shrub to 3 ft., branches spreading: lvs. oblong, to 5 in. long and 1½ in. wide, mucronate, densely black-scaly beneath: fls. deep purple-magenta with tube darker within, tubular-campanulate; stamens 10, exserted, shorter than scaly style, stigma crimson, calyx large, deeply lobed, segms. rounded. Assam.

delicatíssimum. A *catawbiense* hybrid with pale pink fls. changing to white.

desquamàtum (*R. stenoplastum. R. catapastum*). E, Le: shrub or small tree to 30 ft.: lvs. to 3½ in. long, scaly below, glabrous above: fls. pale pinkish-purple, to 1¾ in. across, scaly outside, style glabrous, longer than stamens. W. China, N. Burma.

detónsum. E, Li: to 12 ft.: lvs. oblong-elliptic, to 5 in. long, densely or remotely reddish-tomentose beneath: fls. rose-pink, crimson-spotted, to 2 in. across, pedicels 1¼ in. long, corolla 5–7-lobed, ovary glandular. Yunnan.

diacrìtum (*R. pycnocladum*). E, Le: procumbent shrub to 2 ft.: lvs. broadly elliptical, to ¼ in. long, densely scaly on both sides: fls. dark rose-purple with white throat, broadly funnelform, to ⅓ in. long, scaly, style glabrous, longer than stamens. Yunnan.

dichroánthum. E, Li: to 7 ft. or less, blooming when small: lvs. oblong to oblanceolate or obovate, to 4 in. long, whitish underneath, petiole to ⅜ in. long: fls. 2–8 together, yellowish-rose to orange, corolla fleshy and to 1 in. across. Yunnan.

dídymum. E, Le: to 1 ft. or more: lvs. obovate, to 2 in. long, in short whorls, dark green and rugulose above, gray-hairy beneath, apex rounded, base wedge-shaped: fls. dark crimson, tubular-campanulate, about 1 in. long, in umbels of 3–5, stamens 10, filaments red and glabrous, shorter than style. S. E. Tibet.

dilatàtum: *R. reticulatum.*

diphrócalyx. E, Li: to 15 ft.: lvs. oblong-ovate to obovate, to 6 in. long, obtuse or cuspidate, base rounded, essentially glabrous beneath, petiole to ¾ in. long: fls. light crimson to bright red, usually spotted or with basal blotch, to 1¾ in. long, in umbels of 16–22, pedicels to ⅞ in. long and densely hairy, ovary pubescent and shorter than the calyx-lobes. W. Yunnan.

díscolor. E, Li: to 15 ft.: lvs. to 8 in. long, pale beneath, base cuneate: fls. white or pale pink, narrow bell-shaped, to 3½ in. across, June, stamens 14–16, glabrous, ovary glandular. China.

drumònium. E, Le: to 1 ft.: lvs. oblong, to ⅓ in. long and ⅛ in. wide, scaly on both sides: fls. pale bluish-purple, nearly ½ in. long, funnelform, solitary, stamens 10, style glabrous. Yunnan.

Edgariànum (*R. oresbium*). E, Le: to 3 ft.: lvs. broadly elliptic, to ⅓ in. long, scaly on both sides: fls. rose-purple, to ¾ in. across, not scaly, style longer than stamens. W. China.

Édgeworthii. E, Li: to 6 ft., often epiphytic: lvs. to 4 in. long, rusty-tomentose beneath, dark green and bullate above: fls. white tinged with rose, broad bell-shaped, to 4½ in. across, ovary and style tomentose. Himalayas.

elæagnoìdes (*R. sinolepidotum*). E, Le: to 9 in., branchlets warty: lvs. obovate-elliptic, to ½ in. long, scaly on both sides: fls. pale yellow or reddish-purple, to 1¼ in. across, solitary, ovary scaly, stamens 8. Himalayas.

euchaìtes. E, Le: currently considered a variant of *R. neriiflorum*, differing only in its height of usually 15–20 ft. and tree-like in habit, not shrubby. Border of Yunnan and Burma.

Everestiànum: see *R. Morelianum.*

exímium: *R. Falconeri* var.

Fàberi. E, Li: to 18 ft.: lvs. to 6 in. long, rusty-tomentose beneath, base rounded: fls. white or pink spotted with red, broad bell-shaped, 1½ in. across, calyx to ⅜ in. long, style glabrous. China.

Fálconeri. E, Li: to 30 ft.: lvs. to 10 in. long, rusty-tomentose beneath: fls. white spotted with purple, fragrant, bell-shaped, 2 in. across, in spring, corolla 8-lobed. Himalayas. Var. **exímium** (*R. eximium*), fls. rose, not spotted.

Fargèsii. E, Li: to 15 ft.: lvs. to 3 in. long, glaucous beneath: fls. white or pink, broad bell-shaped, to 2 in. across, May, calyx rim-like, stigma ¼ in. across. China.

fastigiàtum. E, Li: very dwarf, evergreen: lvs. to ½ in. long, rusty-scaly: fls. lilac-rose, to 1 in. across, glabrous, style glabrous, longer than stamens. China.—See *R. impeditum.*

fastuòsum flòre-plèno: see *R. Morelianum.*

Faùriei. E, Li: shrub to 10 ft.: lvs. oblong-elliptic to obovate, to 5 in. long, upper surface glabrous, grooved along midrib, lower surface paler, apex and base rounded: fls. white or cream-colored, flushed pink along center of petals and green spotted, funnelform-campanulate, about 1 in. long, in racemes of 12–15, stamens 10, filaments glabrous and swollen at base, hairy above, stigma orange. Japan.

ferrugíneum. E, Le: to 3 ft.: lvs. to 2 in. long, shining above, rusty-scaly beneath: fls. pink to carmine, funnelform, ½ in. across. July–Aug. Mts. of Cent. Eu.

fictolácteum. E, Li: to 20 ft.: lvs. to 8 in. long, rusty-tomentose beneath: fls. white spotted with red, bell-shaped, 2 in. across, lobes 7–8, ovary glandular. China.

fimbriàtum. E, Le: low shrub with erect sts.: lvs. lanceolate to oblong-lanceolate, to 1¾ in. long, mucronate, scaly on both sides, petiole scaly: fls. deep mauve-purple fading to purple, about ⅝ in. long, corolla campanulate, glabrous outside, stamens 10, ovary scaly, style pink and glabrous. N. E. Yunnan.

flávidum (*R. primulinum*). E, Le: to 3 ft.: lvs. oblong-ovate, to about ¾ in. long, scaly, darker above: fls. few together, yellow, about 1 in. across, corolla glabrous, stamens 10, exserted. W. China.

flàvum: *R. luteum.*

floribúndum. E, Li: to 15 ft.: lvs. to 6 in. long, gray-tomentose beneath: fls. rose, 1½ in. across, pedicels to ½ in. long, ovary white-tomentose. China.

formòsum. E, Le: to 8 ft.: lvs. to 2½ in. long, scaly and glaucous beneath: fls. white or pinkish, narrow bell-shaped, to 2 in. across, scaly outside, style scaly, stamens 10, shorter than style. Himalayas.

Forsteriànum. Hybrid between *R. Edgeworthii* and *R. Veitchianum:* fls. white.

Fórtunei. E, Li: to 12 ft., evergreen: lvs. to 8 in. long, glabrous beneath: fls. lilac or pink, fragrant, broad bell-shaped, to 3 in. across, May–June, calyx rim-like, style scaly. China. Var. **cyanocárpum** is *R. cyanocarpum.* Var. **Houlstónii** is *R. Houlstonii.*

fragrantíssimum. Hybrid probably between *R. ciliatum* and *R. Edgeworthii:* fls. white or pinkish, fragrant.

Fràseri. Hybrid between *R. japonicum* and *R. canadense:* fls. rose-lilac, 2-lipped, to 1½ in. across.

fúlgens. E, Li: to 8 ft.: lvs. to 4 in. long, rusty-tomentose beneath: fls. blood-red, bell-shaped, to 1¼ in. across, in spring, pedicels less than ½ in. long, ovary glabrous. Himalayas.

galactìnum. E, Li: tree to 20 ft.: lvs. to 8 in. long, tan-pubescent beneath: fls. rose with basal crimson blotches, to 1¾ in. across, 7-lobed, ovary glabrous, stamens 14. Szechuan.

gandavénse. GHENT AZALEAS. A series of hybrids between *R. luteum* and other species, probably *R. calendulaceum*, *R. nudiflorum* and *R. Mortieri.*

gigantèum. A *catawbiense* hybrid with bright rose fls.

glaùcum. E, Le: to 3 ft., evergreen: lvs. to 3 in. long, scaly, glaucous beneath: fls. rose, bell-shaped, 1¼ in. across or less, in spring, corolla and style not scaly. Himalayas.

globulígerum. E, Li: to 6 ft.: lvs. oblong to oboval, to 3 in. long, pubescent beneath, petioles tomentose: fls. white, marked crimson, about 1 in. long, bell-shaped, pedicels less than 1 in. long. W. China.

glomerulàtum. E, Le: to 2 ft. or less, twigs densely brown-scaly: lvs. ovate to ovate-elliptic, about ⅝ in. long, densely scaly on both sides, apex emarginate, base rounded: fls. pale purple-mauve, about 6 in terminal clusters, narrowly campanulate, about ¾ in. long, glabrous outside, hairy within. W. China(?)—Differs from *R. russatum* in glabrous style and smaller calyx.

gránde (*R. argenteum*). E, Li: tree to 40 ft.: lvs. to 1 ft. long, white beneath: fls. rosy to white, bell-shaped, to 3 in. across, calyx minute, style glabrous with large disc-like stigma. Himalayas.—Distinguished from *R. calophytum* by its shorter and glandular fl.-pedicels.

grandiflòrum. A *catawbiense* hybrid with clear rose fls.

Griersoniànum. E, Li: to 6 ft.: lvs. to 7 in. long, acute, with a red horny tip, rusty-tomentose beneath, petioles tomentose: fls. rose with darker spots, 2½ in. long, style glandular at base. China.

Griffithiànum. E, Li: to 8 ft.: lvs. to 1 ft. long, glabrous beneath: fls. white, fragrant, 3 in. across, bell-shaped, calyx to ½ in. long, stamens 12–18, glabrous, style glandular. Himalayas. Var. **Aùcklandii** has fls. to 7 in. across.

hæmàleum. E, Li: to 4 ft.: lvs. to 3 in. long, apex rounded, base cuneate, pubescent beneath, petiole less than 1 in. long: fls. dark crimson with white stamens, to 1½ in. long, tubular-bell-shaped. S. E. Tibet.

hæmatochìlum: *R. oreodoxa.*

hæmatòdes. E, Li: dwarf shrub, sometimes to 10 ft.: lvs. oblong-obovate, to 3 in. long, pubescent beneath, petiole pubescent: fls. crimson, to 2 in. long, in umbels of 6–8, stamens usually 12, glabrous. Yunnan.

Hanceànum. E, Le: to 3 ft.: lvs. to 3 in. long, scaly: fls. pale yellow to nearly white, narrow bell-shaped, ¾ in. across, in spring, stamens exserted, style glabrous. China.

Hatsu-gìri: *R. obtusum* var. *amœnum.*

hedyósmum: *R. ledoides.*

helićlepis. E, Le: to 10 ft.: lvs. oblong-elliptic, to 4 in. long, glabrous beneath, petiole ½ in. long: fls. red to rose, broadly funnelform, to 1½ in. across, scaly outside, style longer than stamens, pubescent at base. Yunnan.

hemitríchotum. E, Le: to 3 ft.: lvs. oblanceolate, to 1 in. long, acute: fls. pale rose, less than 1 in. across, broadly funnel-shaped, short-lobed, stamens 8, pubescent, style very long. W. China.

Hinodegìri. One of the Kurume azaleas, *R. obtusum* var.

Hinomòyo. A Japanese azalea, evergreen: fls. clear pink, produced profusely.

hippophaeoìdes. E, Le: to 5 ft., much branched: lvs. to 1¼ in. long, scaly on both sides: fls. lavender-blue, bell-shaped, ½ in. long, tube villous within, style glabrous. China.

hirsùtum. E, Le: to 3 ft.: lvs. to 1¼ in. long, scaly beneath, ciliate: fls. pink to carmine, funnelform, ½ in. across. June. Mts. of Eu.

Hódgsonii. E, Li: to 20 ft.: lvs. to 1 ft. or more long, rusty-tomentose beneath, petiole tomentose: fls. pale purple, broad bell-shaped, 2 in. across, corolla usually 7–8-lobed, stamens 15–18, glabrous, ovary hairy. Himalayas.

horæum. E, Li: procumbent, to 1 ft. or less: lvs. obovate, to 2 in. long, densely tomentose beneath, petiole white-hairy, to ½ in. long: fls. deep crimson, bell-shaped, to 2 in. across, style glabrous, longer than stamens. S. E. Tibet.

hormóphorum. E, Le: to 3 ft.: lvs. lanceolate, to 2 in. long, ciliate, scaly on both sides: fls. rose marked with brown, funnelform, scaly, to 1¼ in. long, style glabrous, longer than stamens. W. China.

Houlstónii (*R. Fortunei* var. *Houlstonii*). E, Li: differs from *R. Fortunei* in smaller lvs., more glandular pedicels, and glandular-pubescent ovary, fls. pink. China.

hýbridum. Hybrid between *R. viscosum* and *R. maximum:* fls. whitish tinged pink or purple and spotted with yellow, fragrant.

hypolepidòtum. E, Le: to 4½ ft., branchlets scaly: lvs. oblanceolate, to 2 in. long, abruptly mucronate, scaly on both sides, petioles to ⅙ in. long: fls. yellow, broadly campanulate, to ⅔ in. long, ovary scaly, style short and thick, stamens exserted. S. E. Tibet.

illuminàtum: hort. name.

impéditum. E, Le: to 20 in.: lvs. elliptic and obtuse, less than ½ in. long, scaly on both sides: fls. light purplish-blue, funnelform, to ⅔ in. long, not scaly, style glabrous, longer than stamens, stigma lobed. Yunnan.—Sometimes misnamed *R. fastigiatum* which differs in its hoary rather dull green appearance, slightly shorter corolla, purple rather than brown anthers, and non-lobulate stigma.

índicum (*A. indica. R. macranthum. R. lateritium*). An, Ts: to 6 ft., evergreen: lvs. to 1½ in. long, pale beneath, margins crenulate: fls. red or pink, broad-funnelform, to 3 in. across, usually solitary. June–July. Japan. Var. **balsaminæflòrum** (var. *rosæflorum*), fls. salmon-red, double. Var. **laciniàtum,** fls. deeply 5-parted. Varietal names listed under Azalea are **álbum, Cávendishii, coccíneum màjor** is *R. speciosum,* **concínnum élegans, Iveryànum** is not distinct from var. *variegatum,* **lilácinum, Míltonii, præstantíssimum, ròseum** is *R. mucronatum Sekidera,* **sublanceolàtum, violàceum, vittàtum** is *R. Simsii* var.—The *A. indica* of the trade is *R. Simsii* or hybrids of it and other species.

inopìnum. E, Li: shrub, perhaps to 2½ ft.: lvs. ovate-oblong, to 5 in. long, apex acute to acuminate, base rounded: fls. cream-colored with crimson basal blotch and smaller spots, funnelform-campanulate, about 1 in. long, in racemose umbels of about 10. Szechuan.

intermèdium. Hybrid of *R. maximum* and *R. ponticum* with pink fls., to 3 ft.

intricàtum. E, Le: to 1½ ft.: lvs. ½ in. long, scaly: fls. violet-purple, broad-funnelform, ½ in. across. June. China.

irroràtum. E, Li: shrub or tree to 25 ft.: lvs. to 4 in. long, pale and glabrous beneath: fls. white or pinkish, narrow bell-shaped, 1½ in. long, ovary and style glandular. China.

japónicum (*A. japonica*). An, Pe: to 6 ft., deciduous: lvs. to 4 in. long, ciliate: fls. orange-red to scarlet, narrow bell-shaped, to 2½ in. across. Apr.–June. Japan. Vars. **álbum** and **ròseum** are listed.

javánicum. E, Le: epiphytic shrub to 4 ft.: lvs. nearly obovate, to 5½ in. long, glabrous and scaly: fls. red, bell-shaped, 1½ in. long. Mts., Malaya.

Kaémpferi: *R. obtusum* var.

kamtscháticum: *R. camtschaticum.*

Keìskei. E, Le: low sometimes procumbent shrub to 10 ft.: lvs. lanceolate, to 2¼ in. long, scaly beneath: fls. lemon-yellow, unspotted, to 1½ in. across, scaly outside, style glabrous, longer than the 10 stamens. Japan.

keléticum. E, Le: semi-prostrate shrub to 6 in.: lvs. ovate to elliptical, to ½ in. long, mucronate, ciliate, scaly below: fls. purplish-crimson, darker marked, to 1 in. across, funnelform, calyx nearly ½ in. long, style longer than stamens. S. E. Tibet.

Kimnazòi. An evergreen azalea with deep rose fls. 1¼ in. across, and narrow lvs.

Kirishìma. A Japanese evergreen azalea with large white fls. having scarlet center: a form of *R. obtusum.*

kiusiànum: *R. obtusum* var. *japonicum.*

Kosteriànum. Hybrid between *R. japonicum* and *R. molle:* fls. white to red.

Kótschyi. E, Le: to 3 ft., usually less: lvs. oblanceolate, to ½ in. long, mucronate, crenulate, scaly below: fls. pink, rarely white, less than ¾ in. across, corolla-tube longer than lobes, style shorter than ovary. Cent. Eu.

Kurùme azaleas: *R. obtusum* var. *amœnum.*

lætévirens (*R. Wilsonii. R. oleæfolium*). Hybrid between *R. carolinianum* and *R. ferrugineum:* fls. rose, 1¼ in. across.

lanàtum. E, Li: large shrub or tree, but rarely exceeding 8 ft. in cult.: lvs. to 5 in. long, densely tomentose beneath, petioles pubescent: fls. yellow spotted with red, bell-shaped, to 2½ in. across, pedicels less than 1 in. long. Himalayas.

lappónicum. E, Le: to 1½ ft. or prostrate, evergreen: lvs. to ¾ in. long, rusty-scaly beneath: fls. purple, broad bell-shaped, ½ in. across. June–July. Mts. of N. Eu., N. Asia, N. Amer.

lateritium: *R. indicum.*

Leachiànum: *Kalmiopsis Leachiana.*

ledifòlium: *R. mucronatum.*

ledoìdes (*R. hedyosmum*). E, Le: to 2½ ft.: lvs. linear-lanceolate, to 1¼ in. long, scaly beneath: fls. pale rose, to ¾ in. across, corolla-tube not scaly, longer than lobes, stamens 5, glabrous. Yunnan.

lepidòtum. E, Le: to 4 ft.: lvs. to 1½ in. long, scaly: fls. purple, broad bell-shaped, ½ in. across, ovary scaly, style shorter than the 8 stamens. Himalayas.

leucáspis. E, Le: shrub 1–2 ft. high, twigs scaly and pilose: lvs. elliptic to obovate, to 2 in. long, pilose above, scaly beneath, apex rounded or mucronate, base tapering: fls. white, rotate, to 2 in. across, in infl. of 1–3, stamens 10, pubescent basally. Tibet.

levistràtum. E, Li: to 10 ft.: lvs. to 3½ in. long, hairy beneath, base rounded to obtuse: fls. white or pale pink, crimson spotted, about ¾ in. across, pedicels ¾ in. long, calyx minute. N. W. Yunnan.

lilácinum: *R. indicum* var.

linearifòlium (*A. linearifolia*). An, Ts: to 4 ft., evergreen: lvs. linear-lanceolate, to 3 in. long: fls. rose-lilac, deeply divided into linear segms., stamens 5. Japan. Var. **macrosépalum** (*R. macrosepalum*). To 3 ft., often deciduous: lvs. elliptical-ovate to oblanceolate, acute or obtuse: fls. rose-purple. Var. **dianthiflòrum** is a double-fld. form.

litangénse. E, Le: to 2 ft.: lvs. oblong-elliptic, to ½ in. long, scaly on both sides: fls. dull purple, to ⅞ in. across, style glabrous, longer than stamens. W. China.

litiénse. E, Li: to 8 ft.: lvs. oblong, to 3 in. long, glabrous beneath: fls. yellow, unspotted, broadly bell-shaped, to 1¼ in. long, style and ovary glandular, stamens glabrous. Yunnan.—Differs from *R. croceum* in its smaller fls. and lvs. waxy beneath.

lóchmium. E, Le: spreading shrub, twigs densely scaly: lvs. oblanceolate, to 2½ in. long, recurved above from the midrib, glabrous above, densely scaly beneath, apex acuminate to mucronate, base narrowly wedge-shaped: fls. pink with red spots, to 1½ in. long, glabrous outside. Probably W. Szechuan, described from cult. material passing as *R. Davidsonianum.*

Lòderi. Hybrid between *R. Fortunei* and *R. Griffithianum:* fls. white to rose, fragrant, to 6 in. across.

longístylum. E, Le: to 6 ft.: lvs. to 2 in. long, scaly beneath: fls. white, narrow bell-shaped, ½ in. across, style exserted, glabrous. China.

Luscombiànum. Hybrid of *R. Fortunei* and *R. Thompsonii,* with pink fls.

lutéscens. E, Rh: to 6 ft., evergreen: lvs. to 3 in. long, scaly beneath: fls. yellow, broad funnelform, 1 in. across, in spring, stamens exserted. China.

lùteum (*R. flavum. A. pontica*). An, Pe: to 12 ft., deciduous: lvs. to 5 in. long, hairy when young: fls. yellow, very fragrant, funnelform, 2 in. across, May, stamens much exserted. Caucasus.—Parent of the race of Ghent azaleas; see *R. gandavense.*

lysólepis. E, Po: dwarf subshrub, branchlets erect and scaly: lvs. oblong-elliptic, to ¾ in. long, mucronate, glossy glandular-scaly above, scaly beneath: fls. pinkish- to dark-violet, to 1 in. across, corolla-limb at right angles to short tube, infl. of 3 fls., stamens 10, long-exserted, ovary scaly. Nativity not known.

macránthum: *R. indicum.*

macrophýllum (*R. californicum. R. washingtonianum*). E, Li: to 10 ft. or more: lvs. to 6 in. long, glabrous beneath, apex acute: fls. rosy-purple spotted with brown, bell-shaped, to 2½ in. across, May–June, pedicels glabrous, ovary rusty-tomentose. B. C. to Calif.

macrosépalum: *R. linearifolium* var.

macróstemon. A Japanese azalea with large salmon-pink fls.; a form of *R. obtusum* with smaller corolla and long-exserted stamens.

Máddenii. E, Le: to 8 ft.: lvs. to 5 in. long, densely scaly beneath: fls. white, broadly tubular, to 3½ in. across, scaly outside, style scaly, stamens 20, glabrous, shorter than style. Himalayas.

malváticum: hort. name.

Mánglesii. Hybrid between *R. Griffithianum* and *R. album elegans:* fls. white, spotted.

Marièsii. An, Sc: to 10 ft.: lvs. deciduous, ovate-lanceolate, to 3 in. long, glabrous: fls. rose spotted reddish-purple, rotate-funnelform, to 2½ in. across, style glabrous, longer than stamens. S. E. and Cent. China.

máximum, E, Li; tree or shrub to 35 ft.; lvs. to 10 in.

long, tomentose beneath: fls. rose spotted with green, bell-shaped, to 1½ in. across. June–July. N. S. to Ga. and Ala. Color forms are vars. **álbum, purpùreum, ròseum.**

Máxwellii: hort. material under this name is probably of the *R. indicum* group.

Métternichii. E, Li: to 12 ft.: lvs. to 5 in. long, densely tomentose beneath: fls. rose, bell-shaped, to 3 in. across. Apr.–May. Japan.

micránthum. E, Le: to 8 ft.: lvs. to 1½ in. long, rusty-scaly beneath: fls. white, bell-shaped, ½ in. across, June–July, stamens exserted. China.

mìnus (*R. punctatum*). E, Le: to 10 ft.: lvs. to 4 in. long, scaly beneath: fls. pink spotted with green, funnelform, 1¼ in. across, June–July, style glabrous, shorter than stamens. S. C. to Ga. and Ala.

mólle (*R. sinense. A. mollis*). An, Pe: to 5 ft., deciduous: lvs. to 6 in. long, gray-pubescent beneath: fls. golden-yellow, broad funnelform, 2 in. across. Apr.–May. China.

mollícomum. E, Le: to 6 ft.: lvs. narrowly lanceolate, to 1¼ in. long, pubescent on both sides, scaly beneath: fls. crimson, to 1 in. across, in axillary clusters. Yunnan.

Moreliànum. Hybrid between *R. catawbiense* and *R. ponticum:* fls. lilac-violet. *R. Everestianum* and *fastuosum flore-pleno* belong here.

Mòrii. E, Li: shrub or tree to 25 ft.: lvs. oblong-lanceolate, to 5 in. long, base rounded or truncate, glabrous or glandular-pubescent on midrib: fls. white or very pale rose spotted or blotched crimson, broadly bell-shaped, to 1¾ in. long, stamens 10–14. Formosa.

Mortièri. Hybrid between *R. calendulaceum* and *R. nudiflorum:* fls. pinkish spotted with orange.

Mossieànum: an orchid-lavender colored form of *R. obtusum* var. *Arnoldianum.*

moupinénse. E, Le: small shrub, sometimes epiphytic, to 2½ ft.: lvs. elliptic, to 1½ in. long, scaly beneath: fls. white, to 1½ in. long, broadly funnelform, fragrant, glabrous, style glabrous, longer than stamens. E. Tibet.

mucronàtum (*R. ledifolium* and var. *album. A. mucronata*). An, Ts: to 6 ft., evergreen: lvs. to 3 in. long, tomentose: fls. white, fragrant, broad funnelform, 2 in. across. May. China. Var. **narcissiflòrum,** fls. white, double. A form having pure white fls. spotted with rose is Sekidèra.

mucronulàtum (*R. dauricum* var. *mucronulatum*). E, Rh: to 7 ft.: lvs. elliptic-lanceolate to lanceolate, to 3 in. long, acute, both sides somewhat scaly: fls. pale rose-purple, to 1¾ in. across, before the lvs., style longer than stamens, glabrous. N. China.

muliénse. E, Le: to 2½ ft.: lvs. oblong, to ½ in. long, densely scaly on both sides: fls. bright yellow, to ¾ in. across, corolla scaly, lobes shorter than tube, style pubescent, much longer than ovary. W. China.

myrtifòlium. Hybrid between *R. hirsutum* and *R. minus:* to 5 ft., evergreen: lvs. to 2½ in. long, rusty-scaly beneath: fls. pink, funnelform, 1 in. across. June–July.—The name is sometimes confused in the trade with *R. Kotschyi.*

myrtilloìdes. E, Le: low shrub to 6 in. with decumbent branches: lvs. to ¾ in. long, gray-white and scaly beneath: fls. plum-colored, red inside, ½ in. long, funnelform, glabrous. Burma.

neriifòlium. E, Le: epiphytic shrub 3–9 ft. high: lvs. linear-lanceolate, to 3 in. long, scaly: fls. rose or purple, funnelform, 1½ in. long, usually solitary. New Guinea.

nikoénse: *R. pentaphyllum.*

níveum. E, Li: shrub or small tree to 15 ft.: lvs. obovate-lanceolate, to 6 in. long, thinly tomentose beneath with lateral veins visible: fls. magenta to purplish-lilac, narrowly bell-shaped, to 1½ in. long, calyx rim-like, ovary pubescent. Himalayas.

norbitonénse. Hybrid with *R. molle* as one parent: fls. yellow. Var. **aûreum** (*R. Smithii aureum*) has lvs. glaucous beneath.

nudiflòrum (*A. nudiflora*). PINXTER-FLOWER. An, Pe: to 6 ft. or more, deciduous: lvs. to 3 in. long, glabrous and green underneath or hairy on the midrib: fls. pink to nearly white, funnelform, 1½ in. across, Apr.–May, stamens exserted. Me. to Fla. and Tex. Var. **ròseum** (*R. roseum, A. rosea*) has under side of lvs. and also shoots grayish-pubescent; similar range but more inland.

obtùsum (*A. obtusa*). An, Ts.: to 3 ft., much branched, evergreen: lvs. to 1 in. long, shining above: fls. red, funnelform, to 1½ in. across. Apr.–May. Japan. Var. **álbum** (*R. ramentaceum*) has white fls. and rather larger lvs. Var. **amœ̀num** (*R. amœnum. R. Hatsu-giri*), fls. purple or magenta, about 1 in. across, hose-in-hose; here belong most of the "Kurume" azaleas. Var. **Arnoldiànum** is a hybrid between vars. *amœnum* and *Kaempferi* with rose to red fls. Var. **japónicum** (*R. kiusianum*) has two forms of lvs. at different seasons, fls. 2–5, the wild or spontaneous form. Var. **Kaémpferi** (*R. Kaempferi*) is often deciduous, summer lvs. somewhat different: fls. red to pink, 2–4, 2 in. across.—The Kurume and Hinodegiri azaleas are products of *R. obtusum*, the former particularly of var. *amœnum* and the latter of var. *japonicum.*

occidentàle (*A. occidentalis*). An, Pe: to 10 ft., deciduous: lvs. to 4 in. long, ciliate: fls. white or pink with yellow blotch, funnelform, to 2 in. across, June–July, stamens exserted. Ore., Calif.

occulíssimum: hort. hybrid of unknown parentage.

ochràceum. E, Le: to 9 ft.: lvs. narrowly oblanceolate, to 3 in. long, pubescent beneath, petiole pubescent: fls. crimson, unspotted, open bell-shaped, to 1¼ in. long, ovary hairy, style and stamens glabrous. W. China.

odoràtum: *R. azaleoides.*

Òldhamii (*A. Oldhamii*). An, Ts: much branched evergreen to 10 ft., very glandular and hairy: lvs. elliptic or lanceolate to nearly ovate, to 3 in. long: fls. red, to 2 in. across the spreading rounded lobes. Japan.

oleæfòlium: *R. lætevirens.*

oleifòlium: *R. racemosum* var.

Oomurasàki: referable to *R. pulchrum* var. *phœniceum.*

orbicùlare. E, Li: compact cushion-like shrub to 6 ft. high and 12 ft. across: lvs. broadly ovate to orbicular, to 4 in. long, glabrous beneath: fls. rose, bell-shaped, to 2½ in. across, 7-lobed, calyx minute, style glabrous, stamens 14. W. China.

oreodóxa (*R. hæmatochilum*). E, Li: shrub: lvs. to 4 in. long, glabrous beneath, base obtuse or rounded: fls. pale rose, sometimes purple spotted, broadly bell-shaped, to 2½ in. across, usually 7–8-lobed, stamens usually 14. W. China.

oreótrephes. E, Le: to 7 ft.: lvs. to 2 in. long, rounded at each end, densely scaly beneath: fls. rose-lavender, broad funnelform, to 1½ in. long, not scaly, in trusses of 5–8, stamens exserted, style glabrous, shorter than stamens. China.

orésbium: *R. Edgarianum.*

orthoclàdum. E, Le: to 4 ft.: lvs. oblanceolate, to ½ in. long, scaly on both sides: fls. mauve, to ¾ in. across, funnelform, not scaly, style glabrous, shorter than stamens. N. Yunnan.

ósmerum: *R. russatum.*

ovàtum. Az: evergreen: lvs. to 2½ in. long, shining above: fls. pale purple to pink, spotted, 1 in. across. May–June. China.

pachýtrichum. E, Li: shrub 6–18 ft. high: lvs. oblong to oblanceolate or obovate, to 5 in. long, glabrous above and beneath except on lower side of midrib which is brown-shaggy-hairy, apex cuspidate, base cordulate-rounded or cuneate: fls. white to pale rose with dark purple basal blotch, campanulate, to 1½ in. long, in racemose umbels of 7–10. W. Szechuan.

paradóxum. E, Li: shrub to 7 ft., terminal lf.-buds elongate with outer basal scales twice as long as inner: lvs. oblong, to 5 in. long, glabrous above with patches of loose indumentum beneath, apex obtuse and beaked, base rounded: fls. white with dark crimson basal blotch with smaller spots above, to ¾ in. long, in racemose umbels of about 7–9 fls. Szechuan.—Similar to *R. inopinum,* the latter best distinguished by its ovate terminal lf.-buds whose outer scales scarcely exceed the inner.

parvifòlium. E, Le: to 1½ ft.: lvs. to ¾ in. long, scaly on both sides: fls. rose-purple, broad bell-shaped, to ¾ in. across, glabrous within, Apr.–May. Siberia, Korea.

péndulum. E, Le: low shrub with trailing branches, often epiphytic: lvs. elliptic-oblong, to 2 in. long, woolly beneath: fls. white, sometimes yellowish within, broadly tubular, to 1½ in. wide, scaly outside. Himalayas.

pennsylvánicum. Listed as a natural hybrid of *R. atlanticum* and *R. nudiflorum:* fls. white, fragrant, early.

pentaphýllum (*R. nikoense*). An, Rho: to 25 ft., deciduous: lvs. elliptic, glabrescent, to 2½ in. long: fls. rose, broad bell-shaped, 2 in. across, in clusters of 1–3. Apr.–May. Japan.

peregrìnum. E, Li: shrub or small tree: lvs. elliptic, to 7 in. long, pubescent beneath: fls. white spotted and blotched bright red, to 2 in. across, bell-shaped, 6–7-lobed, on hairy pedicels to 1½ in. long, ovary glabrous. W. China.

phœníceum: *R. pulchrum* var.

planètum. E, Li: to 12 ft.: lvs. to 8 in. long, pale green beneath: fls. pink, narrow bell-shaped, to 2 in. long, calyx small, stamens 12–14, style glabrous with large flat stigma to ¼ in. across. W. China.

pleistánthum. E, Le: differs from *R. yunnanense* in its violet to pale purple fls., non-bristly lvs. and non-scaly calyx. Yunnan.

polylèpis. E, Le: to 10 ft.: lvs. to 3 in. long, scaly beneath: fls. purple spotted with yellow, to 2 in. across, stamens exserted, longer than style. China.

pónticum. E, Li: to 10 ft.: lvs. to 6 in. long, pale beneath: fls. purple spotted with brown, narrow bell-shaped, 2 in. across. May–June. Spain, Portugal, Asia Minor. Vars. **compáctum** and **Dàviesiæ** are listed.

poukhanénse: *R. yedoense* var.

præcox. E, Rh: hybrid between *R. dauricum* and *R. ciliatum:* lvs. to 2 in. long, rusty-scaly beneath: fls. rose-purple, broad funnelform, 1½ in. across. Mar.–Apr.

primúlinum: *R. flavidum.*

pròbum. E, Li: shrub 4–6 ft. high: lvs. oblong to obovate, to 2 in. long, dark green and glabrous above, glaucous-gray beneath, apex and base rounded: fls. white without markings, to 1¼ in. long, in umbels of 4–5. W. Yunnan.—Currently treated as a variant of *R. selense,* a species not known to be in cult. in N. Amer.

procúmbens: see *Loiseleuria procumbens.*

pruniflòrum. E, Le: compact subshrub to 2 ft., branchlets scaly: lvs. obovate-elliptic, to 1¼ in. long, obtusely mucronate, glabrous above, scaly beneath: fls. crimson to plum-purple, to ⅝ in. long, broadly tubular-campanulate, glabrous outside, ovary scaly, style short. N.E. Burma.

prunifòlium. An, Pe: to 10 ft., deciduous: lvs. to 5 in. long, pale beneath: fls. crimson, funnelform, 1 in. long, stamens much exserted. Ga. to Ala.

Przewálskii. E, Li: lvs. to 4 in. long, brown-tomentose beneath: fls. white or pink spotted with purple, bell-shaped, to 1½ in. across, ovary glabrous, grooved. China.

pseudoyánthinum (*R. concinnum* var. *lepidanthum*). E, Le: similar to and often confused with *R. concinnum,* differing in the larger lvs. 2½–3 in. long and 1–1¼ in. wide, and larger dark purple fls. W. Szechuan.

pubéscens. E, Le: to 4 ft.: lvs. narrowly lanceolate, to ¾ in. long, scaly beneath and densely villous on both sides: fls. bright rose, to ⅔ in. long, lobes ciliate, style glabrous, longer than stamens. W. China.

púlchrum. An, Ts: to 6 ft.: lvs. persistent, elliptic to oblong-oblanceolate, to 2½ in. long, glabrescent above, somewhat hairy beneath: fls. rose-purple spotted darker, broadly funnelform, to 2½ in. across, sepals lanceolate, stamens 10. Intro. from cult. in China; possibly of bybrid origin. Var. **calýcinum** (*R. ledifolium* var. *purpureum*), fls. bright rose-purple, large, sepals usually acuminate. Var. **phœníceum** (*R. puniceum*), fls. magenta.

pùmilum. E, Le: to 6 in., semi-prostrate: lvs. obovate-elliptic, to ¾ in. long, scaly beneath: fls. pink, broadly tubular, to ¾ in. long, pubescent and sometimes scaly outside. S. Tibet, N. Burma, W. China.

punctàtum: *R. minus;* also applied to *R. lætevirens* and by some authors to *R. carolinianum.*

puníceum: *R. pulchrum* var. *phœniceum.*

purálbum. E, Li: shrub 12–15 ft. high: lvs. oblong-ovate, to 5 in. long, both surfaces glabrous at maturity, apex obtuse or subacute, base rounded to truncate or subcordate, petiole about 1 in. long: fls. white, saucer-shaped, to 1¾ in. long, about 8 in terminal umbels, stamens 10–12, style and ovary glandular. Yunnan.

purpùreum críspum. A *catawbiense* hybrid with lilac-purple fls. spotted with green. **purpùreum élegans** and **grandiflòrum** have rich purple fls.

pycnoclàdum: *R. diacritum.*

quinquefòlium. An, Sc: to 25 ft., deciduous: lvs. to 2 in. long, ciliate: fls. white spotted with green, broad bell-shaped, 1½ in. across. May. Japan. Var. **ròseum** is a synonym of *R. pentaphyllum.*

racemòsum. E, Rh: to 6 ft., evergreen: lvs. to 1½ in. long, scaly and glaucous beneath: fls. pink, broad bell-shaped, ¾ in. across, Apr.–May, scaly but not pubescent, stamens exserted. China. Var. **álbum,** fls. white. Var. **oleifòlium** (*R. oleifolium*) has pink to white fls. which are pubescent and scaly outside.

ràdians. E, Le: shrub: lvs. in whorls of 5–12, cordate-ovate or oval, to 2 in. long, slightly scaly beneath: fls. white, salverform, to 3 in. long, slightly scaly outside. Celebes.

radìcans. E, Le: prostrate and matted, to 8 in. high, mentioned in rock-gardening: lvs. thick, narrow-oblong to somewhat obovate, about ½ in. long, shining above, grayish underneath: fls. solitary and terminal, dark purple, corolla about ½ in. long. Tibet.

radìnum. E, Po: to 4 ft., branchlets bristly and scaly: lvs. narrowly oblanceolate, to ¾ in. long, mucronate, scaly on both sides: fls. white flushed with rose, narrowly tubular, to ⅓ in. long, scaly outside, stamens 5, glabrous, ovary scaly, style short and glabrous. Yunnan.

ramentàceum: *R. obtusum* var. *album.*

ramosíssimum. E, Le: to 3 ft.: lvs. broadly elliptic, to ¼ in. long, scaly on both sides, reddish beneath: fls. dark purple, to ⅓ in. long, broadly funnelform, style glabrous, shorter than stamens. W. China.

ràvum. E, Le: to 4 ft.: lvs. oblanceolate, to nearly ½ in. long, scaly on both sides: fls. rose, to ¾ in. long, narrowly funnelform, style hairy at base, longer than stamens. Yunnan.

rèpens. E, Li: creeping shrub to 1 ft. high: lvs. obovate to elliptic, to 1¼ in. long, somewhat bullate above, glandular-hairy below: fls. crimson, to 1½ in. long, narrowly bell-shaped. W. China.—Vars. having larger lvs. or of taller habit are known.

reticulàtum (*R. rhombicum. R. dilatatum. A. reticulata*). An, Sc: to 25 ft., deciduous: lvs. ovate, to 2½ in. long: fls. rose-purple, broad bell-shaped, to 2 in. across. Apr.–May. Japan.

rhaibocárpum. E, Li: to 7 ft.: lvs. elliptic-oval, to 2¾ in. long, minutely pubescent beneath: fls. white or pinkish, sometimes with crimson basal blotch, funnelform, to 1½ in. long. N. W. Yunnan.

rhántum: see *R. decorum.*

rhómbicum: *R. reticulatum.*

rígidum. E, Le: shrub to 7 ft., twigs laxly scaly: lvs. oblanceolate, to 2 in. long, scaly on both sides, apex mucronate, base tapering: fls. very pale rose with crimson-brown markings, to ¾ in. long, about 4 in terminal clusters. Yunnan.

ripàrium. E, Le: to 1½ ft.: lvs. elliptic, to ¾ in. long, scaly both sides: fls. purple with darker spots, to 1 in. long, lobes scaly outside. S. Tibet.

Ríriei. E, Li: to 18 ft.: lvs. to 6 in. long, pale beneath: fls. purple with black spots, broad bell-shaped, 2 in. across. China.

rosæflòrum: *R. indicum* var. *balsaminæflorum.*

Rósamundii: catalogue name for form said to have pink fls.

ròseum: *R. nudiflorum* var.; sometimes considered to be a separate species.

ròseum élegans and **ròseum supérbum** are *catawbiense* hybrids with lilac and rose-purple fls.

rubiginòsum. E, Le: shrub or tree to 30 ft.: lvs. elliptic-lanceolate, to 2½ in. long, scaly beneath: fls. pinkish-blue, brown spotted, funnelform, to 2 in. across, style glabrous. Yunnan.

rupícola. E, Le: to 2 ft.: lvs. broadly elliptic, to ½ in. long, scaly on both sides: fls. dark crimson, to 1 in. across, scaly, style glabrous, longer than stamens. Yunnan.

russàtum (*R. osmerum*). E, Le: to 3 ft.: lvs. oblong to oval, to 1 in. long, scaly and russet-brown underneath: fls. in head-like umbels, deep purple-blue with white center, to ¾ in. long, not scaly, style hairy at base. Yunnan.

rústicum. Hybrid.

Rutherfordiànum. Hort. hybrid having many color forms from white through crimson, one parent of which is said to be *R. pulchrum* var. *phœniceum.*

Sakuragìri. A Japanese azalea having white fls. edged with pink.

saluenénse. E, Le: to 2 ft.: lvs. oblong-elliptic, to 1 in. long, scaly on both sides: fls. dark purple-crimson, to 1½ in. across, scaly and pubescent outside. N. W. Yunnan.

Sánderi. Hybrid between *R. obtusum* and *R. Simsii.*

sanguíneum. E, Li: to 3 ft.: lvs. obovate to narrowly oblong, to 2½ in. long, minutely pubescent beneath: fls. crimson, narrowly bell-shaped, to 1½ in. long, ovary hairy, style glabrous. W. Yunnan.

scàbrum (*R. sublanceolatum*). An, Ts: to 6 ft., evergreen: lvs. to 4 in. long; fls. rose to scarlet, funnelform, 2½ in. across. Japan.

Schlíppenbachii (*A. Schlippenbachii*). An, Sc: to 15 ft., deciduous: lvs. to 5 in. long, pale beneath: fls. pink spotted with brown, fragrant, broad funnelform, to 3 in. across. May. Korea, Manchuria, Japan.

scíntillans. E, Le: to 3 ft.: lvs. oblanceolate, to ½ in. long, scaly on both sides: fls. lavender, to nearly 1 in. across, broadly funnelform, not scaly outside. Yunnan.

Sèarsii. E, Le: to 15 ft.: lvs. oblanceolate-acuminate, to 3 in. long, scaly beneath: fls. white to mauve, to 2½ in. across, not scaly, style glabrous, longer than stamens. W. China.

serpyllifòlium (*A. serpyllifolium*). An, Ts: low much branched shrub, branchlets appressed-hairy: lvs. deciduous, obovate to elliptic, to ½ in. long, base wedge-shaped, remotely hairy beneath: fls. rose-pink, funnelform, to 1 in. across, stamens 5, glandular on basal half, style glabrous, ovary hairy. Japan.

serrulàtum (*A. serrulata*). An, Pe: to 25 ft., deciduous: lvs. to 3 in. long, ciliate: fls. white, fragrant, funnelform, 1½ in. long, stamens exserted. Ga. to Fla. and La.

setòsum. E, Le: low spreading shrub to 15 in. high, branchlets densely setose: lvs. oblong-elliptic, to ½ in. long, glandular-scaly above and setose-scaly beneath: fls. bright purple-pink, funnelform, to 1 in. long, in 3-fld. terminal clusters, stamens 10, ovary scaly, style glabrous. Himalayas to S. Tibet.

Shérwoodii: catalogue name.

shweliénse. E, Le: to 3 ft.: lvs. to 2 in. long, scaly on both sides, grayish-white below: fls. greenish-yellow, bell-shaped, ¾ in. long. China.

siderophýllum. E, Le: to 9 ft.: lvs. to 3½ in. long, scaly beneath: fls. white to violet, to 1 in. across, lobes slightly scaly outside. S. W. Yunnan.

sigillàtum. E, Li: shrub 6–12 ft.: lvs. oblong-elliptic to ovate or obovate, to 4 in. long, glossy above, ends rounded, densely short-hairy beneath: fls. white with crimson markings on lower side, in umbels of about 10, funnel-campanulate, to 1½ in. long, stamens 10, ovary and style glabrous. N. W. Yunnan.

Símsii. An, Ts: to 10 ft., semi-evergreen: lvs. to 2 in. long, hairy: fls. rose to red, broad funnelform, to 2 in. across. May–June. China, Formosa. Var. **vittàtum** (*R. vittatum*), fls. white striped with lilac-purple.

sinénse: *R. molle.*

sìno-gránde. E, Li: to 30 ft.: lvs. to 1½ ft. long and 1 ft. across, white-pubescent beneath: fls. white with crimson blotches, bell-shaped, 2½ in. long, stamens 18–20, puberulous at base. Mts., China.

sinolepidòtum: *R. elæagnoides.*

sinonuttállii. E, Le: to 10 ft.: lvs. elliptic, to 8 in. long, scaly beneath, midrib raised on upper surface: fls. whitish-pink tinged with yellow, fragrant, bell-shaped, to 5 in. across. China.

Smirnòwii. E, Li: to 18 ft.: lvs. to 6 in. long, brown-tomentose beneath: fls. rose, narrow bell-shaped, to 3 in. across. May. Caucasus.

Smíthii. Hybrid between *R. ponticum* and *R. arboreum:* fls. rose-purple.

Soùliei. E, Li: to 10 ft.: lvs. to 3 in. long, glabrous beneath: fls. pink or white, cup-shaped, to 3 in. across, May–June, ovary glandular, style glandular to tip, stamens glabrous. China.

speciòsum (*A. speciosa*). An, Pe: to 6 ft., deciduous: lvs. to 2½ in. long, pubescent beneath: fls. red with yellow spot, funnelform, to 2 in. across, May, stamens much exserted. S. C. to Ga.

sperábile. E, Li: to 6 ft.: lvs. elliptic-lanceolate, to 4 in. long, tawny-pubescent beneath, petiole ⅓ in. long: fls. scarlet, to 1½ in. long, narrowly bell-shaped, style glandular and hairy. N. E. Burma.

sphæránthum. E, Le: to 4 ft.: lvs. narrowly oblong-lanceolate, to 1 in. long, scaly beneath: fls. pink, to ⅔ in. long, tubular, stamens 5, included, longer than style. Yunnan.

spinulíferum. E, Li: to 8 ft.: lvs. to 1¾ in. long, pubescent and glandular-scaly beneath: fls. red, tubular, 1 in. long, stamens exserted. China.

stenoplástum: *R. desquamatum.*

sterophýllum. To 6 ft., branchlets resinous-glandular: lvs. obovate, to 2 in. long, mucronate, densely scaly on both sides, petioles scaly, to ¼ in. long: fls. rose-pink, very small, in 3–4-fld. clusters, stamens 10, hairy below, ovary scaly, style glabrous. Yunnan.

Stewartiànum. E, Li: to 7 ft.: lvs. elliptical, to 5 in. long, pubescent beneath: fls. white, yellow to rose, to 2 in. long. N. E. Burma.

strigillòsum. E, Li: to 8 ft., twigs strongly strigose: lvs. to 5½ in. long, brown-hairy beneath: fls. red or white, bell-shaped, 1½ in. across, filaments and style glabrous. China

sublanceolàtum: *R. scabrum.*

sutchuenénse. E, Li: to 10 ft.: lvs. to 10 in. long: fls. pink or lilac spotted with purple, narrow bell-shaped, to 2½ in. across, ovary and style glabrous. China.

taliénse. E, Li: to 10 ft.: lvs. to 5 in. long, rusty-tomentose beneath: fls. white to pink, narrow bell-shaped, 1 in. across. China.

tapetifórme. E, Le: slow-growing mat-forming shrub to 8 in. high or less: lvs. broadly elliptic, to ½ in. long, scaly on both sides: fls. pink, funnelform, to ½ in. long, not scaly, style glabrous, longer than stamens. Tibet-Yunnan border.

telmatèium. E, Le: to 3 ft.: lvs. narrowly oblanceolate, to ⅓ in. long, scaly on both sides: fls. deep rose-purple with white center, broadly funnelform, scaly outside, to nearly 1 in. across, style glabrous, longer than stamens. Yunnan.

tephropéplum. E, Le: lvs. to 2½ in. long, scaly beneath: fls. rose, broad funnelform, 1 in. long, style somewhat scaly and longer than stamens. S. E. Tibet.

Thayeriànum. E, Li: shrub 9–13 ft. high: lvs. narrowly oblanceolate, to 5½ in. long, acute to acuminate, base cuneate: fls. white flushed pink, funnelform-campanulate, to 1¼ in. long, usually 10–20 in compact racemose corymbs. W. Szechuan.

Thómsonii. E, Li: to 12 ft.: lvs. to 4 in. long, glaucous beneath: fls. blood-red, bell-shaped, to 3 in. across, in early spring, stamens and pistil glabrous. Himalayas.

timetèum. E, Le: differs from *R. oreotrephes* in lvs. less glaucous beneath and scales more remote and fewer, the infl. usually only 3–4-fld., and corollas purplish-rose with a few darker markings. S. W. China.

Trailliànum. E, Li: shrub or small tree to 30 ft.: lvs. to 4½ in. long, apex and base rounded, tomentose beneath: fls. white or pale rose spotted crimson, funnelform-bell-shaped, 1 in. across, infl. of 10–15 fls. N. W. Yunnan.

trichoclàdum. E, Le: to 3 ft., branches hairy: lvs. deciduous, oblong-lanceolate, to 1½ in. long, pubescent above, minutely scaly beneath: fls. greenish-yellow spotted dark green, broadly funnelform, to 1½ in. across, ovary scaly, style glabrous, sharply bent. W. Yunnan.

triflòrum. E, Le: to 8 ft.: lvs. lanceolate, to 2½ in. long, scaly beneath: fls. light yellow, green spotted, to 1½ in. long, scaly outside, style glabrous, not sharply bent. Himalayas.—Differs from *R. Keiskei* in its non-hairy petioles and green spotted fls.

tsangpoénse. E, Le: weak much branched shrub to 2 ft.: lvs. obovate, to 1½ in. long, remotely scaly beneath: fls. pink, to 1½ in. across, usually 3–5 in infl., glabrous outside, style glabrous, abruptly bent downward, stamens hairy to top. Tibet.

tsarongénse. E, Po: to 2 ft.: lvs. oblong to oblong-elliptic, to ¾ in. long, scaly beneath: fls. white with yellow center, narrowly tubular, to nearly ¾ in. long, tube hairy within, scaly outside, stamens 5. S. E. Tibet.

Tschonóskii (*A. Tschonoskii*). An, Ts: to 8 ft., much branched, deciduous: lvs. to 1 in. long, pubescent: fls. white, funnelform, ½ in. across, June, stamens exserted. Japan, Korea.

Úngernii. E, Li: to 20 ft.: lvs. to 6 in. long, brown-tomentose beneath: fls. pink to white, broad bell-shaped, 2 in. across. Caucasus.—Differs from *R. Smirnowii* in its glabrous ovary and minutely apiculate lf. apex.

vaccinioìdes. Small shrub, usually epiphytic: lvs. oblanceolate, about ¾ in. long, scaly beneath: fls. pink or white, to ½ in. long, somewhat scaly outside, style shorter than stamens. Himalayas.

Vàseyi (*A. Vaseyi. Biltia Vaseyi*). An, Rho: to 15 ft., deciduous: lvs. to 5 in. long: fls. rose spotted with brown, 2-lipped, 1½ in. across, Apr.–May, stamens 5–7, exserted. N. C.

Veitchiànum. E, Le: to 6 ft.: lvs. to 4 in. long, scaly and glaucous beneath: fls. white, broad funnelform, 5 in. across, scaly, style scaly at base, longer than stamens. Himalayas.

vernicòsum: see *R. decorum.*

verruculòsum. E, Le: to 3 ft.: lvs. broadly elliptic, to ½ in. long, scaly on both sides: fls. purple, to ¾ in. across, scaly, stamens 7–8, shorter than style. W. China.

Vervæneànum. A hybrid Indian azalea with rose fls. bordered with white. Var. **álbum** has white fls.

villòsum. E, Le: to 5 ft., rarely to 20 ft.: lvs. oblong-lanceolate, to 4 in. long, scaly beneath, midrib pubescent: fls. rose, more than 1 in. across, scaly outside and bristly on lower half, ovary bristly and scaly. W. China.

virgàtum. E, Le: to 4 ft.: lvs. to 2½ in. long, scaly beneath: fls. rose, funnelform, 1¼ in. across, style longer than stamens, hairy and scaly on basal half. Himalayas.

viscòsum (*A. viscosa*). WHITE SWAMP HONEYSUCKLE. An, P: to 10 ft. or more, deciduous: lvs. to 2½ in. long: fls. white or pink, fragrant, funnelform, to 2 in. long, June–July, stamens exserted. Swamps Me. to S. C. Var. **glaùcum**, lvs. glaucous beneath. Var. **montànum**, a dwarf form from N. C.

vittàtum: *R. Simsii* var.

Wállichii. E, Li: to 10 ft., branchlets glabrous: lvs. elliptic, to 4 in. long, obtuse, somewhat cordate at base, under surface with scattered tufts of hair: fls. lilac with dark rose-colored dots, broadly campanulate, to 2 in. long, in racemes of 6–10, pedicels 1½ in. long, corolla 5-lobed, stamens 10, pistil to 1¾ in. long, ovary glabrous. Himalayas.

Wárdii. E, Li: to 20 ft.: lvs. broadly elliptic to semi-orbicular, usually glabrous beneath: fls. bright yellow, to 3½ in. across, ovary and style glandular. W. Yunnan.

washingtoniànum: *R. macrophyllum.*

Websteriànum. E, Le: to 3 ft.: lvs. narrowly elliptic, to ½ in. long or less, densely scaly on both sides: fls. rose-purple, to 1 in. across, not scaly outside. W. China.

wellesleyànum. Hybrid between *R. catawbiense* and *R. maximum:* fls. white or pinkish.

Wéyrichii. An, Sc: to 17 ft., deciduous: lvs. suborbicular to rhombic-ovate, to 3 in. long, becoming glabrous beneath with age: fls. red, funnelform, to 2½ in. across. S. Japan and Korea.

Wíghtii. E, Li: to 14 ft.: lvs. to 8 in. long, rusty-tomentose beneath: fls. yellow spotted with red, bell-shaped, 2½ in. across. Himalayas.

Williamsiànum. E, Li: slender-branched, to 3 ft.: lvs. ovate or broader, mostly subcordate, to nearly 2 in. long, glabrous: fls. 3–5 together, pale rose, pedicels nearly glabrous, stamens glabrous. W. China.

Wílsonii: *R. lætevirens.*

Wíltonii. E, Li: to 15 ft., twigs greenish-white-pubescent, becoming glabrous with age: lvs. to 5 in. long, cinnamon-tomentose beneath: fls. white to pink with red spots or blotches, to 2½ in. across, stamens hairy at base. W. China.

yánthinum: *R. concinnum.*

Yayegìri. A Kurume azalea with double salmon-red fls.

yedoénse (*A. yodogava*). An, Ts: deciduous or semi-evergreen: lvs. to 3 in. long, pale and hairy beneath: fls. rose-lilac spotted with purple, double. May. Korea, Japan. Var. **poukhanénse** (*R. poukhanense*). To 6 ft.: fls. fragrant, 2 in. across.

yodogàva or **yodogàwa:** *R. yedoense.*

yunnanénse. E, Le: to 6 ft., semi-evergreen: lvs. to 3 in. long, scaly, bristly on upper surface and margins: fls. white or pinkish spotted with red, broad funnelform, 2 in. across, May, infl. axillary and terminal, stamens exserted. China. Var. **præcox** is listed.

zaleùcum. E, Le: tree to 30 ft.: lvs. to 3 in. long, gray-scaly and glaucous beneath: fls. white or pinkish, funnelform, 1½ in. long, scaly, style glabrous, longer than stamens. China.

zeylánicum: *R. arboreum* var.

RHODOHYPÓXIS. *Amaryllidaceæ.* A small genus of S. African bulbous plants allied to Hypoxis, differing in having a short perianth-tube and sessile anthers. They are adapted to the environment of a well-drained rock-garden when planted in a sandy soil in full sun; propagated by offsets or seed.

Baùeri. To 2½ in.: lvs. linear, acute, to 2 in. long, hairy and glaucous: fls. rose-red, to 1 in. across, solitary on erect slender sts.

hygrométrica: *Hypoxis hygrometrica.*

platypétala. Similar to *R. Baueri* and by some considered only a variant of that species, differing in fls. white or flushed pale pink and lvs. much more densely pubescent.

RHODOMÝRTUS. *Myrtaceæ.* Trees and shrubs trop. Asia to Australia, with opposite simple lvs., rather large pink or white fls., and fr. a berry; grown for the edible fr.

The following species will withstand several degrees of frost and is not particular as to soil. Propagated by seeds which should be sown in flats.

tomentòsa. Downy-Myrtle. Hill-Gooseberry. To 5 ft.: lvs. to 2½ in. long, densely tomentose beneath, 3-nerved from base: fls. rose-pink, ¾ in. across: fr. ½ in. across, purple. Japan, China, Philippines.

RHODORA: *Rhododendron canadense.*

RHODORHIZA: *Convolvulus floridus.*

RHODÓSTACHYS. *Bromeliaceæ.* Short-stemmed S. American herbs with stiff spiny-toothed lvs. and sessile fls. in heads; suitable for cult. in a warm greenhouse.

andìna. Lvs. linear, to 1 ft. long and 1 in. wide: fls. rose, 1 in. long, petals linear-lanceolate, acuminate, the bracts about the length of fls. Chile.

pitcairniifòlia. Lvs. ensiform, to 1 ft. long, margins short-spined, innermost ones bright red at base: fls. blue, to 2 in. diam., in dense central sessile head, petals oblong, obtuse. Chile.

RHODOTHÁMNUS. *Ericaceæ.* Evergreen much branched shrub about 1 ft. high suitable for rock-gardens. It does best in peaty moist soil in partial shade. Propagated by seeds, layers and cuttings of ripe wood. **R. Chamæcístus** (*Rhododendron Chamæcistus*). Lvs. to ½ in. long, entire, ciliate: fls. purple, 1 in. across, usually solitary, May–June. Alps of Eu., E. Siberia.

RHODÓTYPOS. *Rosaceæ.* Deciduous shrub to 6 ft., native in Japan and China and now much planted for ornament. **R. tetrapétala** (*R. kerrioides*). Jetbead. Lvs. opposite, ovate or oblong-ovate, to 4 in. long, doubly toothed: fls. white, to 2 in. across, solitary, May–June: fr. a shining black drupe about ¼ in. across.—Hardy in N. Y. and New England and of easy cult. Propagated by seeds and cuttings. The generic name has recently been written *Rhodotypus*, but the author of the name used the Greek form *-os.* By some authors the specific name *scandens* is brought over from Thunberg's *Corchorus scandens*, 1793, supposed to be identical with our plant; but Thunberg described, under that name, a climbing plant with yellow fls., perhaps an error, and the name may lead to confusion when applied to Rhodotypos.

RHŒO. *Commelinaceæ.* Per. herb from W. Indies and Mex., grown in greenhouses and in the open in S. Fla., where it is also naturalized. **R. díscolor** (*Tradescantia discolor* and *versicolor*). Sts. to 8 in. long: lvs. to 1 ft. long and 3 in. wide, dark green above, purple below, making an attractive erect-spreading foliage clump: fls. white, in dense umbels nearly concealed by 2 boat-shaped bracts. Var. **vittàta** is striped above lengthwise with pale yellow.

RHOMBOPHÝLLUM. *Aizoaceæ.* Segregate from Mesembryanthemum (which see for cult.), marked by oblique-rhomboidal white-flecked lvs. and thread-like stigmas. S. Afr.

dolabrifórme (*Hereroa dolabriformis. M. dolabriforme*). St. at length to 6 or 8 in.: lvs. hatchet-shaped (dolabriform), glaucous, to 1½ in. long and nearly or quite half as broad at apex: fls. golden-yellow, 1½ in. across, in 3's or 5's.

Nèlii. Differs from *R. dolabriforme* in the 2-lobed, not hatchet-shaped, lvs.

rhomboídeum (*M. rhomboideum*). Stemless: lvs. 8–10, to 2 in. long and ¾ in. broad: fls. yellow, 1 in. across, in 3's on a scape, the petals little exceeding calyx.

RHOPALÓSTYLIS (*Eora*). *Palmaceæ.* Unarmed ringed monœcious feather-palms bearing infl. at summit of trunk and base of lvs., and with sheathing petiole-base, native in the New Zeal. region, all the species being accounted for herewith: crown rather narrow because of the upward or feather-duster habit of the lvs.: pinnæ with 1 strong rib either side the midrib: spadix short, stout, much branched; fls. in 3's, pistillate one in middle; stamens 6: fr. ellipsoid, ovoid-oblong or globose, ½ in. or less long, with fleshy exterior; seed 1. For cult. see *Palm.*

Baùeri: see *R. sapida.*

Cheèsemanii: see *R. sapida.*

sápida (*Areca, Kentia* and *Eora sapida*). Nikau Palm. Erect clean-looking tree to 20 or 25 ft., trunk 6–9 in. diam.: lvs. to 8 ft.; rachis scaly; pinnæ numerous, 2–3 ft. or more, 1–2 in. broad: spadix 12–16 in. or less long; fls. purplish: fr. ovoid or ovoid-ellipsoid, about ½ in. long and ⅜ in. or less diam., red at maturity; seed ovoid, with light colored polished surface and broad-linear hilum: fruiting perianth cup-like. New Zeal.—Thrives and fruits in S. Calif., the spadices sometimes appearing only 2 ft. above the ground; probably the only species planted in the U. S. **R. Baùeri.** Tall palm, probably reaching twice or more the height of *R. sapida:* spadix to 3 ft. long: fr. ovoid-ellipsoid, ⅝ in. long and ½ in. diam., seed with dull brown surface, and hilum linear and slightly narrowing toward base: fruiting perianth cup-like. Norfolk Isl. **R. Cheèsemanii** of the Kermadec Isls. (north of New Zea.. proper), was formerly confused with *R. Baueri:* tall, to 60 ft.: spadix in fr. about 1½ ft. diam.: fr. globose, ½ in. or less diam.; seed with light colored polished surface, the hilum broad and suborbicular above and narrowing toward base: fruiting perianth wide-spreading rather than cup-like.

RHUBARB (*Rheum Rhaponticum*). Strong hardy Old World perennial grown for the thick leaf-stalks that are cooked and eaten in early spring for their agreeable acid; known also as pie-plant. See *Rheum.*

Rhubarb thrives on any good garden land. As large leaf-stalks in abundance are wanted, the land should be rich and kept moist.

The plant is usually propagated by division of the fleshy roots, small pieces of which will grow if separated from the old established roots and planted in rich mellow soil, every piece having a good eye. Planting is usually in spring; roots are spaced 2–3 feet apart in rows 4–6 feet apart and covering 3–4 inches deep. Clean tillage should be maintained throughout the season. If given good care the plants will yield abundantly for many years. The stalks should not be harvested until the second year. In harvesting the stalks are pulled (not cut) and the expanded portion of the leaf is cut off.

Rhubarb may be forced for winter and very early spring, either by placing a temporary glass structure over rows in the field or by digging the roots in autumn and growing them in the cellar or under a greenhouse bench. For the latter kind of forcing strong roots are employed, allowed to freeze after digging, then planted in position with earth underneath them and over them in a room or space with diffused light and a temperature 50° to 75°. After forcing, the roots are usually discarded.

RHUBARB, SPINACH-: *Rumex abyssinicus.*

RHÚS. Sumac. *Anacardiaceæ.* Woody erect or root-climbing plants native to temp. and subtrop. regions, with milky or resinous juice, simple or compound lvs., small polygamous fls. borne in panicles, 5 stamens, and small 1-seeded drupaceous fr.; grown for ornament; some of them yield tannin; some are poisonous.

Cultivation is simple in any garden soil. Propagated by seeds and root-cuttings; some species by layers and by cuttings of mature wood. Planted mostly in shrubbery borders for the luxurious effect of the pinnate foliage, the bright red autumn color, and the dense fruit-heads.

americàna: *Cotinus americanus.*

aromática (*R. canadensis. Schmaltzia crenata*). Fragrant S. Shrub to 8 ft.: lvs. aromatic, of 3 ovate coarsely toothed lfts. to 3 in. long: fls. yellowish, in clustered spikes before the lvs.: fr. red and hairy. Ont. to Minn., south to Fla. and La. Var. **laciniàta** is listed as having lfts. more narrowly and deeply lobed.

canadénsis: *R. aromatica.*

chinénsis (*R. javanica* of hort., *R. Osbeckii. R. semialata*). Shrub or tree to 25 ft.: lvs. of 7–13 ovate commonly toothed lfts. to 5 in. long, brownish-pubescent beneath, the stalk winged: fls. creamy-white, in large terminal panicles in Aug. and Sept.: fr. red and hairy. China, Japan, S. Asia.

cismontàna. Shrub to 6 ft.: lvs. of 11–15 lanceolate sharply toothed lfts. to 4 in. long: fls. greenish-yellow: fr. red and hairy. S. D. to Wyo., south to Ariz. and N. Mex. Var. **flavéscens** has yellow fr. changing to russet and light green foliage.—Sometimes treated as a var. of *R. glabra.*

coccínea: *R. glabra.*

cognàta: *R. trilobata.*

copallìna. Shining S. Shrub or tree to 20 ft.: lvs. of 9–21 oblong-lanceolate usually entire lfts. to 4 in. long, the stalk winged: fls. greenish, in dense terminal panicles in July and Aug.: fr. red and hairy. Me. to Minn., south to Fla. and Tex.

coriària. Shrub to 20 ft.: lvs. of 9–15 oval to oblong toothed lfts. to 2 in. long, pubescent beneath, the petiole winged: fls. greenish, in loose terminal panicles in July: fr. red, hairy. Medit. region.

cotinoìdes: *Cotinus americanus.*

Cotìnus: *Cotinus Coggygria.*

diversíloba. Poison-Oak. Shrub to 8 ft. or sometimes climbing: lvs. of 3 ovate variously toothed or lobed lfts. to 3 in. long: fls. greenish, in panicles with the lvs.: fr. whitish. B. C. to Calif.

glàbra (*R. coccinea*). Smooth S. Glabrous shrub or tree to 20 ft.: lvs. of 11–31 oblong-lanceolate toothed lfts. to 5 in. long: fls. green, in dense panicles in June and July: fr. scarlet and hairy. N. S. to Minn., south to Fla. and La. Var. **laciniàta** has deeply cut lfts.

hírta: *R. typhina.*

integrifòlia. Sour-Berry. Evergreen shrub or tree to 30 ft.: lvs. simple, oval, to 2 in. long, entire or toothed: fls. white or pinkish, in pubescent panicles: fr. dark red and hairy. S. Calif.

javánica: the true *R. javanica* of Linnæus is not known in cult., the plants so named are referred to *R. chinensis.*

láncea. Small tree: lvs. compound, the lfts. lanceolate-linear, to 5 in. long: fls. in panicles shorter than lvs. S. Afr.

laurìna. Laurel S. Evergreen glabrous shrub: lvs. simple, ovate to lanceolate, to 3 in. long, entire: fls. greenish-white, in dense panicles: fr. whitish. S. and Lower Calif.

Ósbeckii: *R. chinensis.*

ovàta. Sugar-Bush. Evergreen shrub to 10 ft.: lvs. simple, ovate, to 3 in. long, usually entire: fls. light yellow, in short dense spikes: fr. dark red and hairy. S. Calif., Ariz.

quercifòlia: *R. Toxicodendron.*

radìcans (*R. Toxicodendron* of auth. *Toxicodendron radicans*). Poison Ivy. Poison-Oak. Vine or low shrub: lfts. 3, to 10 in. long, margins entire, toothed or lobed, glossy or dull above, glabrous or somewhat pubescent beneath: fls. greenish-white, early spring: frs. white, in axillary clusters, berry-like, waxy, persisting into the winter. B. C. to N. S. south to Fla., Tex. and Mex.

semialàta: *R. chinensis.*

succedànea. Wax-Tree. Shrub or tree to 30 ft.: lvs. of 9–15 oblong lfts. to 4 in. long, shining above: fls. yellow-green, in panicles in May: fr. whitish. Asia.

sylvéstris. Tree to 30 ft.: lvs. of 7–13 ovate lfts. to 4 in. long: fls. brownish-pubescent, in panicles in June: fr. brownish-yellow, glabrous. China, Japan, Korea.

terebinthifòlia. Evergreen shrub to 6 ft.: lvs. of 3–15 oblong to ovate lfts. to 2½ in. long: fr. red or orange, hairy. Mex., Guatemala.

Toxicodéndron (*R. quercifolia*). Shrub to 1½ ft.: lvs. of 3 lfts. which are 3–7-lobed: fls. greenish, in panicles: fr. whitish. N. J. to Tex.—The *R. Toxicodendron* of most authors, and more commonly known as poison ivy, is now considered to be the plant treated here as *R. radicans.*

trichocárpa. Tree to 25 ft. or more, branchlets hairy when young: lfts. 13–17, ovate to oblong, to 4 in. long, acuminate, pubescent beneath on veins, margins entire, base rounded: fls. in axillary panicles to 6 in. long: fr. whitish. Japan, China.—Foliage orange to scarlet in autumn, probably poisonous.

trilobàta (*R. cognata. Schmaltzia trilobata*). Lemonade S. Ill-smelling shrub to 6 ft.: lvs. of 3 ovate usually coarsely toothed lfts. to 1 in. long: fls. greenish, in clustered spikes before the lvs.: fr. red and hairy. Ill. to Calif.

typhìna (*R. hirta*). Staghorn S. Shrub or tree to 30 ft. with densely pubescent twigs: lvs. of 11–31 oblong-lanceolate toothed lfts. to 5 in. long: fls. greenish, in dense terminal panicles, in June–July: fr. crimson and hairy. Que. to Ga. and Ia. Var. **dissécta** has lfts. cut and var. **laciniàta** lfts. and bracts laciniately toothed.

venenàta: *R. vernix.*

vernicíflua. Varnish-Tree. Lacquer-Tree. Tree to 60 ft.: lvs. of 11–15 ovate-oblong entire lfts. to 8 in. long: fls. whitish, in loose axillary panicles, in June and July: fr. yellowish, glabrous. Japan, China.

vérnix (*R. venenata.*) Poison S. Swamp S. Poison Dogwood. Shrub or small tree to 20 ft.: lvs. pinnately compound, lfts. 7–13, glabrous, margins without teeth, lf.-stalks reddish: fls. greenish, axillary: frs. greenish-white, in pendent axillary clusters to nearly 8 in. long, the pedicels persistent through the winter. Swamps, Me. to Minn., south to Fla. and La.—Probably not in cult.

viminàlis. Tree to 40 ft. or more: lvs. trifoliolate, lfts,. lanceolate, to 2½ in. long: fls. whitish-green, to ⅛ in. across, in terminal panicles. Afr.

RHYNCHÒSIA (*Dolicholus*). *Leguminosæ.* Per. herbs or subshrubs with pinnately trifoliolate lvs., usually yellow papilionaceous fls. in axillary racemes, and flattened pods; rarely grown for ornament in warm regions.

mínima. Slender twiner or trailer: lfts. rhombic-ovate: fls. ¼ in. long: pods to ¾ in. long. Tropics.

pubérula (*Desmodium ciliatum*). Prostrate or partially climbing, with many flexuose branches: lfts. oblong: fls. ⅛ in. long: pods to ¾ in. long. Cape.

RHYNCHOSPERMUM: *Trachelospermum.*

RHYNCHÒSTYLIS. *Orchidaceæ.* Old World epiphytic orchids with leafy non-pseudobulbous sts. and densely many-fld. lateral racemes;

dorsal sepal and petals similar, the lateral sepals broader; lip entire and spurred. For cult. see *Orchids.*

retùsa (*Saccolabium Blumei. S. præmorsum.*). Lvs. to about 1 ft. long and 1 in. wide, ligulate, imbricated: infl. a densely many-fld. pendulous raceme longer than lvs.; fls. about ¾ in. across; sepals and petals white spotted with purple; lip purple. June–Sept. India, Burma, Indo-China, Malaya, Philippines.

violàcea: *Anota violacea.*

RHYTICÒCOS. Overtop Palm. *Palmaceæ.* One large monœcious unarmed ringed feather-palm of the French W. Indies and Dominica, a segregate from Cocos with the aspect of Arecastrum. **R. amàra** (*Cocos amara. Syagrus amara*). Tree to 50 or 60 ft. with relatively thick trunk: lvs. long and heavy, dark shining green; pinnæ numerous, aggregate or fascicled particularly toward base of lf., middle ones 1½–2 in. broad, conduplicate, with very strong midrib: spathe conspicuously plicate-sulcate on outside; pistillate fls. ovate or ovate-conic when closed, petals valvate at apex: fr. very large, 2–2¾ in. long, heavily fibrous-coated, ovoid with blunt apex; nutlet 1-celled, the wall bony and very thick; albumen ruminate, with cavity in center when dry.—A handsome tree, probably intro. into the southern part of our territory.

RIB: in a leaf or similar organ, the primary vein; also any prominent vein or nerve.

RIBBON-BUSH: *Homalocladium.*

RÌBES. Currants. Gooseberries. *Saxifragaceæ.* Shrubs of temp. regions, mostly deciduous, sometimes prickly, with alternate usually palmately lobed lvs., bisexual or unisexual fls. in racemes or solitary, appearing in spring with the lvs., and fr. a berry. Certain Ribes are grown for edible frs. (as *R. Grossularia, R. hirtellum, R. odoratum, R. nigrum, R. sativum*) and others for ornamental habit and bloom. For cult. see *Currant and Gooseberry.* Propagated by cuttings and mound-layers as well as by means of seeds.—Ribes proper, including the currants, is without spines at the nodes and the fls. are mostly in racemes on jointed pedicels. The Grossularia section (by some authors held as a separate genus), comprising the gooseberries, is prevailingly prickly and the fls. are solitary or few and pedicels commonly not jointed; the synonymy indicates them.

alpéstre. Hedge G. To 10 ft., armed with spines about 1 in. long: fls. greenish or reddish, 1–2 together: fr. purple, glandular-bristly. Himalayas, China.

alpìnum. Mountain C. To 8 ft., unarmed: fls. diœcious, greenish-yellow, in erect racemes: fr. scarlet, glabrous. Eu. Hort. vars. are **aùreum** with yellowish foliage, **laciniàtum** with deeeply cut lvs., **pùmilum** dwarf.

americànum (*R. floridum*). American Black C. To 5 ft., unarmed: lvs. resinous-dotted beneath: fls. yellowish-white, in many-fld. drooping racemes: fr. black, glabrous. N. S. to Va. and Colo.

aùreum (*R. tenuiflorum. Chrysobotrya aurea*). Golden C. To 6 ft., unarmed: fls. yellow, in 5–15-fld. racemes: fr. black or purplish, glabrous. Wash. to Mont. and Calif. Var. **chrysocóccum** has orange-yellow fls. Var. **gracíllimum** differs chiefly in calyx characters.—See *R. odoratum.*

bracteòsum. To 10 ft., unarmed: lvs. resinous-glandular beneath: fls. greenish or purplish, in erect racemes to 10 in. long: fr. black with whitish bloom. Alaska to Calif.

califórnicum. To 4 ft., spiny: fls. white with greenish or purplish calyx, solitary: fr. bristly. Calif.

cèreum. To 3 ft., unarmed, glandular-pubescent: fls. white or greenish, in few-fld. drooping racemes: fr. bright red. B. C. to Mont. and Calif.

curvàtum (*Grossularia curvata*). To 3 ft., with spines to ¼ in. long: fls. white, 1–5 together: fr. greenish, glabrous. Ga. to La. and Tex.

Cynósbati (*Grossularia Cynosbatii*). To 5 ft., with spines to ½ in. long or lacking: fls. green, 1–3 together: fr. wine-red, prickly. N. B. to N. C. and Ala. Var. **inérme** is a native form without prickles.

Diacántha. To 6 ft., armed with small prickles: fls. diœcious, greenish-yellow, in erect racemes: fr. scarlet, glabrous. N. Asia.

echinéllum (*Grossularia echinella*). To 3 ft., with spines about ½ in. long: lvs. less than 1 in. long: fls. green or greenish-white, 1–2 together: fr. green, very prickly. Fla.

fasciculàtum. To 5 ft., unarmed: fls. diœcious, yellowish, fragrant, the staminate in 4–9-fld. umbels, the pistillate in 2's: fr. scarlet, glabrous. Japan, Korea. Var. **chinénse** is larger. N. China.

flóridum: *R. americanum.*

glandulòsum (*R. prostratum*). Fetid C. Low, with prostrate sts.: fls. white or pinkish, in 8–12- fld. racemes: fr. red, bristly. N. Amer.

glutinòsum. To 12 ft., unarmed, glandular-pubescent: fls. red, in spreading or nodding racemes: fr. black, bloomy. Calif.

Gordoniànum. Hybrid between *R. sanguineum* and *R. odoratum* with yellow fls. tinged red outside.

gracíllimum: *R. aureum* var.

Grossulària (*Grossularia reclinata*). English G. To 3 ft., with spines to ½ in. long: fls. greenish, 1–2 together: fr. red, yellow, or green, pubescent. Eu., N. Afr., S. W. Asia.—Original of the large European gooseberries. Var. **Ùva-críspa** has smaller lvs. and yellowish fr.

hespèrium (*Grossularia hesperia*). To 10 ft., with spines to ½ in. long: fls. greenish-red, 1–2 together: fr. very prickly. S. Calif.

hirtéllum (*Grossularia hirtella*). To 3 ft., the branches bristly: fls. greenish or purplish, 1–3 together: fr. purple or black, commonly glabrous. Newf. to W. Va. and S. D.—Original either directly or through hybridization of the American pomological gooseberries.

inèbrians (*R. pumilum*). Branched erect shrub to 4 ft.: lvs. 3–5-lobed, glandular beneath: fls. pink, in few-fld. racemes: fr. red, often glandular. Mont., S. D., to N. Mex. and Cent. Calif.

inérme. To 6 ft., usually with few small spines: fls. green or purplish, 1–4 together: fr. purplish-red, smooth. B. C. to N. Mex.

japónicum. To 6 ft., unarmed: fls. greenish or brownish, in erect racemes: fr. black, smooth. Japan.

lacústre (*Limnobotrys lacustris*). To 3 ft., with clustered spines and bristles: fls. greenish or purplish, in 12-20-fld. drooping racemes: fr. purple, bristly. N. Amer.

lasiánthum (*R. leptanthum* var. *lasianthum. Grossularia lasiantha*). To 3 ft., stiffly branched, with spines ½ in. long: fls. yellow, 2–4 together: fr. crimson, glabrous. Mts., Calif.

leptánthum (*Grossularia leptantha*). To 6 ft., with spines to ½ in. long: fls. greenish-white, 1–2 together: fr. black, shining. Colo. to New Mex.

Lóbbii (*Grossularia Lobbii*). To 6 ft., with spines to ¾ in. long: fls. purple-red, 1–2 together: fr. purple, densely glandular. B. C. to Calif.

malvàceum. To 6 ft., unarmed: fls. pink or purple, in drooping racemes: fr. sticky-pubescent. Calif.

missouriénse (*Grossularia missouriensis*). To 6 ft., more or less bristly and the spines ¾ in. or less long: fls. greenish-white, 2–3 on slender peduncle: fr. purplish, glabrous. Tenn. west and northwest.—Like *R. niveum* but with smaller and greener fls.

nevadénse. Unarmed: fls. rose, in 12–20-fld. racemes: fr. blue, glaucous. Ore., Calif., Nev.

nìgrum. European Black C. To 6 ft., unarmed: fls. greenish-white, in 4–10-fld. drooping racemes: fr. black, glabrous. Eu., Asia. Some of the hort. vars. are: **chlorocárpum,** fr. green; **heterophýllum** (var. *laciniatum*), lvs. deeply cut; **reticulàtum,** lvs. mottled with yellow; **xanthocárpum,** fr. yellow or whitish.—The black currants of fruit-gardens are of this species.

níveum. To 10 ft., with spines to ¾ in. long: fls. white, 1–4 together: fr. bluish-black, glabrous. Ida., Wash., Nev.

odoràtum (*Chrysobotrya odorata*). Buffalo C. To 6 ft., unarmed: fls. yellow, fragrant, in 5–10-fld. racemes: fr. black, glabrous. S. D. to Tex. Grown for fr. in the form known as Crandall.—Closely related to *R. aureum* and differing chiefly in having the sepals less than half the length of the calyx-tube; these species have been confused.

orientàle (*R. resinosum*). To 6 ft., unarmed: fls. diœcious, green tinged with red, in short racemes: fr. scarlet, pubescent. Eu., Asia.

oxyacanthoìdes (*Grossularia oxyacanthoides*). Low, bristly, with spines ½ in. or less long: fls. greenish-white, 1–2 together: fr. red, smooth. N. Amer.

petræum. To 6 ft., unarmed: fls. red or pink, in racemes to 4 in. long: fr. dark red. Mts. of Eu.—A variable species of many botanical varieties.

pinetòrum (*Grossularia pinetorum*). To 6 ft., with spines 1 in. or less long: fls. orange-red, 1–2 together: fr. purple, prickly. Ariz., New Mex.

prostràtum: *R. glandulosum.*

pùmilum: *R. inebrians.*

resinòsum: *R. orientale.*

robústum. Hybrid between *R. niveum* and probably *R. inerme:* spines small: fls. white or pinkish.

Roézlii (*Grossularia Roezlii*). To 6 ft., branches spreading, tortuous, spines usually in 3's, to ½ in. long: lvs. rounded, to 1 in. across, 3–5-lobed, incised-crenate, more densely hairy beneath than above: fls. with white petals: fr. dark red to purplish, about ½ in. across, hairy and prickly. Calif.

rotundifòlium. To 3 ft., with few small spines: fls. greenish-purple, 1–3 together: fr. purplish, smooth. Mass. to N. C.

rùbrum. Northern Red C. To 6 ft., unarmed: fls. greenish-brown, in racemes: fr. red. Eu., Asia.—Cult. in Eu. but rarely in Amer.

sanguíneum. To 12 ft., unarmed: fls. red, in many-fld. racemes: fr. bluish-black, bloomy. B. C. to N. Calif. Vars. **atrórubens** and **spléndens** have dark red fls.

sativum (*R. vulgare*). Common or Garden C To 5 ft., unarmed: fls. green or purplish, in many-fld. drooping racemes: fr. red or white, juicy. W. Eu. Var. **macrocárpum,** Cherry C., has large red frs. Var. **variegàtum** has lvs. variegated with white or yellowish.—Here belong the common pomological currants.

setòsum (*Grossularia setosa*). To 3 ft., bristly, with spines to about 1 in. long: fls. white, 1–3 together: fr. red or black, glabrous or slightly bristly. Ida. to S. D.

speciòsum (*Grossularia speciosa*). Fuchsia-flowered G. Evergreen, to 12 ft., bristly and spiny: fls. bright red, 2–4 together, drooping, the stamens long exserted: fr. red, glandular-bristly. Calif.

stenocárpum (*Grossularia stenocarpa*). To 6 ft., spiny: fls. reddish, 1–3 together: fr. greenish or reddish, mostly glabrous. China.

ténue. To 8 ft., unarmed: fls. diœcious, brownish-red, in racemes: fr. red. W. Asia.

tenuiflòrum: *R. aureum.*

tríste. Swamp Red C. Sts. decumbent: fls. purple, in drooping racemes: fr. red, smooth. N. N. Amer., N. Asia.

viburnifòlium. Evergreen, to 8 ft., unarmed: fls. rose, in erect racemes: fr. red. S. Calif., Lower Calif.

vulgàre: *R. sativum.*

RÍCCIA. A genus of hepatics or liverworts (which are allied to mosses), one of which may be seen in aquaria or pools; it is *R. fluitans*, with little green radiating thalli on the surface of the water much like branching lemnas and which may be gathered with those plants on stagnant and roadside pools: thallus or plant-body forking and becoming an inch or two long, sometimes forming mats, without root-hairs when floating but developing them when stranded on mud, the branches or divisions ⅛ in. or less broad.

RICE: *Oryza sativa.* **-Flower:** *Pimelea.* **Wild:** *Zizania.*

RICHÁRDIA. *Rubiaceæ.* Pubescent or hairy herbs with opposite entire lvs. and white or pink fls. in terminal clusters subtended by an involucre, having funnelform corolla and 3–5-lobed limb. See *Zantedeschia* for calla-lily once known as Richardia.

One species is grown as a forage, green-manure and cover-crop in southern United States. It thrives on sandy soil. Propagated by seeds.

scàbra (*Richardsonia scabra*). Mexican Clover. Ann. with erect or diffuse sts. to 4 ft. long: lvs. ovate to lanceolate, to 3 in. long, rough: fls. white, ¼ in. long. S. C. to S. Amer.

RICHARDSONIA: *Richardia scabra.*

RÍCINUS. *Euphorbiaceæ.* A single variable species widely nat. in the tropics and warm regions but originally from Afr., commonly planted for foliage effects; the seeds yield oil which is extensively used for medicinal and other purposes.

Castor-beans thrive in sandy or clay loams with good drainage, although they grow on any land not too wet. Seeds may be sown where the plants are to stand or sown in pots under glass and transplanted about the middle of May.

commùnis. Castor-Bean. Castor-Oil-Plant. Palma Christi. Ann. to 15 ft., or in tropics a tree to 40 ft.: lvs. peltate, palmately divided into 5–11 lobes, to 3 ft. across: fls. monœcious, without petals, in panicles 2 ft. or more long: fr. to 1 in. long, covered with soft dark brown spines. Runs into numerous forms, the best known of which are: **africànus** with very large green lvs.; **borboniénsis arbòreus** with red sts. and glaucous lvs.; **cambodgénsis** with very dark foliage and sts.; **coccíneus** with dark red foliage; **Gíbsonii,** a small form with dark red foliage having a metallic luster; **hýbridus panórmitans,** a large form with dark, very glaucous foliage; **laciniàtus,** lobes deeply cut; **macrocárpus,** purple-red foliage; **macrophýllus,** purple-red; **purpùreus,** purple-red; **sanguíneus** with red lvs.; **zanzibarénsis,** bright green lvs. with white veins.

RICÒTIA. *Cruciferæ.* Annuals of the Medit. region: glabrous and much branching: lvs. mostly pinnatisect: fr. a broad flat pod. **R. Lunària,** of Egypt and Syria, is a diffuse quick-growing ann. sometimes raised for its lilac radish-like fls. and large flat thin odd pods.—Sow in the open in spring; fls. should appear in two months or less; plant 8–20 in. high, spreading; sometimes used in rock-work.

RIGIDÉLLA. *Iridaceæ.* A small genus of half-hardy bulbous plants from Mex., differing from Tigridia in the very small inconspicuous erect inner perianth-segms. and larger outer ones with a reflexed blade.

flámmea. To 5 ft.: lvs. broadly linear-lanceolate, plicate, equitant: fls. bright scarlet striped black at throat, in terminal fascicles: caps. 3-valved and papery. Var. **guatemalénsis** is listed.

RIMÀRIA. *Aizoaceæ.* Plants in the trade under this name may be found as follows:

Cómptonii: *Gibbæum Comptonii.*

Hèathii: *Gibbæum Heathii.*

Pole-Évansii: *Dinteranthus Pole-Evansii.*

Roòdiæ: *Vanheerdia Roodiæ.*

RIMU: *Dacrydium cupressinum.*

RIVÌNA. *Phytolaccaceæ.* Herbs with alternate entire lvs., small bisexual fls. in many-fld. racemes, and fr. a red berry; grown out-of-doors and in the greenhouse for the ornamental little berry-like frs. Propagated by seeds or cuttings in spring over heat.

aurantìaca: *R. humilis.*

hùmilis (*R. aurantiaca*). Rouge-Plant. To 3 ft.: lvs. ovate, to 4 in. long: fls. white or rosy. S. U. S. and trop. Amer.

ROBERTIELLA: *Geranium Robertianum.*

ROBÍNIA. Locust. *Leguminosæ.* American trees and shrubs with pinnate lvs., showy papilionaceous fls. in usually pendulous racemes, and flattened pods; planted for ornament.

Locusts are mostly hardy in the North and thrive in any usual soil. Propagated by seeds sown in spring, by suckers, root-cuttings and division, and special varieties by grafting.

Bessonidna: *P. Pseudo Acacia* var.

Bóyntonii. Shrub to 10 ft.: lfts. 7–13, elliptic or oblong: fls. pink or rose-purple and white, May–June: pods glandular-hairy. N. C. to Ga. and Ala.

Decaisneàna: *R. Pseudo Acacia* var.

Élliottii. Shrub to 4½ ft., branchlets glabrous or pubescent, not hispid: lfts. 11–15, to 1 in. long, elliptical: fls. rose-purple or white, racemes 5–10-fld., peduncle pubescent: pods hispid. N. C. to Ga.

fértilis: *R. hispida* var.

globòsa: listed name of plant resembling *R. Pseudo-Acacia* var. *Rehderi.*

híspida. Rose Acacia. Shrub to 7 ft., with bristly hairs: lfts. 7–13, oval to suborbicular, obtuse: fls. rose or pale purple, May–June: pods bristly-hairy, to 2½ in. long. S. E. U. S. Var. **Camuséttii** has deep red bristles. Var. **fértilis** (*R. fertilis*), to 8 ft. high, with lfts. oblong to oblong-elliptic, acute. Var. **macrophýlla** has larger lfts. and fls. and the branchlets and petioles are nearly destitute of bristles. Var. **ròsea** may be either *R. Boyntonii* or *R. Elliottii.*.

Hóldtii. Hybrid between *R. luxurians* and *R. Pseudo-Acacia:* fls. light pink or rose.

Kélseyi. Shrub to 10 ft.: lfts. 9–11, oblong-lanceolate: fls. rose, May–June: pods bristly-hairy, 2 in. long. N. C.

luxùrians. Shrub or tree to 30 ft.: lfts. 15–21, oblong: fls. pale rose or nearly white, June–Aug.: pods glandular-hairy, to 4 in. long. Colo. to Utah and New Mex.

neo-mexicàna. Shrub to 6 ft.: lfts. 9–15, elliptic-lanceolate: fls. rose, June–Aug.: pods smooth, to 4 in. long. New Mex.

péndula: *R. PseudoAcacia* var.

PseudoAcàcia. False Acacia. Black Acacia. Yellow L. Tree to 80 ft., nearly glabrous, the branches prickly: lfts. 7–9, oval: fls. white, fragrant, May–June: pods reddish-brown, glabrous, to 4 in. long, remaining on tree over winter. E. and Cent. U. S. Var. **amorphifòlia** has narrow oblong lfts. Var. **Bessoniàna,** slender unarmed branches. Var. **Decaisneàna,** light rose-colored fls. Var. **érecta** has lvs. of 1 or few lfts., a tree of columnar habit. Var. **inérmis** (*R. spectabilis*), unarmed branches. Var. **monophýlla** is var. *unifoliola.* Var. **péndula,** branchlets somewhat pendulous. Var. **pyramidàlis** is of columnar habit with spineless branchlets. Var. **rectíssima,** Shipmast L., has more durable wood, produces no root shoots, has fewer fls. with less hairy calyces and is not known to produce fr. Var. **Rèhderi** is a low subglobose form. Var. **semperflòrens** flowers throughout the year. Var. **tortuòsa** has short twisted branches. Var. **umbraculífera** has a dense head and unarmed branches. Var. **unifolìola** (*monophylla*), lfts. reduced to 1 to 3 or more.

spectábilis: *R. PseudoAcacia* var. *inermis.*

umbraculífera: *R. PseudoAcacia* var.

viscòsa. Clammy L. Tree to 40 ft., young branches and other parts glandular-viscid: lfts. 13–25, ovate: fls. pink, May–June: pods with glandular hairs, to 3½ in. long. S. U. S.

ROBINSONÉLLA. *Malvaceæ.* Small trees or shrubs of Mex. and Cent. Amer., differing from Sida in their tree-like habit and the much inflated papery carpels with the calyx much smaller than fr. and sepals never connivent nor inclosing it. Grown for ornament in S. Fla.

edéntula. Small tree: lvs. ovate to ovate-lanceolate, to 6 in. long, usually 3-lobed, somewhat scabrous: fls. white with violet center, about ¾ in. across. Cent. Amer.

ROBLE: *Platymiscium polystachyum.*

ROCAMBOLE: *Allium Scorodoprasum.*

RÒCHEA. *Crassulaceæ.* Succulent S. African subshrubs with opposite simple lvs. and white, yellow or red fls. in dense terminal clusters, the petals joined to about the middle; one sometimes grown in greenhouses for the bloom. For cult. see *Succulents.*

coccínea (*Crassula* and *Kalosanthes coccinea*). To 2 ft.: lvs. ovate, to 1½ in. long, closely imbricated: fls. bright scarlet, fragrant, to 2 in. long, with long slender tube.

falcàta: *Crassula falcata.*

longifòlia: listed name without botanical standing.

versícolor. Differs from *R. coccinea* in the long lanceolate lvs. and the pink or white fls.

ROCK-BRAKE: *Cryptogramma.* **-Rose:** *Cistus.*

ROCKET: *Diplotaxis, Hesperis.* **-Salad:** *Eruca sativa.*

ROCKFOIL: *Saxifraga.*

ROCK-GARDENING. A type of gardening in which special provision is made for rock-loving or saxicolous plants. It is likely to be confused with alpine-gardening, which may be only one phase of it: see *Alpines.*

A rock-garden is not primarily a pile of rocks: the rocks and stones are employed for the purpose of providing proper conditions for the growing of plants. The plants, rather than the rocks, are the primary consideration; and the plants should be such as specially thrive in rock crevices and pockets or at least be comparable with them in size and form. A tumulus of rocks in which is grown a miscellaneous collection of plants that do not profit by such conditions is not a rock-garden: such plants may be grown with less trouble elsewhere, and are likely to be much more in keeping.

Much of the charm of a rock-garden depends on its setting. In a city or town lot a rock-garden may be established in the rear without particular relation to a landscape although it should have connection with boundaries, but in properties of any size such a garden should conform to contours and to the subdivision of the area. Not every park or pleasure-ground has an acceptable setting for a rock-garden. It is to be remembered, also, that not every so-called rock-garden is an object of interest and beauty. Unless under the hand of a specially skilled gardener who maintains a continued interest in it, such an area is likely soon to fall into neglect and disrespect, and it becomes an abundant lodgement for weeds and vagrants.

The special appeal of a rock-garden lies in the skilful growing of plants that in nature inhabit cliffs, moraines and mountains. Many such plants are tall and take much room in the wild, but those kinds most prized in the constructed rock-garden are the low, tufted and spreading species, for the most part perennial. They are likely to have a penetrating root system, often a pronounced tap-root, and are therefore able to establish themselves in deep cool moist chinks and depressions. The proper preparation for the rock-gardener is a keen knowledge of such plants: he then finds or makes conditions for them where they may come to perfection. Having provided a proper place for the plant, he will keep it in place, restricting it to its confines. He will be careful with his labels and his note-book records. He will provide inhabitants for all the pockets or spaces, and this may require a supply of extra plants, sometimes even of temporary annuals if they are conformable and not the usual horticultural subjects of flower-gardens and borders.

The exposure of the rock-garden must depend on the kinds of plants to be grown in it, and the climate. In general, it should occupy an open free space not over-shadowed with trees or buildings; yet in parts of North America it is well if the severity of midday and afternoon sun can be mitigated. The area should be protected from the roots of trees that may forage underneath it.

Knowing the kinds of plants he may wish to grow, the rock-gardener will make his rock areas to suit them. The construction will be neat and trim, and have good lines and proportions. If there are rocky cliffs or outcrops on the property, he may utilize them rather than attempt to make a wholly artificial area. Stone walls and old foundations may sometimes be utilized to advantage. Old quarries often yield excellent results. The rock-garden will not be a mere display of rocks. The larger part of any structural rock or stone is below the surface of the ground. In placing the rocks one must always have in mind the providing of good roothold for plants.

All cavities should be firmly filled to avoid covered hollows that dry out. Every part of the construction should be easily accessible from paths and trails. The success or failure of the rock-garden may depend on the ability to hold moisture and thereby to carry the plants through dry times, although provision must be at hand for applying water when needed. On the other hand, good natural drainage is essential, for saxicoles are not bog-plants. The soil with which to fill the pockets and leads will be conditioned on the plants to be grown, but in general its main elements should be good garden earth, fine or sifted leaf-mold or peat, and gritty sand or fine gravel, all well mixed. Fertilizing is likely to be necessary.

The visible part of the rock construction should be attractive. Rocks from the neighborhood or region are commonly the most desirable. Generally speaking, only about one-third of the mass of any boulder should be exposed to view. There should be harmony in the work, the rocks, and the positions and directions in which they are laid, presenting a pleasing uniformness of character. Likewise it is necessary that the plants produce a harmonious picture. Much of this harmony will reside in vegetation, presented in tufts, mats, and growths lying close to stones. Many of the rock-garden mats are evergreen; and at appropriate places very dwarf compact forms of certain conifers may be utilized, as well as various kinds of shrublets.

The kinds of plants suited to rock-gardening are legion. Crassulaceous plants of this character are many (see *Succulents*); also ferns; some of the best of them in other families are in the genera æthionema, allium, alyssum, androsace, anemone, aquilegia, arabis, arenaria, aster (dwarf), aubrietia, campanula, cassiope, corydalis, cotoneaster, daboëcia, daphne, dianthus, draba, dryas, epigæa, epimedium, erinus, gentiana, heuchera, iberis, iris (dwarf), leontopodium, lewisia, linaria, linnæa, lithospermum, loiseleuria, lychnis, oxalis, papaver, petrocallis, phyllodoce, phlox, potentilla, primula, ranunculus, rhododendron, saxifraga, shortia, soldanella, thymus, viola, wahlenbergia. The attentive rock-gardener will observe the saxicolous plants native in his region and find satisfaction in growing them.

A rock-garden properly placed, constructed and maintained, and with a population of well chosen and skilfully grown plants, constitutes one of the choicest departments of horticulture.

RODGÉRSIA. *Saxifragaceæ.* Herbaceous perennials with thick rootstocks, showy terminal fl.-clusters: lvs. large, peltate or digitately or pinnately compound: native in China and Japan, variously hardy N. Multiplied by division of the plants, also by seeds when obtainable.

æsculifòlia. To 6 ft.: lvs. resembling the horse-chestnut, finger-shaped, with usually 7 coarsely toothed lfts. to 10 in. long: fls. white, in flat clusters forming an infl. to 2 ft. long. China.

pinnàta. To 4 ft.: lvs. pinnately compound, lfts. oblanceolate, 5–9, to 8 in. long: fls. red without, white within, in large branched panicles with reddish rachis and branches. China. Var. **álba,** fls. white, in larger and looser panicles.

podophýlla. To 5 ft., with thick scaly rootstock: lvs. finger-shaped, the 5 lobes angled and toothed, to 10 in. long and 6 in. wide, light green in spring, in summer metallic bronzy: fls. small, yellowish-white, in panicles to 1 ft. long, making a fluffy spray. China.

sambucifòlia. To 3 ft.: lvs. pinnately compound into 3–11 lfts.: fls. white, small, in terminal flat-topped panicles. China.

tabulàris. To 3 ft.: lvs. peltate, to 3 in. across, long-petioled, with many short lobes resembling teeth: fls. white, small, in many-fld. panicles. China.

RODRIGUÈZIA. *Orchidaceæ.* American epiphytes often with an elongate rhizome, small 1–2-lvd. pseudobulbs and lateral racemes; dorsal sepal and petals similar; lateral sepals deeply united and concave; lip with a short spur. Grown at intermediate temperatures; see *Orchids.*

secúnda. Lvs. narrowly oblong, very leathery, to about 9 in. long: racemes usually one-sided, many-fld., to 15 in. long; fls. pale rose to red. Feb.-Oct. Panama, St. Vincent, Trinidad, N. S. Amer.

venústa (*Burlingtonia fragrans*). Lvs. linear-oblong, to about 9 in. long: racemes pendulous, to about 9-fld.; fls. 1½ in. long, fragrant, white with yellow spot on lip. Jan.–May. Brazil.

ROEMÈRIA. *Papaveraceæ.* Ann. slender herbs of the Medit. region, with yellow juice, pinnately dissected lvs., and violet or blue solitary fls.; sometimes planted for the bloom.

refrácta. To 1 ft.: lvs. with linear segms.: fls. blue, spotted with black at base, to 1 in. long. Asia Minor, Caucasus.

violàcea. To 1½ ft.: lvs. 2–3-pinnatisect, segms. linear and terminated by a bristle: fls. lilac, on short peduncles. Medit. region.

ROGIERA: *Rondeletia.*

RÒHDEA. *Liliaceæ.* One Chinese and Japanese herb sometimes grown as a durable foliage plant in the house or out-of-doors in mild climates; much prized in the Far E. **R. japónica.** Lvs. basal, to 2 ft. long and 3 in. broad, leathery: fls. tightly packed in a thick short spike terminating the scape, resembling an aroid, concealed by the foliage: fr. a large berry with red pulp. There are many forms with striped, variegated, and otherwise modified lvs.

ROLLÍNIA. *Annonaceæ.* Trop. American trees and shrubs with alternate simple lvs., bisexual fls. with the 3 outer petals produced into wings or spurs, and fr. a fleshy syncarp resembling Annona. Cult. as for *Cherimoya.*

mucòsa (*R. Sieberi*). Small tree: lvs. elliptic, to 8 in. long, pubescent beneath: fls. rusty-tomentose, about 1 in. long: fr. nearly globose, 3 in. across, covered with tubercles, edible. W. Indies, Mex.

Sièberi: *R. mucosa.*

ROMANOVIA: *Actinophlœus Nicolai.*

ROMANZÓFFIA. *Hydrophyllaceæ.* Per. herbs of W. N. Amer., in habit resembling a delicate saxifrage: lvs. mostly basal, round-cordate and lobed, long-stalked: fls. pale pink, purple or white, in racemes on scape-like sts.

califórnica. Material so listed is probably not distinct from *R. sitchensis. R. californica* was originally described as differing from the following species in lacking scaly bulb-like tubers but this distinction has not been accepted in recent treatments.

sitchénsis. To 9 in., the rootstock bearing tubers: fls. white, on long stalks. Alaska to Calif.

unalaschkénsis. Differs from *R. sitchensis* in roots not bearing tubers, pedicels shorter instead of longer than fls., and very short-funnelform corolla. Unalaska.

ROMNÈYA. *Papaveraceæ.* Per. herb native in S. Calif. and Mex., striking as a flower-garden and border subject where hardy. Propagated by suckers and seeds but the latter require several years before blooming. It transplants with difficulty. **R. Còulteri.** MATILIJA-POPPY. To 8 ft.: lvs. pinnately cut, to 4 in. long: fls. white, fragrant, 6 in. across, solitary. Var. **trichócalyx** has a beakless bristly calyx.

ROMULÈA. *Iridaceæ.* Crocus-like bulbous herbs with narrow basal lvs. overtopping the fls. and solitary funnelform fls. having short tube and long pedicels: cult. as for *Crocus* but not so hardy.

Hártungii: catalogue name.

hirsùta. Lvs. obscurely pilose, to 4 in. long: fls. golden-yellow below, reddish-purple above, segms. lanceolate, to 1 in. long, stigmatic branches reaching anther tips. S. Afr.

hírta: catalogue name.

ròsea. Lvs. to 1 ft. long: fls. red-lilac with yellow throat, segms. oblanceolate, acute, the outer ones with faint purple stripes, 1 in. across, stigmatic branches much exceeding anther tips. S. Afr.

sabulòsa. To 4 in.: lvs. filiform, terete, to 3 in. long: fls. deep rose-pink with purple center, segms. obovate, obtuse, free to base and not forming tube, anthers exceeding style. S. Afr.

RONDELÈTIA (*Rogiera*). *Rubiaceæ.* Many trop. American evergreen shrubs and trees with mostly opposite lvs., tubular 4–5-lobed fls. in cymes in red, yellow or white, and capsular frs.

Rondeletias are grown out-of-doors in the South, and in the greenhouse North where the temperature should not be allowed to go below 50°. Propagated by cuttings of half-ripened wood.

amœna (*R. versicolor*). Shrub or small tree: lvs. ovate, to 6 in. long, densely pubescent beneath: fls. pink, pubescent, with yellow-bearded throat, ½ in. long. Mex. to Panama.

cordàta. Shrub to 7 ft.: lvs. ovate-oblong or ovate, to 5 in. long, nearly glabrous: fls. pink or red, pubescent, with yellow-bearded throat, ¼ in. across. Guatemala.

odoràta (*R. speciosa*). Shrub to 6 ft.: lvs. ovate to oblong. 2 in. long, nearly glabrous, margins often revolute: fls. orange-red with yellow throat, ½ in. across. Cuba, Panama.—The commonest species in cult.

speciòsa: *R. odorata.*

spléndens: listed name.

thyrsoídea. Shrub to 6 ft.: lvs. ovate or oval, to 6 in. long, pubescent beneath: fls. yellow, ¼ in. long, pubescent. Jamaica.

versícolor: *R. amœna.*

ROODIA DIGITIFOLIA: *Argyroderma brevipes.*

ROOTSTOCK: subterranean stem; rhizome.

ROQUETTE: *Eruca sativa.*

RORIPA ARMORACIA: *Armoracia rusticana.*

RÒSA. ROSE. *Rosaceæ.* Large genus of shrubs, mostly prickly, often more or less scandent, native mostly in the north temp. zone, and furnishing many ornamental subjects: lvs. alternate, commonly pinnate: fls. white, yellow or red, solitary or in corymbs, prevailingly in early summer: fr. a hip, achenes inclosed in a fleshy nearly closed hollow receptacle, usually red. The species of Rosa can be accurately determined only from full technical descriptions; at this place some of the main horticultural features may be indicated. For cult. see *Rose.*

acicularis. To 3 ft.: lfts. 3–7 to 2 in. long: fls. deep rose, fragrant, 2 in. across, solitary. N. Amer., N. Asia. Var. **Bourgeauiàna** has obtuse doubly toothed lvs. Var. **Éngelmannii** (*R. Engelmannii*) is more bristly and lvs. are glabrous beneath. Var. **nipponénsis,** lfts. 7–9, to 1 in. long, petioles and pedicels bristly.

álba. Presumably a hybrid between *R. corymbifera* and *R. gallica:* to 6 ft.: lfts. mostly 5, to 2½ in. long: fls. white or pinkish, fragrant, to 3 in. across, often double, in corymbs. Var. **cárnea** is said to have pale salmon-pink fls.—A source of attar of roses. Hardy N., and frequent in yards.

Álbertii. To 3 ft.: lfts. 5–9, to 1¼ in. long: fls. white, 1¼ in. across. Turkestan.

alpìna: *R. pendulina.*

altàica: *R. spinosissima* var.

Ándersonii: listed as a late-flowering rose-pink form.

anemoneflòra: *R. triphylla.*

anemonoìdes. Hybrid probably between *R. lævigata* and *R. odorata:* climbing: lfts. 3–5: fls. light pink, single.

arkansàna. To 1½ ft.: lfts. 9–11, to 2½ in. long: fls. pink, 1½ in. across, in corymbs. Wis. to Kans. and Colo.

Arnoldiàna. Hybrid between *R. rugosa* and *R. borboniana:* lfts. 5–7: fls. purplish, 2 in. across, semi-double, in corymbs.

arvénsis (*R. repens*). Branches trailing: lfts. mostly 7, to 1½ in. long: fls. white, to 2 in. across, in corymbs or solitary. Eu; hardy N. Var. **Ayreshìrea,** AYRESHIRE R., is more vigorous.—The double-fld. forms are probably hybrids.

Bánksiæ. BANKSIA R. Climbing to 20 ft., evergreen, with few prickles: lfts. commonly 3–5, to 2½ in. long: fls. white or yellow, 1 in. across, slightly fragrant, in many-fld. umbels. China; not hardy N. Var. **álbo-plèna,** fls. double, white. Var. **lùtea,** fls. double, yellow. Var. **lutéscens,** fls. single, yellow. Var. **normàlis,** fls. single, white.

banksiópsis. Lfts. 7–9, 1 in. long: fls. red, 1 in. across, in corymbs. China.

Barbieràna. A series of hybrids between *R. Wichuraiana* and *R. multiflora:* lfts. 5–7: fls. red, 2 in. across, single.

Beggeriàna. To nearly 10 ft., prickles hooked: lfts. 5–9, ovate to elliptic-obovate, to 1 in. long, serrate, blue- to gray-green, usually pubescent beneath: fls. white, rarely pink, to 1⅓ in. across, usually in corymbs. N. Persia to Altai.

bélla. To 10 ft.: lfts. 7–9, to 1 in. long: fls. rose, 2 in. across, in 1–3-fld. corymbs. China.

bengalénsis: *R. chinensis* var. *semperflorens.*

blánda. To 6 ft., often without prickles: lfts. 5–7, to 2½ in. long: fls. pink, 2 in. across, solitary or in few-fld. corymbs. Newf. to Pa. and Mo.

borboniàna (*R. borbonica*). BOURBON R. Hybrid between *R. chinensis* and *R. gallica:* lfts. mostly 7: fls. red or purple, to 3 in. across, double or partially so, solitary or in few-fld. corymbs in late summer. Hybrid Bourbons represent crosses between this hybrid and *R. gallica, R. centifolia,* and *R. damascena*; these crossed with *R. chinensis* produced the group of Hybrid Perpetuals or Remontants, which are mostly hardy N.

borbónica: *R. borboniana.*

bracteàta. MACARTNEY R. To 20 ft., half-climbing, evergreen: lfts. 5–9, to 2 in. long, shining above, rachis glabrous: fls. white, 3 in. across, solitary, subtended by large toothed bracts. China; nat. in S. U. S.—Some of the material so listed may be *R. Wichuraiana.*

Bruántii. A group of hybrids between *R. rugosa* and *R. odorata* or *R. dilecta.*

Brunònii. HIMALAYAN MUSK R. Tall, with partially climbing branches: lfts. 5–7, to 2½ in. long: fls. white, fragrant, to 2 in. across, in many-fld. corymbs. Himalayas; not hardy N.

burgundìaca: *R. centifolia* var. *parvifolia.*

califórnica. To 10 ft.: lfts. 5–7, to 1¼ in. long: fls. pink, 1½ in. across, in corymbs. Ore. to Lower Calif. Var. **plèna** has fls. double or partially so.

Caméllia: *R. lævigata.*

canìna (*R. Friedlanderiana. R. monticola*). DOG R. To 10 ft.: lfts. 5–7, to 1½ in. long: fls. white or pinkish, to 2 in. across, solitary or in few-fld. corymbs. Eu.

cantabrigiénsis: listed name of unknown botanical standing.

carélica: the plant in the trade is a form of *R. acicularis.*

carolìna (*R. humilis*). PASTURE R. To 3 ft. or more, suckering: lfts. commonly 5, to 1¼ in. long: fls. rose, 2 in. across, usually solitary. Me. to Fla. and Tex. Var. **álba** (*R. Lyonii* var. *alba*) has white fls. Var. **grandiflòra** has fls. 2½ in. across. Var. **villòsa** (*R. Lyonii*) is somewhat larger with longer lfts. and larger fls. which are often in few-fld. racemes. B. C. to Tex.—See *R. palustris.*

cathayénsis: *R. Gentiliana.*

caudàta. To 12 ft.: lfts. 7–9, to 2 in. long: fls. red, 2 in. across, in few-fld. corymbs: fr. orange to coral-red, about 1 in. long. China.

centifòlia. CABBAGE R. To 6 ft.: lfts. mostly 5, to 2 in. or more long: fls. pink, fragrant, to 3 in. across, solitary, nodding, very double with the petals overlapping. Caucasus. Var. **cristàta** has edges of sepals mossy. Var. **muscòsa** (*R. muscosa*) Moss R., has mossy calyx and pedicels. Var. **parvifòlia** (*R. parvifolia, R. burgundiaca*), BURGUNDIE R., lfts. to ¾ in. long, fls. 1 in. across.—Seen in old yards, and hardy N.

cerasocárpa. Allied to *R. moschata:* lfts. 3–5, ovate to elliptic-ovate, glabrous: fls. white, about 1 in. across, pedicels and receptacles glandular. Cent. China.

cherokeénsis: *R. lævigata.*

chinénsis. CHINA R. Low, evergreen or partially so: lfts. 3–5, to 2½ in. long, shining above: fls. red to nearly white, 2 in. across, in few-fld. corymbs. China; hardy only far S. Var. **Manéttii** is *R. Noisettiana.* Var. **mínima** (*R. Lawranciana, R. Roulettii*). FAIRY or PYGMY R. To 1 ft.: fls. rose-red, 1½ in. across, single or double. Var. **semper-**

flòrens (*R. bengalensis*). Fls. crimson, usually solitary. Var. **viridiflòra.** Green R. Fls. green, the petals represented by green lvs.

chrysophýlla: listed name.

cinnamòmea. Cinnamon R. To 6 ft.: lfts. 5–7, to 1½ in. long: fls. red, fragrant, 2 in. across, solitary or in few-fld. corymbs. Eu., Asia; escaped in E. U. S. Var. **plèna** has double fls.

clinophýlla. Differs from *R. bracteata* in prickles straight, not hooked, and lfts. acute and pubescent beneath with rachis also pubescent. China.

coriifòlia. To 5 ft.: lfts. 5–7: fls. rose, solitary or in corymbs. Eu., W. Asia. Var. **Froebèlii** has small white fls.

corymbífera (*R. canina* var. *dumetorum*. *R. dumetorum*). Distinguished from *R. canina* by the lfts. being pubescent rather than glabrous. Eu., W. Asia; hardy N.

corymbulòsa. To 6 ft.: lfts. 3–5, to 1½ in. long: fls. red, white in center, 1 in. across, in many-fld. corymbs. China.

cymòsa. Differs from *R. Banksiæ* in having more slender sts. with hooked prickles, glabrous rachis and corymbs of smaller white fls. China.

damascèna. Damask R. To 8 ft.: lfts. usually 5, to 2½ in. long: fls. pale pink to red, fragrant, double, in corymbs. Origin unknown; intro. from Asia Minor. Var. **trigintapétala,** fls. red, semi-double. Var. **versícolor,** York and Lancaster R., has partially double white fls. striped with pink.—A source of attar of roses. Hardy N., and persists in old yards.

Dàvidii. To 10 ft.: lfts. 7–9, to 2 in. long: fls. pink, to 2 in. across, in corymbs. China.

davùrica. Resembles *R. cinnamomea* but with straight instead of curved prickles and smaller lfts. N. Asia.

dilécta. A group of hybrids between *R. odorata* and *R. borboniana*, comprising the Hybrid Teas: fls. white, red, yellow, fragrant.

dumàlis (*R. glauca*. *R. Reuteri*). To 6 ft.: lfts. 5–7, to 1½ in. long, bluish-green: fls. rose, about 1½ in. across, solitary or in corymbs. Eu., W. Asia.

dumetòrum: *R. corymbifera.*

dumiflòra: error for *R. dumetorum.*

Dupóntii (*R. moschata* var. *nivea*). Hybrid between *R. moschata* and *R. gallica:* fls. white.

Ècæ. This species is not known to be in cult., material so listed being *R. Primula.*

Eglantèria (*R. rubiginosa*). Eglantine. Sweerbrier. To 8 ft., much branched: lfts. 5–7, to 1¼ in. long, glandular and fragrant: fls. pink, 2 in. across, solitary or in few-fld. corymbs. Eu.; nat. in N. Amer., and common in pastures. Var. **dùplex** has double fls.

Éngelmannii: *R. acicularis* var.

excélsa: a hybrid *Wichuraiana.*

Fedtschenkoàna. Differs from *R. Webbiana* in branchlets bristly as well as prickly, lfts. oblong and somewhat longer and pubescent beneath, with white fls. Turkestan.

Féndleri: *R. Woodsii* var.

fèrox: *R. horrida.*

ferrugínea: *R. rubrifolia.*

fílipes. To 15 ft., the branches partially climbing: lfts. 5–7, to 3 in. long: fls. white, fragrant, about 1 in. across, in many-fld. corymbs. China.

fœ́tida (*R. lutea*). Austrian Brier. To 10 ft.: lfts. 5–9, to 1½ in. long: fls. deep yellow, with unpleasant odor, to 3 in. across, commonly solitary. Asia; hardy N. Var. **bícolor,** Austrian Copper Brier, fls. coppery. Var. **persiàna,** Persian Yellow, fls. double.

foliolòsa. To 1½ ft.: lfts. 7–9, to 1¼ in. long, shining above: fls. rose or white, 1½ in. across, solitary or in few-fld. clusters. Ark. to Tex. Var. **álba** has white fls.

Fortuneàna. Hybrid between *R. Banksiæ* and probably *R. lævigata* climbing: lfts. 3–5: fls. white, double, solitary.

Friedlanderiàna: *R. canina.*

fujisanénsis. To 10 ft., sts. flexuose: lfts. 3–9, to ¾ in. long: fls. white, 1 in. across, in corymbs. Japan.

gállica. French R. To 4 ft.: lfts. 3–5, thick, to 2½ in. long: fls. pink or crimson, to 3 in. across, solitary. Eu., W. Asia. Var. **pùmila** is a dwarf form with single red fls. Var. **versícolor** has partially double fls. striped white and red. Other listed vars. are **conditòrium, marmoràta** and **spléndens.**—This rose is common in old gardens and often escapes or persists.

Gentiliàna (*R. cathayensis*. *R. multiflora* var. *cathayensis*). Branches somewhat climbing: lfts. usually 5–7, stipules fringed: fls. few, pink or rose, 1½ in. across, fragrant, in corymbs. China.—Other material of this name is *R. Henryi.*

gigantèa: *R. odorata* var.

Giráldii. Lfts. usually 7, to ½ in. long: fls. pink, 1 in. across. China.

glaùca: *R. dumalis* or *R. rubrifolia.*

glutinòsa. To 4 ft. or less, prickles to nearly ½ in. long, bristly and gland-tipped, abundant: lfts. elliptic to obovate, to ½ in. long, glandular: fls. pink, small. S. E. Eu., W. Asia.

gratíssima. To 6 ft., much branched: lfts. 5–7, to 1¼ in. long: fls. pink, about 1 in. across, in corymbs. Calif.

gymnocárpa. To 10 ft.: lfts. 5–9, to 1½ in. long: fls. rose, about 1 in. across, usually solitary. B. C. to Mont. and Calif.

hæmatòdes. To 4 ft., prickles stout and curved: lfts. 3–5, ovate-oblong, obtuse, sharply toothed, nerves often minutely glandular-puberulous beneath: fls. crimson, large. E. Caucasus.

Hárisonii. Harisons Yellow R. Hybrid between *R. fœtida* and *R. spinosissima:* fls. pale yellow, double.

Hélenæ. To 15 ft., with partially climbing branches: lfts. 7–9, to 2 in. long: fls. white, fragrant, about 1 in. across, in many-fld. corymbs. China; hardy N.

helióphila: *R. suffulta.*

hemisphǽrica. Sulphur R. To 15 ft., prickles hooked: lfts. 5–9, obovate, to 1½ in. long, coarsely toothed, somewhat glandular, base wedge-shaped: fls. pale yellow, to 2 in. across, double, not fragrant. W. Asia.—A form with single fls. is not known to be cult.

Hénryi (*R. Gentiliana*, in part). To 12 ft., the branches partially climbing: lfts. 5, to 2½ in. long: fls. white, fragrant, to 1½ in. across, in many-fld. corymbs. China.

hibérnica. Hybrid between *R. spinosissima* and *R. canina:* fls. pink, 1 in. across.

highdownénsis. Said to be a hybrid of which one parent is *R. Moyesii:* lvs. glaucous beneath: fls. crimson, on arching sts.: fr. bright colored.

Híllieri: *R. pruhoniciana.*

himalàica: fls. white tinted blush; hort. name.

híspida: *R. spinosissima* var.

hórrida (*R. ferox*). Dwarf: lfts. 5–7, about ½ in. long: fls. white, about 1 in. across, in few-fld. corymbs. S. Eu., Asia Minor.

Hugònis. Hugo R. To 8 ft., the branches drooping: lfts. 5–13, to ¾ in. long: fls. yellow, 2 in. across, solitary, May–June. China; hardy N., early.

hùmilis: *R. carolina.*

illinoénsis: *R. spinosissima.*

índica: confused name, belonging mostly to *R. chinensis* and *R. odorata.*

inérmis Morléttii: a form of *R. pendulina*, with purplish fls., thornless.

Iwàra. Hybrid between *R. multiflora* and *R. rugosa:* fls. white, single, small.

Jáckii: *R. Maximowicziana* var.

Jácksonii. Hybrid between *R. Wichuraiana* and *R. rugosa:* fls. bright crimson.

Jundzíllii: *R. marginata.*

kamtchática: *R. rugosa* var.

Kukolínskii. A cross or sport of *R. canina* which has been recommended as an understock.

lævigàta (*R. Camellia*. *R. cherokeensis*). Cherokee R. Climbing to 15 ft., evergreen: lfts. usually 3, to 2½ in. long, shining: fls. white, fragrant, to 3½ in. across, solitary. China; nat. in S. U. S.

Lawranciàna: *R. chinensis* var. *minima.*

láxa. To 8 ft.: lfts. 7–9, to 1½ in. long: fls. white, several. Turkestan.

Lheritieràna. Boursault R. Hybrid between *R. pendulina* and *R. chinensis:* climbing to 20 ft.: lfts. 3–7: fls. red, in corymbs.

longicúspis. Climbing: lfts. to 4 in. long, ovate to ovate-oblong, acuminate, glabrous, glossy: fls. silky, in corymbs, pedicels pubescent. W. China.

lùcens érecta: hort. form with semi-double pink fls., perhaps of *R. longicuspis* or *R. sempervirens.*

lùcida: *R. virginiana.*

lùtea: *R. fœtida.*

Lỳonii: *R. carolina* var. *villosa.*

MacDoùgalii: *R. nutkana* var. *hispida.*

Macoùnii. To 6 ft., much branched: lfts. 5–7, to 1¼ in. long, glaucous beneath: fls. rose, 1½ in. across, solitary or in few-fld. corymbs. B. C. to Tex.

macrántha. Hybrid between *R. canina* and *R. gallica:* lfts. 5–7: fls. light pink, 3 in. across.

macrophýlla. Large: lfts. 9–11, to 2½ in. long: fls. red, 2 in. or more across, solitary or in few-fld. corymbs. Himalayas.

Manéttii: *R. Noisettiana.*

marginàta (*R. Jundzillii*). Related to *R. canina*, differing in prickles nearly straight, lfts. doubly glandular-serrate and usually glandular beneath, pink fls. to 3 in. across on long glandular bristly pedicels. Eu., W. Asia. Var. **amœna** is listed.

Marrétii. Branchlets dark purple: lfts. mostly 7, to 1½ in. long: fls. pink, solitary or in few-fld. corymbs. Saghalin Isl.

Maximowicziàna. Branches partially climbing: lfts. 7–9, to 2½ in. long: fls. white, 1½ in. across, in many-fld. corymbs. N. Asia. Var. **Jáckii** (*R. Jackii*) has no bristles.

melìna. To 3 ft., much branched: lfts. usually 7, to 1¼ in. long: fls. rose, to 2 in. across, commonly solitary. Colo., Utah.

micrántha. To 6 ft., much branched: lfts. 5-7, to 1¼ in. long: fls. pink or white, about 1 in. across, solitary or in few-fld. corymbs. Eu.; escaped in N. Amer.

microcárpa. The true *R. microcarpa* is not known to be in cult., the material so listed is referable to *R. cymosa*.

microphýlla: *R. Roxburghii.*

minutifòlia. To 4 ft.: lfts. 5–7, ¼ in. or less long: fls. pink or white, 1 in. across. Lower Calif.

mirífica: *R. stellata* var.

mohavénsis. To 3 ft.: lfts. usually 5, to ½ in. long: fls. rose, about 1 in. across, mostly solitary. Calif.

móllis. To 4 ft.: lfts. 5–7, to 1⅓ in. long, silky-tomentose beneath: fls. deep pink or rarely white, to 2 in. across, solitary or few. Eu., W. Asia.

montícola: *R. canina.*

morìca. Hybrid with *R. canina* as one parent: fls. light pink.

moschàta. Musk R. Branches partially climbing or arching: lfts. 5–7, to 2 in. long: fls. white, with odor of musk, to 2 in. across, in 7-fld. corymbs. Medit. region; not hardy N. Var. **abyssínica,** a more prickly tender form from Abyssinia. Var. **álba,** a large-fld. hybrid between the species and *R. canina*. Var. **floribúnda,** large clusters of white fls. Var. **grandiflòra** (*R. polyantha* var. *grandiflora*), probably hybrid. Var. **japónica** is listed. Var. **nívea** is *R. Dupontii*. Var. **nastaràna** (*R. Pissardii*) has more numerous pinkish fls. Var. **plèna** has double fls.—Now little known in gardens.

Moyèsii. To 10 ft.: lfts. 7–13, to 1½ in. long: fls. deep red, to 2½ in. across, solitary or in 2's: fr. dark orange-red, about 2 in. long. China.

multibracteàta. To 6 ft.: lfts. 7–9, to ½ in. long: fls. pink, about 1 in. across, in corymbs. China.

multiflòra. Branches climbing or trailing: lfts. 5–11, to 1¼ in. long, stipules fringed: fls. white, very fragrant, to ¾ in. across, in many-fld. panicles. Japan. Var. **platyphýlla,** Seven Sisters R., has larger lvs. and deeper pink fls. Other listed vars. are **japónica** and **nàna.**—Source of many garden roses, often double, together with its Chinese ally, *R. Gentiliana*. Hardy N. Crimson Rambler is of this relationship.

muscòsa: *R. centifolia* var.

mutábilis: a confused name, plants so listed are probably referable to *R. gallica* or *R. setigera*.

myriacántha: *R. spinosissima* var.

nipponénsis: *R. acicularis* var.

nítida. To 1½ ft.: lfts. 7–9, to 1¼ in. long, shining above: fls. rose, 2 in. across, solitary or in few-fld. corymbs. Newf. to Conn.

Noisettiàna. Noisette, Manetti or Champney R. Hybrid between *R. chinensis* and *R. moschata:* to 10 ft.: lfts. 5–7: fls. white, pink, red, yellow, in many-fld. corymbs. Not hardy N. The Maréchal Niel is one of this group, as are also the Manetti roses (*R. Manettii*) used extensively as stocks on which to grow greenhouse roses.

nutkàna. To 5 ft.: lfts. 5–9, to 2 in. long: fls. commonly rose, 2 in. across, solitary. Alaska to Calif. Var. **híspida** (*R. MacDougalii*). has the receptacle glandular-hispid. Var. **Hallìàna** is listed with large pink fls.

Nuttalliàna: probably *R. palustris* var.

odoràta. Tea R. Evergreen or somewhat so, branches partially climbing: lfts. 5–7, to 3 in. long, shining above: fls. white, pale pink or yellow, to 3 in. across, solitary or in few-fld. corymbs. China; hardy only far S. Var. **gigantèa,** fls. cream, to 6 in. across. Var. **ochroleùca,** fls. pale yellow, double. Var. **pseudíndica,** fls. salmon-yellow, double, to 4 in. across.

omeiénsis. To 12 ft.: lfts. 9–17, to 1 in. long: fls. white, to 1½ in. across. China. Var. **chrysocárpa,** fr. bright yellow. Var. **pteracántha** has prickles much enlarged at base, forming wide rings.

oxýodon: *R. pendulina* var.

palústris. Swamp R. To 6 ft.: lfts. commonly 7, to 2 in. long: fls. pink, 2 in. across, in corymbs. N. S. to Fla. and Miss. Var. **Nuttalliàna** has larger fls.—This is the rose to which the Linnæan name *R. carolina* was long erroneously applied.

parvifòlia: *R. centifolia* var.

Paùlii (*R. rugosa* var. *repens*). Hybrid between *R. rugosa* and *R. arvensis:* procumbent: fls. white, in corymbs.

pendulìna (*R. alpina*). To 3 ft.: lfts. 7–9, to 2½ in. long: fls. rose, 1½ in. across, solitary or in few-fld. corymbs. Eu. Var. **oxýodon** (*R. oxyodon*), lfts. 5–9, ovate; pedicel and receptacle smooth, not glandular-bristly. Var. **pyrenàica** is of lower habit with glaucous branchlets and glandular-bristly pedicels and receptacle.

Penzanceàna. Lady Penzance R. Hybrid between *R. fœtida* and *R. Eglanteria:* lfts. 7, fragrant: fls. pink with yellow center.

Pernetiàna: see *R. fœtida*, page 640.

pérsica (*R. simplicifolia*). To 1½ ft.: lvs. simple, to 1¼ in. long: fls. yellow with red center, 1 in. across, solitary. W. Asia; little grown and not hardy N.

pimpinellifòlia: *R. spinosissima.*

pinetòrum. To 3 ft.: lfts. 5–7, to 1¼ in. long: fls. deep rose, 1½ in. across, usually solitary. Calif.

pisocárpa. To 6 ft.: lfts. 5-7, to 1½ in. long: fls. pink, 1¼ in. across, in corymbs. B. C. to Calif.

Píssardii: *R. moschata* var. *nastarana.*

polyántha. A group of roses of the *R. multiflora* type.

pomífera (*R. villosa*). To 6 ft., densely branched: lfts. commonly 5–7, to 2 in. long: fls. pink, to 2 in. across, solitary or in few-fld. corymbs. Eu., Asia; hardy N.—Recent studies have shown the description accompanying the older Linnæan name of *R. villosa* to be too ambiguous to merit its acceptance.

pratíncola: *R. suffulta.*

Práttii. To 8 ft.: lfts. 7–15, to ½ in. long: fls. pink, to ¾ in. across, solitary or few-fld. China.

Prímula (*R. Ecæ* of cult.). To 6 ft.: lfts. 7–15, to ¾ in. long: fls. pale yellow, 1 in. across, solitary. Asia.

pruhoniciàna (*R. Hillieri*). Hybrid between *R. Willmottiæ* and *R. Moyesii:* fls. bright pink.

rèpens: *R. arvensis.*

Reùteri: *R. dumalis.*

revérsa (*R. rubella*). To 5 ft., erect bristly sts. with prickles: lfts. 5–9, orbicular to oblong-ovate, to ¾ in. long: fls. red, to 2 in. across, solitary, pedicels glandular-bristly. Eu.—Believed to be a hybrid between *R. spinosissima* and *R. pendulina*.

Ríchardii. Allied to *R. centifolia*, differing in lfts. rugose and pubescent on lower side only and sepals pinnately lobed, leafy at apex. Abyssinia.

Rouléttii: *R. chinensis* var. *minima.*

Róxburghii (*R. microphylla* of cult.). To 8 ft., much branched: lfts. 7–15, to ¾ in. long: fls. pale pink, to 2½ in. across, solitary or in few-fld. corymbs. China, Japan. Var. **hírtula** has lfts. pubescent beneath. Var. **normàlis** has single fls. and var. **plèna** double.

rubélla: *R. reversa.*

rubiginòsa: *R. Eglanteria.*

rubrifòlia (*R. ferruginea. R. glauca*). To 6 ft., sts. purplish: lfts. 7–9, to 1½ in. long, somewhat purplish: fls. deep red, 1½ in. across, in few-fld. corymbs. Eu.; hardy N.

rugòsa. To 6 ft.: lfts. 5–9, to 2 in. long, thick and rugose, shining above: fls. red or white, to 4 in. across, solitary or in few-fld. corymbs. China, Korea, Japan; hardy and durable. Var. **álba,** fls. white. Var. **álbo-plèna,** fls. white, double. Var. **Chamissoniàna,** less bristly, lvs. smaller. Var. **kamtchática,** lvs. thinner, fls. smaller. Var. **magnífica,** said to be an improved form. Var. **rèpens** is *R. Paulii*. Var. **ròsea,** fls. rose. The typical form (var. *rubra*) has fls. purple.

rústica: *R. stylosa.*

sáncta. The true *R. sancta* is not known to be in cult.; the materials so listed are probably *R. Richardii*.

saturàta. To 8 ft., scarcely prickly: lfts. mostly 7, to 2½ in. long: fls. dark red, 2 in. across, solitary. China.

sempérvirens. Evergreen, the branches decumbent or climbing: lfts. 5–7, to 2 in. long, shining: fls. white, slightly fragrant, to 2 in. across, in corymbs. Medit. region; to be grown S.

Serafìnii. Low shrub, prickles hooked, unequal: lfts. 5–7, ovate-orbicular, to ½ in. long, glandular beneath: fls. pink, solitary, pedicels short, glabrous. Medit. region.

serícea. To 12 ft., prickly: lfts. 7–11, to ¾ in. long, silky-pubescent beneath: fls. white, to 2 in. across, solitary. Himalayas. Var. **frùcto-lùteo** has yellow hips. Var. **nìgra** is listed.

sertàta. To 6 ft.: lfts. 7–11, to ¾ in. long: fls. rose, 2½ in. across, solitary or in few-fld. corymbs. China.

setígera. Prairie R. To 15 ft., the branches climbing: lfts. 3–5, to 4 in. long: fls. rose fading to white, 2 in. across, in few-fld. corymbs. Ont. to Fla. and Tex.; hardy N., and represented in Baltimore Belle and others. Var. **tomentòsa** has lvs. tomentose beneath.

setípoda. To 10 ft.: lfts. 7–9, to 2½ in. long: fls. pink or rose, 2 in. across, in corymbs. China.

simplicifòlia: *R. persica.*

sínica: synonym of *R. lævigata* and *R. chinensis.*

sonoménsis. To 1 ft.: lfts. 5, to ½ in. long: fls. rose, in many-fld. corymbs. Calif.

Soulieàna. To 12 ft.: lfts. mostly 7, to 1¼ in. long: fls. white, 1½ in. across, in many-fld. corymbs. China.

Spæthiàna. Hybrid of *R. rugosa* and *R. palustris*, having corymbs of large purple fls.

spinosíssima (*R. pimpinellifolia. R. illinoensis*). Scotch or Burnet R. To 4 ft., densely spiny: lfts. 5–11, to ¾ in. long: fls. white, pink or yellow, to 2 in. across, solitary. Eu., Asia. Var. **álba**, fls. white. Var. **altàica** (*R. altaica*), fls. white. Var. **cestiflòra** is listed as a single rose. Var. **fúlgens**, fls. lilac-pink, semi-double, small. Var. **híspida**, fls. sulfur-yellow, to 3 in. across. Var. **lùtea**, fls. bright yellow. Var. **lutèola**, fls. pale yellow. Var. **myriacántha** (*R. myriacantha*), very prickly, fls. white tinged pink. Var. **sulphùrea**, fls. pale yellow. Var. **Vórbergii** is *R. Harisonii.*

spinulifòlia. Hybrid between *R. tomentosa* and *R. pendulina.*

spithàmea. To 1 ft.: lfts. 3–7, to 1½ in. long: fls. rose, to 1¼ in. across, in few-fld. corymbs. Ore., Calif.

stellàta. To 2 ft.: lfts. usually 3, to ¼ in. long: fls. deep rose, to 2 in. across, solitary. Tex., Ariz. Var. **mirífica** (*R. mirifica*), to 4 ft., fls. larger.

stylòsa (*R. rustica*). Sts. green, arching, prickles stout, curved, scattered: lfts. 5–7, ovate to elliptic, mostly to ¾ in. long, serrate: fls. soft pink to nearly white at base, to 2 in. across, in corymbs of 3–6. Eu.

subserrulàta. To 2½ ft.: lfts. 3–7, sharp-toothed: fls. rose, about 2 in. across, solitary. Mo. to Tex.

suffúlta (*R. heliophila. R. pratincola*). To 1½ ft.: lfts. 7–11, to 1½ in. long: fls. pink, 1¼ in. across, in corymbs. Man. to Tex.

Sweginzòwii. To 15 ft.: lfts. 7–11, to 2 in. long: fls. rose, 1½ in. across, solitary or in few-fld. corymbs. China.

tomentòsa. To 6 ft.: lfts. 5–7, to 1½ in. long: fls. pale pink to white, 1½ in. across, solitary or in few-fld. corymbs. Eu.; escaped in N. Amer.

triphýlla (*R. anemoneflora*). Climbing, partially evergreen: lfts. 3–5, to 3 in. long: fls. white, 1½ in. across, double with the inner petals shorter, in corymbs. China.

villòsa: *R. pomifera.*

virginiàna (*R. lucida*). To 6 ft.: lfts. 7–9, to 2½ in. long, shining above: fls. pink or rose, to 2½ in. across, in few-fld. corymbs. Newf. to Va. and Mo. Var. **álba** has white fls.

Watsoniàna. Branches partially climbing: lfts. 3–5, to 2½ in. long, very narrow and with entire wavy margins: fls. white or pink, ½ in. across, in many-fld. corymbs. Probably Japan; not hardy far N.

Webbiàna. To 6 ft.: lfts. 5–9, to ¾ in. long: fls. pale pink, 2 in. across, mostly solitary. Himalayas to Turkestan.

Wichuraiàna. Memorial R. Prostrate or trailing, evergreen: lfts. 7–9, to 1 in. long, shining above: fls. white, fragrant, to 2 in. across, in corymbs. Japan to China; hardy N.—Dorothy Perkins is a derivative of this species.

Willmottiæ. To 10 ft., densely branched: lfts. 7–9, to ½ in. long: fls. rose-purple, 1¼ in. across, solitary. China.

Woòdsii. To 6 ft.: lfts. 5–7, to 1¼ in. long: fls. pink or rarely white, 1½ in. across, solitary or in few-fld. corymbs. Sask. to Kans. and Utah. Var. **Féndleri** (*R. Fendleri*) is lower with straight prickles.

xánthina. To 10 ft.: lfts. 7–13, to ¾ in. long: fls. yellow, 1½ in. across, semi-double, solitary. N. China, Korea. Var. **spontànea** (var. *normalis*) is the wild single form.—Some of the material so listed may be *R. Primula.*

ROSÀCEÆ. Rose Family. About 100 widely distributed genera of herbs, shrubs and trees, with mostly alternate lvs., bisexual regular fls. having 4–5 sepals and petals or petals lacking, and 5–many stamens borne on edge of calyx-tube, and fr. an achene, follicle, hip, pome or drupe. The family contains many of the most important fruit plants and ornamentals in the north temp. zone, most of them grown out-of-doors. Genera herein treated are Acæna, Adenostoma, Agrimonia, Alchemilla, Amelanchier, Aronia, Aruncus, Cercocarpus, Chænomeles, Chamæbatia, Chamæbatiaria, Chrysobalanus, Cotoneaster, Cowania, Cratægomespilus, Cratægus, Cydonia, Dalibarda, Dryas, Duchesnea, Eriobotrya, Exochorda, Fallugia, Filipendula, Fragaria, Geum, Gillenia, Heteromeles, Holodiscus, Horkelia, Kageneckia, Kelseya, Kerria, Luetkea, Lyonothamnus, Maddenia, Margyricarpus, Mespilus, Neillia, Neviusia, Osmaronia, Osteomeles, Petrophytum, Photinia, Physocarpus, Potentilla, Poterium, Prinsepia, Prunus, Purshia, Pyracantha, Pyrus, Quillaja, Raphiolepis, Rhodotypos, Rosa, Rubus, Sanguisorba, Sibbaldia, Sibiræa, Sorbaria, Sorbaronia, Sorbopyrus, Sorbus, Spenceria, Spiræa, Stephanandra, Stranvæsia, Waldsteinia.

ROSA DE MONTANA: *Antigonon leptopus.*

ROSCHÈRIA. *Palmaceæ.* Monœcious palm of the Seychelles Isls., sometimes included in Verschaffeltia, but lvs. pinnate except in very young trees, fls. in 2's, one of which is pistillate, spathes several and in technical characters. It is seldom seen in collections.

ROSCÒEA. *Zingiberaceæ.* Per. herbs with thick fleshy roots, of the Curcuma kind, lanceolate or oblong parallel-veined lvs. and purple or blue fls. in terminal spikes, the calyx split down one side.

Roscoeas are suitable for the greenhouse or for borders in mild climates. The roots should be planted in sandy loam 4–5 inches deep. Propagated by division.

alpìna. To 6 in.: lvs. oblong-lanceolate, to 4 in. long, sessile, becoming fully developed after blossoming: fls. with dark purple limb and tube white, to 1 in. long. Himalayas to Burma.

cautleoìdes. To 1 ft.: lvs. usually sessile, to 6 in. long and 1 in. wide: fls. pale primrose-yellow, to 3 in. or more long. China.

purpùrea. To 1 ft.: lvs. lanceolate, undulate, usually 5–6 on st.: fls. with white to purple limb and tube, few in sessile spike. Himalayas to Burma and Assam. Var. **capitàta** is listed.

ROSE. The species of Rosa are probably 200, widely distributed in the northern hemisphere. A score of them have been much modified under cultivation or have contributed to important hybrids, but even in the crosses the parental resemblances are usually apparent to students of the genus. All members of the genus are important to the horticulturist, to be grown as ornamental shrubbery if not directly for bloom. The well-known horticultural classes, often much modified from the wild state, are the following:

Hybrid Perpetual or Remontant roses (H.P.) are of mixed ancestry, with *R. borboniana* probably prevailing (although few Bourbon roses as such are now in commerce); highly developed varieties of upright growth, producing in early summer and sparingly in autumn very large, double and fragrant flowers, from white through pink to deep crimson. Hardy for the most part in the northern states, they form the background of many rose gardens. Once dominant, their varieties, not seriously increased in the last twenty years, are now less than one-fourth of those in ordinary use.

Hybrid Tea (H.T.) roses, broadly referred to *R. dilecta*, represent crosses between the Hybrid Perpetuals and virtually all other classes, beginning with Tea and China groups. They are less hardy than the Hybrid Perpetuals and the Polyanthas, but because of their recurrent blooming habit and the richness and color variation of their fragrant blooms, they by far predominate as garden roses. The Hybrid Teas are grown throughout America, sometimes with such protection as may be required, and also extensively for out-of-season flowering in greenhouses. Through the work of a French hybridizer, M. Pernet-Ducher, about 1900, there was introduced into the Hybrid Tea class the brilliant yellow and copper tones of the Austrian Brier (*R. fœtida*), giving as a continuing result under many hybridizers colors not before available, and, at the same time, unfortunately beginning a disease liability now being slowly bred out.

To illustrate the relation of these Hybrid Teas to the general group of garden roses, it was noted that a recent comprehensive catalogue included 204 H.T., as compared with 120 H.P. and 85 of the varied Polyantha varieties.

The Polyantha roses, sometimes attributed to *R. multiflora nana*, form a most important and largely used branch of the Multiflora family. It includes dwarf roses with characteristic flowers, sometimes called "baby ramblers." In more recent hybridizations, equally floriferous and hardy, and even better adaptable to garden use, the flowers are larger and brighter in color, including yellow and orange, and are of high value for masses of bloom. Certain desirable forms originating in Denmark and north Germany reach above 3 feet, being otherwise similar to the lower-growing Polyantha type. An indeterminate subclass in this general group, by reason of its blooming habit, has been commercially called the Floribunda without botanical support. All the colors of the rose, including yellow and even orange, as well as the pinks and crimsons and scarlets, are found in these important and rapidly enlarging groups.

Tea roses (T.), derived principally from *R. odorata*, are much less used in America than the Hybrid Tea group. In California and on the Gulf Coast great specimens of these roses, brought in with the old missions, yet remain in much beauty. Not dependably hardy north of the Mason and Dixon Line, they yet provide abundance of bloom, large flowers, and great beauty, though in general without the strong yellows and bright reds which characterize the H.T.'s. Once considerably grown under glass for forcing purposes, they are now rarely so used. About 25 horticultural varieties are found in various parts of America.

China and Bengal roses, attributed both to *R. chinensis* and *R. odorata* and their hybrids, are used in the same way as are the Tea roses, though some of them prove hardy in the middle states. Both have horticultural varieties with small red blooms, and, being generally of lower growth, are valuable, with careful selection, in ordinary rose gardens.

Noisette or Champneys, *R. Noisettiana*, resulting from a hybrid made in Charleston, South Carolina in 1810, form excellent bush roses where they are hardy, as in the same section mentioned for the larger Tea roses. Much grown in Europe, they have their horticultural varieties, including the famed Maréchal Niel and similar strong-growing climbing yellow roses.

The Multiflora roses, *R. multiflora*, include an important class of climbing roses sometimes called "ramblers," but diminishing in importance by reason of hybridization with *R. Wichuraiana* forms. The true Multiflora groups have cluster flowers in large panicles of white, blush pink, and dull crimson.

The Wichuraiana group, *R. Wichuraiana*, (also called the Memorial rose) arises from a more or less evergreen ground trailer, itself useful for covering banks with its white flowers and shining leaves, but more important because of the hybrids which have reached into all other forms of roses, producing pillar and climbing roses of high value with both large and small flowers and in varied and attractive colors. This is the dominant form of the Hardy Climbing rose in America, and not even a trained botanist can readily distinguish the Wichuraiana base from the Multiflora base. The initials L.C. are used to designate these varieties, referring to the larger flowers produced on these modern climbers.

The Sweetbriers, *R. Eglanteria* (*rubiginosa*), are exemplified in the so-called Penzance sweetbrier hybrids, which, with fragrant foliage, also include single flowers of great attractiveness.

The Rugosa roses, *R. rugosa*, from China and Japan, furnish hardy roses of strong growth, suitable for hedges and garden backgrounds. Hybridized with all other classes, many forms even including rich yellow and orange tones, have been combined with the Rugosa type to great garden advantage when the plants are used as backgrounds or for hedges, being unsuitable for the formal rose-garden. The class is generally designated as H.R.

The Austrian Brier rose, *R. fœtida*, includes yellow roses of upright or half-climbing habit, also bringing in notable copper hues. An early American hybrid, Harisons Yellow, includes, apparently, a cross with *R. spinosissima* in a hardy spreading awkward bush of great bloom beauty. Another hybrid, the Persian Yellow, was the parent of the so-called Pernetiana group previously discussed.

Banksia rose, *R. Banksiæ* or Lady Banks, is a climbing evergreen form from China abundantly used in California, the South, and other mild regions for its good foliage and seasonal abundance of small clustered yellowish or white flowers, sometimes fragrant.

The Cherokee rose, *R. lævigata*, from China and Japan, has been naturalized in the South, producing very large single fragrant white flowers, blooming once on strong shoots, sometimes evergreen. The Cherokee rose is rarely hardy north of the Mason and Dixon Line. Certain hybrids have been made in this class; one said to contain Cherokee blood, Dr. W. Van Fleet, is of importance as a hardy climber.

The Macartney rose, *R. bracteata*, also a garden escape from China in the South, is chiefly of value through its hybrid called Mermaid, which endures to the middle states.

Hugonis, *R. Hugonis*, from China, provides a yellow-flowered shrub of graceful form, blooming very early, with a covering of primrose single flowers on a shapely hardy bush.

Primula, *R. Primula*, erroneously known as *R. Ecæ*, is of the same general form of bush, but more graceful and stronger, blooming earliest of all with primrose flowers in vast abundance.

Rosa setigera is the Prairie rose, which with its derivatives is usually of climbing or bush habit. Thoroughly hardy, of great vigor, it has been used in second-generation crosses for a series of most useful Hardy Climbing roses, including American Pillar, Doubloons, Thor and many others. These hybrids are designated as H.S. in rose terminology.

Groups long cultivated and found all over America as brought in by pioneers are the Musk roses, including *R. moschata* and *R. Brunonii*, the scentless white Ayrshire rose, *R. arvensis*, the French or Provence roses, including *R. gallica*, the Moss and Cabbage roses, derived from *R. centifolia*, the Damask roses, *R. damascena*. All are included among the "old roses" listed as worth the attention of the discerning amateur.

The Dog rose, *R. canina*, little used in America, is important in Europe as an understock. In that connection *R. blanda* and several other species in northwestern America come into view because of their hardiness and understock adaptability.

The Scotch or Burnet rose, *R. spinosissima*, is of very real garden importance for its pink, white and yellow flowers on a hardy, handsome and somewhat globular plant of much persistence.

The Cinnamon rose, *R. cinnamomea*, sometimes naturally develops flowers of many petals, and it belongs with the "old roses," being long-persisting about old premises.

The dominant garden roses of America include the Hybrid Tea, Hybrid Perpetual, and Polyantha types, in that order as to importance. They are currently obtainable in hundreds of horticultural varieties as pleasing and important garden plants, rarely desirable as lawn subjects, though the use of certain taller-growing plants which can endure half shade is taking these roses into the edge of the shrubbery. One notable Rugosa hybrid, Max Graf, affords a thoroughly hardy bank, fence or stone-pile cover with enduring foliage and very beautiful large pink flowers in June.

Broadly speaking, these truly garden roses need to be composed by themselves, preferably in beds or borders, though in some cases, with skilful use, the Polyantha roses form an admirable adjunct in herbaceous borders, as well as serving excellently as low hedges. In some cases the Rugosa roses, either trained high as a protective hedge or pruned down to a definite height, as may be done with certain hybrids, serve admirably as backgrounds against which the lower-growing roses above mentioned may be displayed. Some few of the groups mentioned above may give similar service.

It is important that the separated rose garden, the chief feature of which is to be the recurring bloom of the Hybrid Teas and Polyanthas, should be so placed that it can be adequately cared for. This care, in addition to thorough cultivation, and sometimes mulching, also involves protection against the insects and diseases which bother garden roses. Research by the American Rose Society has resulted in control methods for both fungous and insect troubles, so that with reasonable care any thoughtful grower may have good flowers through a long season.

Some of the species of roses add an advantage to their pleasing single blooms in decorative "hips" which retain their color over winter.

Roses do well in any soil that will grow good vegetables, whether of light or heavy nature. Enough rotted manure to add fertility, the use of peat moss in many cases to lighten clay soils and to retain moisture, and good culture, will generally produce many pleasing roses throughout the season. Roses seem to prosper best in soils neither strongly acid nor alkaline.

Planting methods vary according to location. Ordinarily, roses in beds in the North can be as close together as 15 inches, so that their foliage will shade the ground. Farther south, with larger growth, the distance must increase. The admirably useful Hardy Climbing roses may be planted in almost any location, and will flourish wherever the soil will produce a good burdock. In all cases thorough drainage is essential, as roses do not endure "wet feet." In general the observing rose grower varies his soil make-up and his cultural practice by his own experience or through reading the data constantly supplied by other amateurs through the American Rose Annual.

Roses are best planted in the North very early in the spring, though satisfactory results follow fall planting in well-prepared ground with at least a 6-inch hilling-up around the stem for winter protection. Plants are now sold in containers of various sorts so that they may be purchased in full leaf, and sometimes in full bloom, and successfully transplanted. The best practice is that of planting only fully dormant plants with adequate preparation and care.

Pruning is as desirable to secure good roses as it is for good apples or peaches. The average rose plant is not a beautiful object in itself. It is desirable, particularly with Hybrid Tea or Polyantha roses, to space and handle beds so as to give a flower mass as the blooms open. To obtain this effect pruning is requisite: if the plants are cut low, there will be more blooms not so large; if the plants are kept high and the buds are thinned, large representative and specimen flowers may be obtained.

The Hybrid Perpetual roses bloom on shoots of the current season which arise from last year's wood, and that fact must be kept in mind when they are pruned. The Hybrid Tea roses bloom only on the wood of the current year, and that may arise from the base, above the bud. The Polyantha roses bloom on old wood and require little pruning. It is obvious that the frame of the plant, in the case of the Hybrid Perpetuals, is made up of older wood, whereas with Hybrid Teas the new shoots are of more importance for form and flowers.

Pruning may be simple and according to the ideal established, it being always good practice to cut away weak or diseased shoots and to prune toward the size and style of plant that is desirable.

In pruning the Hardy Climbing roses it is essential to know whether the variety is of the Multiflora type, in which case most or all of the current year's shoots are removed immediately after the bloom is over, the new shoots that arise from the base forming the plant for next year. The other type, of which Dr. W. Van Fleet is an example, blooms on short shoots arising from old wood, and this must not be pruned so sharply.

The Hybrid Perpetual roses may be induced to recur in bloom, in many cases, if carefully pruned after the bloom is spent, there being at the same time added fertility to promote new growth.

Generally speaking, rose pruning should be done in the spring, though it is sometimes advisable to cut back long shoots to avoid whipping about by winds during the winter.

Winter protection depends on location. Throughout the middle states a mound from 6 inches to a foot of earth about the Hybrid Tea roses will preserve them so that even if the frost is heavy, Nature's pruning to the top of the mound will leave a good plant for next year. Pruning for special places and of special varieties is best learned by conferring with others who have succeeded, and in that respect the American Rose Society, provides important available information.

The species and bush roses are usually pruned only by removing shoots that are in the way or are obviously diseased or worn out. It is not often desirable to cut them down as is the practice for Hybrid Tea roses.

Rose plants are easily propagated by one of two ordinary methods. For many years, as "own-root roses," there was large use of rooted cuttings of Hybrid Tea and Tea roses which were sold when the plants were in full leaf, and which, under proper care, would grow to usefulness in a year. As some varieties seemed to do better if given a stronger root system than naturally available, the practice arose of budding on an understock. Formerly the most important understock was known as Manetti, and that is still used for greenhouse roses. By far the largest number of the ordinary garden roses, including the Hybrid Teas and Polyanthas, are budded on one of several understocks, the more important being the Japanese Multiflora. Another much used understock is Ragged Robin, being the old Bourbon rose, Gloire des Rosomanes. In both of these cases the understocks may be raised from cuttings, or, with Multiflora, sometimes from seedlings.

The process of budding is not here described. Any standard method by which a bud of the desired variety is slipped when sap is moving under the slit stem of the proposed understock, with attention to protection until the bud has begun to grow, will give good results.

In general, the dependence in America is on budded roses grown in the open ground which have had the advantage of a full season's growth after the bud has taken hold, and before the plant, then known as a "maiden," is lifted to be sold or elsewhere set where it is to remain. Of these budded roses there are several qualities, and the nursery standards explain the difference between the No. 1 and No. 1½ roses of commerce. These plants, if carefully budded on a suitable understock and carried through a full season under good nurture, afford the most desirable material for planting a rose garden. There are unscrupulous dealers who sell plants not fully matured, or who are careless about the labels, these plants usually being offered at lower prices. Obviously it is a waste of time to go to the trouble of planting roses that cannot be depended on as being what the purchaser desires and as having back of them the responsibility of a known grower who is willing to make good.

The culture of roses has tremendously increased in the United States, and annually fully twenty-five millions of outdoor-grown budded rose plants are sold. The greenhouse men who grow roses to bloom over winter probably do ten millions more. There is an increasing demand for the Hardy Climbers and for the bush and species roses as desirable adjuncts for home planting.

ROSE, BRIDAL-: *Matricaria inodora* var. *plenissima.* **Brier-:** *Rubus coronarius.* **California-:** *Convolvulus japonicus.* **Christmas-:** *Helleborus niger.* **Confederate-:** *Hibiscus mutabilis.* **Cotton-:** *Hibiscus mutabilis.* **Guelder-:** *Viburnum Opulus* var. *roseum.* **-Mallow:** *Hibiscus.* **-Moss:** *Portulaca grandiflora.* **-of-China-:** *Hibiscus Rosa-sinensis.* **-of-Heaven:** *Lychnis Cœli-rosa.* **-of-Jericho:** *Anastatica hierochuntica.* **-of-Sharon:** *Hibiscus syriacus.* **Rock-:** *Cistus.* **Rush-:** *Crocanthemum scoparium.* **Sun-:** *Helianthemum.*

ROSELLE. An annual hibiscus, *H. Sabdariffa,* sometimes grown in the warmest parts of the United States and in the tropics for the large thick acid calyx and bracts that are prized in the making of jams, sauces, jellies and acid drinks. It is grown like tomatoes or eggplants. Rows are ordinarily spaced for horse tillage, and plants may be set therein 18–24 inches apart. The plants reach 4 or 5 feet or more in height, making a continuous line or hedge. The bolls or heads are picked when immature, before becoming woody, and utilized either fresh or after being dried. There are yellowish forms of roselle, but in the usual kind the bolls are red. The plant is known also as Jamaica sorrel.

ROSEMARY: *Rosmarinus.* **Bog-:** *Andromeda.* **Wild:** *Ledum palustre.*

ROSENBERGIA: *Cobæa.*

ROSEOCÁCTUS. *Cactaceæ.* Segregate from Ariocarpus, technically defined by the fls. arising from an areole concealed in a longitudinal cleft in the tubercle: very succulent plants with a turnip-like root and flat or hemispherical body bearing thick spirally disposed tubercles: fls. from the center of the plant, opening in sun and of short duration. See *Cacti.*

fissuràtus (*Anhalonium fissuratum. Ariocarpus fissuratus. Mammillaria fissurata*). Living Rock. Plant-body flattish or somewhat rounded, mostly buried, to 5 or 6 in. across; tubercles grooved on upper side, the triangular surface showing a deep linear impression following the outer margins: fls. white to shell-pink, to 1½ in. across. W. Tex., Mex.

Kotschoubeyànus (*Ariocarpus Kotschoubeyanus* and *A. sulcatus*). Plant 2 in. or less across, only the flat top above ground; tubercles grooved on upper side, the triangular surface slightly rough: fls. about 1 in. long, rose-colored to light purple, arising near the top of the tubercle. Mex.

Llóydii (*Ariocarpus Lloydii*). Body with rounded top, 4 in. or more diam.; tubercles without a linear depression along the margin, exposed end broadly rhomboid rather than triangular: fls. purple, slightly above 1 in. long. Cent. Mex.

ROSEOCEREUS: *Trichocereus tephracanthus.*

ROSEROOT: *Sedum Rosea.*

ROSINWEED: *Silphium.*

ROSMARÌNUS. Rosemary. *Labiatæ.* Hardy evergreen subshrub with small fls. in short axillary racemes, a well-known sweet herb grown for its aromatic lvs. which are used in seasoning while their volatile oil is common in drug-stores. Rosemary lasts for years if given well-drained soil and some winter protection. It is useful in S. Calif. for hedges, especially along the coast where it is dry and rocky. **R. officinàlis.** To 6 ft.: lvs. linear, ¼ in. long, revolute, dark and shining above, white-tomentose beneath: fls. in short axillary racemes, light blue, ½ in. long, Apr.–May. Medit. region. Var. **prostràtus** is prostrate.

ROSULARIA PALLIDA: *Sedum chrysanthum.*

ROTANTHA: *Campanula floridana.*

ROTATE: wheel-shaped; with short or obsolete tube and a flat and circular limb.

ROTENONE: see *Derris*.

ROTUND: nearly circular; orbicular inclining to be oblong.

ROUGE-PLANT: *Rivina humilis*.

ROÚPALA. *Proteaceæ*. Trop. American trees with alternate leathery lvs., bisexual fls. in pairs borne in racemes, and hard capsular frs.; differs from Hakea and Grevillea chiefly in seed characters. Sometimes grown under glass, and out-of-doors in S. Calif.

corcovadénsis: *R. Pohlii*.

Pòhlii (*R. corcovadensis*). To 30 ft. or more, branches rusty-tomentose: lvs. with 5–8 pairs of ovate or oblique toothed lfts. to 5 in. long: fls. white or yellowish, in racemes to 5 in. long. Brazil.

ROWAN: *Sorbus Aucuparia*.

ROYÈNA. *Ebenaceæ*. African evergreen trees or shrubs with entire lvs., small usually solitary fls., and fr. a leathery berry; one species grown out-of-doors in S. Calif. and sometimes under glass.

lùcida. To 12 ft. or more: lvs. alternate, oval, to 2 in. long, shining above: fls. white or yellowish, to ⅓ in. long: fr. red or purple, to 1 in. long. S. Afr.

ROYOC: *Morinda Royoc*.

ROYSTÒNEA. Royal Palms. *Palmaceæ*. Monœcious columnar unarmed feather-palms of American tropics of striking appearance and much planted in trop. countries around the world and in S. Fla.: trunk solitary, tall, cylindrical or variously bulged, more or less ringed: lvs. regularly pinnate, long and large, handsomely arching and drooping: spadices arising from top of trunk at base of sheath-column, much branched, shorter than lvs.: fls. in 3's, the middle one pistillate, or in 2's and staminate toward ends of branches; stamens mostly 6: fr. globose or oblong, ⅜ to ¾ in. long, 1-seeded. See *Palm* for cult.

borinquèna. Puerto Rico R. P. Trunk to 50 ft. and more, fusiform or swollen in the upper part and thence tapering to the infl.: lvs. to 10 ft. long; pinnæ many, to 2½ ft. long, nearly 2 in. or less broad, long-tapering to the point; stamens covered in the bud: fr. ovoid, yellowish-brown, about ½ in. long and ⅜ in. thick. Puerto Rico; sometimes planted elsewhere.

floridàna: *R. regia*.

oleràcea (*Oreodoxa oleracea*). Caribbee R. P. Noble slender tree reaching 100 ft. and more: trunk commonly swollen at base and then cylindrical: lvs. ascending or horizontally spreading so that the crown is more or less flat on the bottom; pinnæ in a single row on either side the rachis: spadices far below the crown and therefore conspicuous; stamens protruding in the bud: fr. oblong, ½–⅝ in. long and ⅜ in. thick, often somewhat curved. Farther W. Indies; much and widely planted.

règia (*R. floridana. Oreodoxa regia*). Cuba R. P. To 70 ft. or perhaps more, the trunk swollen somewhat at or above the middle and then tapering: crown bushy and the lower lvs. drooping and covering the rather short spadices; pinnæ in 2 rows or directions on either side the rachis; stamens covered in the bud: fr. globose or globular-oblong, ⅜–½ in. long. Cuba, and reported on other isls.; S. Fla. on isls. in Everglades; much planted in S. Fla.

RUBACER: *Rubus odoratus*.

RUBBER, PARA: *Hevea brasiliensis*. **-Plant:** *Ficus elastica*. **-Tree, Mexican:** *Castilla elastica*. **-Vine:** *Cryptostegia*.

RÙBIA. *Rubiaceæ*. Per. herbs with mostly whorled lvs. and small wheel-shaped 5-lobed fls. in cymes; of wide distribution, one sometimes cult. for the root which yields a dye.

tinctòrum. Madder. To 4 ft., erect or decumbent: lvs. in 4's–6's, lanceolate, to 4 in. long, prickly on midribs and edges: fls. greenish-yellow, in branching cymes: fr. red turning black. S. Eu., Asia.

RUBIÀCEÆ. Madder Family. A large group of about 350 genera of herbs, shrubs and trees, sometimes climbing, abounding in ornamental subjects: lvs. simple, opposite or whorled: fls. usually bisexual with gamopetalous 4–5-lobed corolla, 4–5 stamens, inferior 1–10-celled ovary: fr. a caps., berry or drupe. The family furnishes many economic plants such as coffee and quinine, as well as dyes and medicines. The genera known to hort. are Asperula, Bouvardia, Catesbæa, Cephaelis, Cephalanthus, Chiococca, Cinchona, Coccocypselum, Coffea, Coprosma, Coutarea, Crucianella, Damnacanthus, Duggena, Emmenopterys, Galium, Gardenia, Genipa, Hamelia, Hoffmannia, Houstonia, Isertia, Ixora, Leptodermis, Luculia, Manettia, Mitchella, Morinda, Nertera, Palicourea, Pentas, Portlandia, Posoqueria, Psychotria, Putoria, Richardia, Rondeletia, Rubia, Serissa, Tricalysia, Vangueria, Warszewiczia.

RÙBUS. Brambles. *Rosaceæ*. Shrubs, seldom nearly herbaceous, the woody species with bien. canes (fruiting the second year and then perishing), most of them prickly, including the blackberries, dewberries, raspberries grown for fruit and also a good number of exotic species planted for the showy flowers and ornamental foliage; there are hundreds of species around the world, mostly in the northern hemisphere. Lvs. alternate, prevailingly compound but sometimes simple: fls. white or pinkish or rose, in the cult. species mostly in clusters: fr. an aggregate of small drupes; when the cone or thimble of cohering drupelets parts from the receptacle when picked, it is a raspberry, the receptacle remaining on the bush; when the drupelets adhere to the receptacle it is a blackberry or dewberry, the receptacle being eaten as part of the fruit. The dewberries differ from blackberries only in being vines, running over the ground or when planted needing support. The new cane, which usually does not flower and fruit that year, is a *primocane;* the second year it bears fls. and frs., may have different foliage, and is called a *floricane*. The characters of the cane in these different ages are important points in distinguishing the species botanically.

The pomological blackberries and dewberries in North America are derived within a century from native species, yet these species are so little understood that the varieties cannot now be referred to their original sources. Probably the subject will be elucidated in the near future. The native species are many more than we have recognized, some of them not yet named and described.

The brambles are of simple culture. The canes of blackberries and raspberries should be removed at the ground after fruiting and opportunity given for the new ones to develop. An open exposure and average garden soil are suitable. They grow readily from seeds, but the usual method of propagation is by root-cuttings or by suckers; some of them increase by the new canes taking root either at the joints or at the recurving tip. See *Blackberry, Boysenberry, Dewberry, Himalaya-Berry, Loganberry, Raspberry*.

acuminàtus. Ornamental scandent shrub: lvs. simple, ovate-oblong, caudate-acuminate, serrulate; fls. white, small, in fascicled racemes. Himalayas; probably adapted to parts of the S.

allegheniénsis (*R. nigrobaccus*). Glandular highbush blackberry, erect or at length somewhat arching, to 10 ft., with hooked prickles: lfts. 3 or 5, ovate or oblong-ovate, long-pointed, soft-pubescent underneath: infl. elongated: fr. mostly long or oblong, sweet and aromatic. Common, N. S. to N. C. and Mo.—In dry open lands the wild plant may remain as low as 1 or 2 ft.

árcticus. The plant so listed is probably not the true

R. arcticus of N. Eurasia but *R. stellatus* native in northern Amer. and which is an herbaceous unarmed glabrous more or less decumbent or mat-forming plant much resembling a strawberry: lfts. 3 or the lf. 3-lobed, close to the soil: fl.-sts. rising from the crown or at the ground, bearing 1 or 2 rose-colored fls.: fr. very small, globular.

argùtus. Non-glandular highbush blackberry, erect or becoming arching or in woods more or less decumbent, to 8 ft. or more, stiff and upright in the open: lfts. 3 or 5, mostly oval to oblong or lance-ovate, commonly soft-pubescent underneath, the petioles and infl. essentially glandless: infl. short: fr. rather small, short-oblong. Central eastern states and west to Miss. River.

aurantìacus: see *R. ellipticus.*

austràlis. Lofty tree climber, diœcious; branches slender and drooping, recurved-prickly: lfts. usually 3 or 5, variable, narrow-ovate or narrower, to 5 in. long, glabrous or sometimes tomentose underneath, sharp-serrate: fls. white, to ½ in. diam.: fr. reddish-orange, ¼ in. diam. New Zeal. Var. **glàber** is the glabrous or smooth form.—Adapted only to warmer parts and sometimes seen under glass.

bambusàrum: *R. Henryi* var.

cæ̀sius. EUROPEAN DEWBERRY. Weak plant with long-prostrate slender rooting glaucous canes, making large colonies, prickles not stout and mostly or often straight, sts. and fl.-clusters with few or no glands: lfts. normally 3, broad-ovate: fls. white, few in open cluster: fr. of a few large glaucous drupelets and the sepals mostly erect. Eurasia.—Planted as ground-cover and sometimes spontaneous, also intro. for fr. because of its hardiness far N.

canadénsis (*R. Millspaughii*). Glandless highbush essentially glabrous blackberry, spineless or nearly so, to 8 or 12 ft., the canes at length somewhat arching: lfts. 3, 5 or seldom 7, ovate to narrow-ovate and long-acuminate, sharp-serrate: infl. elongated: fr. oblong to roundish, mostly sour. Abundant northward, ranging from Newf. to the mts. of Ga.—Probably not in cult. outside botanical collections except as a transplant; the thornless blackberries of cult. are spineless states of other species.

Chamæmòrus. CLOUDBERRY. Monœcious or diœcious: st. nearly or quite herbaceous, 3–10 in. high, from a creeping rootstock: lvs. 2 or 3, rounded in outline and obtusely lobed: fl. solitary, white, to 1 in. across: fr. reddish or yellow. Arctic and subarctic regions around the world, south to Me.—Useful in rock-garden.

Cockburniànus (*R. Giraldianus*). Raspberry grown for ornament, sts. white-glaucous, somewhat prickly: lvs. white-tomentose underneath; lfts. 7–9, oblong-lanceolate and terminal one much broader, serrate: fls. purplish, small, in narrow terminal panicles 4–6 in. long. China.

Cómmersonii: *R. rosæfolius.*

coronàrius (*R. rosæfolius* var. *coronarius*). BRIER-ROSE. Smaller stature than *R. rosæfolius*, young parts and lvs. glabrous and strongly resinous-dotted, prickles much more numerous and very stout, lfts. relatively small, not prominently acuminate and mostly narrowed at base: fls. full double, white, 1 in. or more across. Probably Asian; cult. and more or less wild in Calif. and tropics; persists as far north as N. J.

cratægifòlius. Upright, to 10 ft., prickly: lvs. cordate-ovate to oblong-ovate, with 3 or 5 acute toothed lobes, mostly slightly hairy underneath: fls. white, ½–¾ in. across, in small clusters: fr. small, orange-red. China, Japan.—Sometimes planted to cover banks and for its good autumn foliage; hardy N.

cuneifòlius. SAND BLACKBERRY. Stiff and erect, 1–3 ft., branched, strongly armed: lvs. white-pubescent underneath; lfts. 3 or 5, mostly obovate, dentate, obtuse or short-acute: fls. white or pinkish, few in a cluster: fr. blackish, oblong, good but small. Sands, Conn. to Fla.—Useful for cover on poor lands.

Dalibárda: *Dalibarda repens.*

deliciòsus (*Bossekia deliciosa. Oreobatus deliciosus*). BOULDER RASPBERRY. ROCKY MOUNTAIN FLOWERING RASPBERRY. Upright, to 6 ft. or more, spreading and arching, unarmed: lvs. orbicular-ovate to reniform, with 3 or 5 broad shallow lobes: fls. white, mostly solitary, to 2 in. across, in spring and early summer: fr. dark purple or wine-red. Canyons, Colo.—Grown for the rose-like fls.; hardy N.

ellípticus (*R. flavus*). Clambering semi-climbing strong evergreen to 10 or 15 ft., sts. densely reddish or brownish hairy and with stout prickles: lfts. 3, oval or elliptic or broader, obtuse or short-acute, serrate, gray-tomentose underneath: fls. white, in panicles: fr. yellow. India.—Grown in Calif. and similar climates for ornament and sometimes naturalized in tropics; has been planted as *R. aurantiacus.*

flagellàris (*R. procumbens*). AMERICAN DEWBERRY. Trailing, rooting at tips, not glandular, with recurved prickles: lfts. 3 or 5, ovate to triangular-ovate, acute to acuminate, serrate-dentate: fls. few in a forking infl.: fr. spherical to oblong, black, edible. Canada to the Gulf states, occasionally planted.—Sometimes known as *R. villosus.* Var. **álmus.** Without prickles: fl.-clusters arising usually from lateral buds on floricane rather than on leafy shoot: here belongs Foster Thornless dewberry. Var. **geóphilus** (*R. geophilus*). Lvs. very large, cut-toothed. Probable origin of the Mayes or Austin and similar dewberries. Var. **roribáccus.** Robust; lfts. cuneate-obovate and doubly serrate, pedicels very long, to 6 in., fls. and fr. very large; Lucretia dewberry.

flàvus: *R. ellipticus.*

Fràseri (*R. robustus*). Cross between *R. parviflorus* and *R. odoratus:* to 8 ft., less glandular-hairy than *R. odoratus:* fls. rose-color fading to pale purple. *R. parviflorus* var. *Fraserianus* is a different plant.

frondòsus. Non-glandular highbush blackberry, at length over-arching, with short recurving prickles: lfts. mostly 3, short-ovate, acute, dentate or serrate, soft-pubescent: fls. in a short leafy cluster: fr. spherical or nearly so, black, sweet. Mass. to Va.

fruticòsus: an old name for shrubby blackberries of Eu., now mostly abandoned as a name for a particular species.

geóphilus: *R. flagellaris* var.

Giraldiànus: *R. Cockburnianus.*

glaùcus. Raspberry with glaucous somewhat prickly canes: lfts. 3, lanceolate or ovate-lanceolate, long-acuminate, serrate, white-tomentose underneath: fls. white, in short terminal racemes. Costa Rica to Ecuador.

Hénryi. Climbing evergreen, with sts. tomentose when young and few prickles: lvs. deeply 3–5-lobed, white-tomentose underneath, the segms. or lfts. long and narrow, to 6 in. long and 1 in. broad: fls. pink, ¾ in. across, in glandular racemes. China. Var. **bambusàrum** (*R. bambusarum*) has 3 narrow short-stalked lfts. to 4 in. long.

híspidus. SWAMP DEWBERRY. Slender hispid and often glandular trailer, lying close on the ground, without prickles, foliage glossy and mostly evergreen: lfts. mostly 3, obovate and obtuse: fls. small, few: fr. black at full maturity, sour. Swamps and low places, Canada to Ga. and Kans.—Sometimes grown as ground-cover.

idæ̀us. EUROPEAN RASPBERRY. Erect, 3–5 ft. or more, prickles many, few or none, sometimes bristly but not glandular, propagating by suckers: lfts. 3 or 5, ovate to broad-ovate, dentate, grayish- or whitish-pubescent underneath: fls. whitish, few and small: fr. oblong, conical or thimble-shaped, mostly dark red but sometimes yellow or whitish. Eurasia, seldom northward in N. Amer.—The pomological red raspberries belong to this species and its varieties. Var. **strigòsus** (*R. strigosus*). COMMON or AMERICAN RED RASPBERRY. More hardy: infl. and sometimes new canes bristly and glandular: fr. light red, hemispherical to conical, soft. Newf. to N. C., Wyo. and B. C., and E. Asia.—The purple-cane raspberries, frs. mostly purplish, are apparently hybrids of the *R. idæus* class and *R. occidentalis;* plants propagated either by suckers or tips.

illecebròsus. STRAWBERRY-RASPBERRY. Canes glabrous, woody or nearly herbaceous from spreading roots forming patches, with curved prickles, to 4 ft. long and more or less lopping: lfts. 5–9, narrow-lanceolate and acuminate, to 4 in. long: fls. white, fragrant, few or solitary, to 1¾ in. long, with very long sepals: fr. large, scarlet, sour. Japan.—Root-hardy N.; planted for ornament, fr. pleasant when cooked. It has been known also as balloon-berry.

inérmis: *R. ulmifolius* var.

innominàtus. Canes densely glandular-hairy, erect, to 10 ft., prickly (in var. **Kuntzeànus** glandless): lfts. 3 or 5, oblong-ovate, serrate, white-tomentose underneath, to 4 in. long: fls. small, pink, in narrow panicles: fr. orange-red, edible. China.—Sometimes grown for ornament and interest, root-hardy N. The Van Fleet raspberry, pomological variety for the S., is a hybrid of *R. innominatus* and the Cuthbert red raspberry.

invìsus: *R. flagellaris* var.

irenæ̀us. Prostrate more or less shrubby evergreen, st. tomentose and with or without prickles: lvs. simple, nearly orbicular, cordate, often acute, to 6 in. across, white- or rusty-tomentose underneath: fls. white, to ¾ in. across, solitary to few: fr. red. China; not hardy N.

laciniàtus. CUTLEAF or EVERGREEN BLACKBERRY. Strong more or less evergreen hardy blackberry with tumbling or trailing prickly per. canes becoming glabrous: lfts. 3 or 5, cut into very narrow acute toothed parts: fls. white or pink, in large panicles: fr. small to medium, spherical or nearly so, black. Eu., run wild in many parts of the world as on the Pacific Coast.—There are a few pomological vars., as Starr, Wonder.

lasiocóccus. Sts. creeping, slender, nearly herbaceous, to 12 in. or more, without prickles: lvs. reniform or orbicular in outline, small, 3-lobed or 3-divided with rounded parts, finely serrate: fls. small, white, usually 1 or 2 on erect sts. 2–4 in. high. Mts., Ore. to B. C.

laudàtus. Tall erect non-glandular blackberry with furrowed canes becoming glabrous and straight or retrorse prickles: lfts. 3 or 5, obovate-oblong to oblanceolate to ovate, acuminate, serrate: fls. white, in a short leafy cluster: fr. oval, black, sweet, early. Mo., Kans.—Bundy and Kenoyer blackberries belong here.

leucodérmis (*R. occidentalis* var. *leucodermis*). Differs from *R. occidentalis* in yellowish canes, more strongly recurved and flatter prickles, lfts. yellowish-green above, less acuminate, more strongly and sharply toothed, fr. reddish or black, edible. B. C. to Calif., Mont., Utah.

leucóstachys. Broadleaf Evergreen Blackberry. Stout and very prickly, more or less evergreen, with long arching or prostrate densely felted per. often glandular canes: lfts. 5, broad-ovate to nearly orbicular, short-acuminate, sharply dentate, yellowish- or grayish-felted underneath: fls. white or pink, in large villous panicles: fr. rather large, globose, black, sweet but insipid. Eu.; sometimes planted, and escaped on Pacific Coast.

Linkiànus. Bramble of uncertain identity, not N. American; the name has been applied to double-fld. forms of European blackberries grown for ornament.

loganobáccus. Loganberry. Phenomenal. Robust and vigorous blackberry, canes glaucous, with many straight prickles, long and vine-like: lfts. 3 or 5, thick, large, broad-ovate, acute, dentate, gray-tomentose underneath: fls. bisexual, white, to 2 in. across (sometimes double), in short open clusters: fr. long, to 1¼ in., red, acid. Cultigen; offshoot of *R. ursinus*.

louisiànus. Erect non-glandular blackberry with scattered prickles, canes becoming glabrous with age; distinguished by the very narrow lfts. (narrowly lanceolate and long-pointed), to 4 in. long, sharp-serrate: fls. white, in open leafy clusters: fr. cylindrical, white or nearly so. S. U. S.—Known in the pomological varieties Crystal White and Iceberg.

macrocárpus. Branches, infl. and petioles glandular and villous, with hooked prickles: lvs. simple, lobed or ternate; lfts. thick, ovate or broad-elliptic, serrate: fls. purple, large, somewhat panicled: fr. large, long. Mts., Ecuador.

macropétalus. Blackberry or dewberry, at first ascending, becoming procumbent or vine-like, plant not tomentose, canes slender and glaucous, with weak prickles: lfts. 3, green both sides, thin, most of them acuminate or pointed, very sharply toothed: fls. unisexual or imperfect, white, variable in size, in short clusters, pedicels and large calyx with stalked glands: fr. glabrous, black. N. Calif. to B. C.—Has given rise to pomological vars.; often confused with *R. ursinus*.

Millspaughii: *R. canadensis.*

mìrus. Decumbent or clambering, with stout prickles but no bristles or glands, the pedicel prickles also long and prominent: lfts. on new shoots ovate or elliptic, more than half as broad as long: fls. white, very large, commonly more than 1 in. across: fr. 1 in. or more long, black, of good quality. Cultigen.—The Marvel dewberry belongs here.

moluccànus. Robust, raspberry-like, tomentose and red-hairy, with curved prickles: lvs. simple, tomentose underneath, usually broad-ovate and deeply cordate, more or less 3–5-lobed: fls. white, in terminal clusters. India, Malaya.

negléctus: form of the native red raspberry, *R. idæus* var. *strigosus*, at one time interpreted as a hybrid.

nigrobáccus: *R. allegheniensis.*

nivàlis. Woody prickly vine to 3 ft. or more long: lvs. persistent, mostly simple, more or less 3-lobed, rounded, serrate: fls. red. Mts., Ida., Ore., B. C.—Grown for ground-cover.

nutkànus: *R. parviflorus.*

occidentàlis. Blackcap Raspberry. Blackcap. Thimbleberry. Erect, 3–5-ft., with glaucous prickly canes that bend over and root at the tip: lfts. mostly 3, ovate-acuminate, doubly dentate, white-tomentose underneath: fls. small, whitish, in dense short prickly clusters: fr. hemispherical, black and glaucous, firm, seldom varying to amber. N. B. to Ga., westward.—The source of many pomological varieties of black raspberry.

odoràtus (*Rubacer odoratum*). Flowering Raspberry. Unarmed, erect, with shredding bark, to 6 ft., forming colonies: lvs. simple, large, broad-ovate, cordate, 3–5-lobed, finely serrate, pubescent underneath: fls. to 2 in. across, rose-purple (varying to whitish), many in loose clusters: fr. red, flat, dry, not eaten. N. S. to Mich. and Ga.—Sometimes planted for ornament.

palmàtus. Mayberry. Diffuse and rather slender, to 7 ft., glabrous, with scattered prickles: lvs. simple, triangular-ovate to oblong-ovate, to 3½ in. long, deeply lobed toward base, sharply lobed-dentate, acuminate, somewhat pubescent on veins underneath: fls. white, to 1 in. across, solitary: fr. yellow. China, Japan.—Has been intro. for fr. in mild climates; sometimes planted for ornament and root-hardy N. with protection.

paniculàtus. Scandent, white-tomentose on branches and under side of lvs. which are simple but sometimes lightly lobed, cordate-ovate, to 6 in. long, acuminate, serrate: fls. medium size, in large panicles. Himalayas; useful S.

parviflòrus (*R. nutkanus*). Much like *R. odoratus*, but fls. fewer and white. Mich. to Mex. and Alaska. Var. **Fraseriànus** has laciniate-toothed petals.

párvus. Prostrate, diœcious, with creeping sts. to 18 in. long, glabrous: lvs. of a single lft. which is linear or linear-lanceolate, acute, dentate, 3 in. or less long: fls. solitary or paniculate, small, white: fr. ½–1 in. long. New Zeal.

pedàtus. More or less herbaceous very slender vine without prickles, to 3 ft. or more: lvs. of 5 small dentate-serrate lfts.: fls. solitary on slender pedicels, white. Mts., Ida., Ore. to Alaska.—Interesting ground-cover.

phœnicolàsius. Wineberry. Canes long, recurving and rooting at tip, with weak nearly straight prickles and covered with red-brown glandular hairs: lfts. usually 3, broadly cordate-ovate, dentate, purplish-veined and white-tomentose underneath: fls. small and whitish or pink, in close clusters, the large calyx bristly: fr. bright red, small, edible. China, Japan; escaped in U. S.—Ornamental.

pròbus. Queensland Raspberry. Erect or somewhat drooping at maturity, 6–8 ft., producing suckers, canes glabrous and with few short spines: lvs. pinnate, glabrous; lfts. 3–9, ovate-lanceolate and gradually acuminate, sharply double-serrate, terminal one to 4 in. long: fls. white, solitary or clustered, long-pedicelled, calyx not elongated: fr. red, depressed endwise. Known only as a cultigen, said to be a hybrid from Queensland, *R. rosæfolius* being one parent.—Prized for fr. in Puerto Rico and has been grown in Fla.

procèrus. Himalaya-Berry. Very vigorous and thorny, the woody per. canes 20–40 ft. long and trailing or clambering, young growths white-tomentose: lvs. thick, persistent, white-tomentose underneath; lfts. 3 or 5, broadly elliptic-ovate, sharply double-serrate: fls. white, in tomentose panicles: fr. a thimble-shaped blackberry, black, midsummer to autumn. Eu.; now run wild in many parts of U. S.

procúmbens: *R. flagellaris.*

pubéscens (*R. triflorus*). Soft little unarmed plant, the sts. herbaceous or somewhat woody: lfts. 3 or 5, rhombic-ovate, acute, serrate, thin and nearly or quite glabrous: fls. white, to ½ in. broad, 1–3 on the peduncle: fr. red-purple. Newf. to Alaska to N. J. and Neb., in swamps; sometimes colonized in moist places.

refléxus. Creeping or scandent, sts., petioles and under side of lvs. rusty-tomentose: lvs. simple, triangular-ovate in outline, 3–5-lobed, middle lobe long, dark green above, brown-tomentose and prominently veined underneath: fls. about ⅓ in. across, white, in close clusters: fr. globose, dark purple. Hongkong.—Sometimes grown under glass and in warm countries; offered as *R. reflexus pictus*.

robústus: *R. Fraseri;* another *R. robustus* is European and another Andean, probably neither in cult. here.

rosæfòlius (*R. Commersonii*). More or less trailing, canes 5–8 ft. long, pubescent at least on younger parts, with few recurved prickles: lvs. pinnate, thinly hairy, sharply double-serrate; lfts. 5 or 7, lanceolate, long-acuminate, broad at base: fls. white, solitary or in small clusters, long-pedicelled, calyx-lobes long-caudate: fr. globose to oblong-thimble-shaped, red, edible. E. Asia; extensively nat. in American tropics and the fr. collected; often planted. Var. **coronàrius,** see *R. coronarius.*

schmidelioìdes (*R. australis* var. *schmidelioides*). Scrambling or climbing, forming a dense diœcious bush with usually unarmed branchlets: lfts. 3 or 5, orbicular-ovate to ovate-lanceolate, mostly tomentose or pubescent underneath, petioles and midribs prickly: fls. whitish: fr. small, pale yellowish. New Zeal.; adapted to parts of Calif.

spectábilis. Salmonberry. Sts. per., upright, becoming long and prostrate, with few or weak spines, bark shredding, spreading by underground roots: lfts. 3, thin, ovate to oblong-ovate, acuminate, doubly dentate and somewhat lobed, nearly glabrous: fls. 1–4, rose-colored or purplish, about 1 in. across: fr. more or less conical, salmon-color, edible. Ida. and Calif. to Alaska.—Sometimes planted for ornament and hardy N.

stellàtus: see under *R. arcticus.*

strigòsus: *R. idæus* var.

thibetànus (*R. Veitchii*). Raspberry with pinnately compound lvs., sts. erect, with slender prickles: lfts. 7–13, elliptic or ovate, coarsely toothed, white underneath, the terminal lft. larger and lobed or pinnatifid: fls. rose-purple: fr. nearly globose, blue-black. W. China.—Sometimes planted for ornament. A very different plant has been grown as *R. Veitchii.*

titànus. Enormous grower, to 40 ft., the canes vine-like and bearing many stiff prickles as also on the petioles and midribs: lfts. 3 or 5, ovate-attenuate, only thinly pubescent underneath, jagged-toothed and sometimes somewhat lobed: fls. white, bisexual, in short leafy clusters: fr. oblong, to

2½ in. long, black, sweet. Pacific coast; the Mammoth blackberry, cult. in Calif. Var. **espinàtus,** without prickles, is represented in the Cory (Cory Thornless). Both are probably developments from *R. vitifolius.*

triflòrus: *R. pubescens.*

triviàlis. Southern Dewberry. Variable long trailer, very prickly and commonly bristly-glandular, partially evergreen: lfts. 3 or 5, stiffish and glabrous, narrow-oblong to lanceolate, pointed, sharp-serrate: fls. white varying to pinkish, solitary or few: fr. oblong, black. Va. to Fla. and Tex.—Several named pomological forms have been intro.

ulmifòlius. A name of doubtful application, in Eu., where native, a very thorny plant and probably not in cult. here, but known in the accepted var. **inérmis** (*R. inermis*), the Evergreen Thornless Blackberry: canes per., very long and clambering, destitute of prickles: lfts. 3 or 5, thick, gray-pubescent underneath, oval to elliptic-ovate, serrate, acute: fls. mostly pinkish, in long panicles: fr. nearly globose, black. Grown somewhat in mild climates, particularly Calif. often as Burbank Thornless.

ursìnus. Pacific Dewberry or Blackberry. Mostly strongly ascending at first but becoming decumbent or vine-like, plant dull green and foliage felted or tomentose at least when young and underneath; primocanes with hairs among the prickles: lvs. usually 3-foliolate unless those in the fl.-clusters: fls. often functionally imperfect, white, pedicels and calyx usually glandless. Ore. to Lower Calif. —See *R. loganobaccus.*

Veìtchii: *R. thibetanus.*

vèlox. Robust, glandless blackberry, canes arching or finally trailing to several ft., with hooked prickles: lfts. 3 or 5, ovate or elliptic-ovate, terminal one to 4 in. long, sharp-dentate, soft-pubescent underneath: fls. white, about 1 in. across, few in forking infl.: fr. 1 in. or more long, black, very early. Tex.—Sorsby, Hogo, Spalding, McDonald blackberries.

vitifòlius. Differs from *R. ursinus* in green color of herbage and thinner not tomentose foliage which may be only pubescent or even glabrous underneath: middle lvs. of flowering shoots mostly 3-lobed rather than 3-foliolate. W. Cent. Calif.—Parent of pomological vars. See *R. titanus.*

xanthocárpus. Small plant with ann. shoots to 1 ft. tall, lightly hairy, prickles few and weak: lvs. 3-foliolate, terminal lft. ovate-oblong, all obtuse and serrate: fls. 1 or 2 in upper axils: fr. large, ovoid, bright yellow, edible. W. China.—Once intro. for its fr.

RUDBÉCKIA. Coneflower. *Compositæ.* Coarse summer-flowering ann. and per. herbs of N. Amer. with simple or compound alternate lvs., and usually showy terminal heads of yellow ray-fls. and hemispheric to columnar disk greenish or yellowish to purplish-black; pappus a crown or teeth or none.

The coneflowers thrive in almost any soil and situation. Propagated by seeds, cuttings or divisions. They are useful for yellow border effects in summer and autumn; some of the annuals are adapted to the flower-garden.

amplexicaùlis (*Dracopis amplexicaulis*). Ann. to 2 ft., glabrous, somewhat glaucous: lvs. oblong or ovate, entire or slightly toothed: heads solitary, 2 in. across, rays yellow often with a brown-purple base, disk brownish, becoming 1 in. high. Mo. to Tex.

bícolor. Ann. to 2 ft., bristly: lvs. lanceolate or oblong, to 2 in. long, entire: rays to 1 in. long, wholly yellow or with lower part dark colored, disk black, ¾ in. high. Ark. and Tex. to Ga. Var. **supérba,** Erfurt C., has heads 2 in. across, rays yellow purplish-brown below.

califórnica. Per. to 5½ ft., pubescent: lvs. ovate or lanceolate, to 1 ft. or more long, entire or lower toothed or lobed: heads solitary, rays to 2 in. long, disk 1½ in. high. Calif., Ore.

columnàris: *Lepachys columnifera.*

flàva: *R. hirta.*

fúlgida. Per. to 2 ft., hairy: lvs. oblong to lanceolate, to 4 in. long, mostly entire: heads 1½ in. across, rays golden-yellow or with orange base, disk black-purple, ½ in. across. Pa. to Fla. and Tex. Var. **variábilis** is listed.

hírta (*R. flava*). Black-eyed Susan. Yellow Daisy. Bien. or sometimes ann., rough-hairy, to 3 ft.: lvs. oblong to lanceolate, to 5 in. long, mostly toothed: rays golden-yellow or sometimes deeper at base, to 2 in. long, disk purple-brown, ¾ in. across. Ont. to Fla. and Tex.

laciniàta. Per. to 12 ft.: lvs. pinnately divided into toothed or lobed segms.: heads 4 in. across, rays yellow, drooping, disk greenish-yellow. Que. to Fla. and Ariz. Var. **horténsia,** Golden-Glow, fls. double.

Mandaiàna: hort. name for a pure yellow form.

máxima. Per. to 9 ft., glabrous and glaucous: lvs. ovate, to 1 ft. long, nearly entire, clasping: rays yellow, to 2 in. long, drooping, disk brownish, to 2 in. long. Mo. to Tex.

móllis. Per. to 3½ ft., gray-hairy: lvs. elliptic-spatulate, to 2½ in. long, margins wavy or entire: heads to 3½ in. across. Coastal plain, E. Ga. to Fla.

montàna. Per. to 6 ft., glabrous: lvs. pinnately divided, the upper entire: heads of purplish-black disk-fls. to 2½ in. long. Mts., Colo.

moschàta: an old name of doubtful application, some of the material so listed being *R. laciniata.*

Nèwmanii: *R. speciosa.*

nítida. Per. to 4 ft.: lvs. ovate to lanceolate, to 6 in. long, entire or finely toothed: rays pure yellow, drooping, disk to 2 in. high. Ga. to Fla. and Tex.

occidentàlis. Per. to 4 ft.: lvs. ovate, to 6½ in. long, toothed: rays none; disk to 1¼ in. high. Wash. to Calif. and Nev.

pállida: *Echinacea pallida.*

purpùrea: *Echinacea purpurea.*

scariòsa: hort. name.

speciòsa (*R. Newmanii*). Per. to 3 ft.: lvs. lanceolate to ovate, to 6 in. long, toothed: rays yellow often orange at base, 1½ in. long, disk brown-purple, to ¾ in. high. Pa. to Mich. and Ark. Var. **grandiflòra** is an improved form.

spectábilis: listed name.

subtomentòsa. Sweet C. Per. to 6 ft., gray-pubescent, rough: lvs. toothed, ovate or 3-lobed, to 5 in. long: rays to 1½ in. long, yellow with sometimes dark base, disk dull brownish, ½ in. across. Ill. to Tex.

tríloba. Brown-eyed Susan. Bien. blooming the first year, to 5 ft.: lower lvs. 3-lobed or -parted, rough: rays to 1 in. long, deep yellow or with orange or brown-purple base, disk black-purple, ½ in. across. N. J. to Ga. and La.

RUE: *Ruta.* **-Anemone:** *Anemonella thalictroides.* **Meadow-:** *Thalictrum.*

RUÉLLIA. *Acanthaceæ.* Herbs and shrubs with opposite entire lvs. and funnelform or salver-form 5-lobed fls.; grown under glass and out-of-doors in the S. for the ornamental fls. Propagated by cuttings, seeds and division.

amœ̀na (*Stephanophysum longifolia*). To 2 ft.: lvs. ovate to oblong-lanceolate, to 5 in. long, toothed or wavy: fls. bright red, 1 in. long, gibbous at base, long-stalked, in clusters. S. Amer.—Frequent in cult.

ciliòsa. To 2½ ft.: lvs. oblong to ovate, to 3 in. long, ciliate: fls. blue, 2 in. long, sessile, solitary or in clusters. N. J. to Fla. and Tex.

Devosiàna. To 1½ ft.: lvs. oval, to 2 in. long, entire, purple beneath, veined with white above: fls. white marked with lilac, 1¾ in. long, solitary. Brazil.—Makes a good decumbent greenhouse plant; has been grown as a Pellionia.

floribúnda: plant cult. under this name is probably *R. amœna.*

formòsa. Subshrub: lvs. ovate, to 3 in. long: fls. scarlet, 1½ in. long, long-stalked. Brazil.

longifòlia: *R. amœna.*

macrántha. To 6 ft.: lvs. ovate-lanceolate, to 6 in. long: fls. rosy-purple, 3 in. or more long, solitary. Brazil.

Makoyàna. Similar to *R. Devosiana* but fls. bright carmine and larger. Brazil.

malacospérma. To 3 ft.: lvs. lanceolate, to 6 in. long: fls. blue-purple, 1½ in. long. Cult. in Mex. and Cent. Amer.—Has been confused with *Strobilanthes isophyllus.*

nudiflòra. To 1 ft. or more: lvs. oval, to 2 in. long: fls. violet, 1¾ in. long. S. U. S., Mex.

occidentàlis: a listed name.

pedunculàta. To 2 ft. or more: lvs. ovate-oblong, to 3 in. long: fls. lilac or bluish, on slender peduncles with 2 leaf-like bracts at summit. Mo. and south.

Portéllæ. To 1 ft., velvety-pubescent: lvs. elliptic-ovate, to 3 in. long, acute, deep green above with primary veins nearly white, reddish-purple beneath: fls. rose-pink, to 1¾ in. long and 1 in. across, lobes bifid, tube slender. Brazil.

strèpens. To 4 ft.: lvs. oblong or ovate, to 6 in. long, entire: fls. blue, to 2 in. long, sessile, solitary or clustered in axils. Pa. to Fla. and Tex.

tuberòsa. To 2 ft., roots tuberous-thickened: lvs. ovate-oblong to elliptic, to 3 in. long, base narrowly wedge-shaped, margins undulate: fls. blue or white, to 1½ in. long, in open axillary cymes forming a terminal panicle-like infl. Tex. to S. Amer.

RUFACER: *Acer rubrum.*

RULAC: *Acer Negundo.*

RÙMEX. Dock. Sorrel. *Polygonaceæ.* Herbs, many of them weeds but a few grown for greens, with basal or st.-lvs. and small green bisexual or unisexual fls. borne in panicles. Of easy cult. in any garden soil. Propagated by seeds which yield plants for cutting in one or two years. The old kitchen-garden species are *R. Acetosa, R. Patientia, R. scutatus; R. abyssinicus* has now been introduced for similar use.

abyssínicus. Spinach-Rhubarb. Per. to 9 ft.: lvs. broadly ovate to arrow-shaped or lanceolate, to 7 in. long, entire or somewhat 3-lobed: fls. unisexual. Abyssinia.—The lvs. are eaten as spinach and the stalks as rhubarb.

Acetòsa. Garden S. Per. to 3 ft.: lvs. oblong or oblong-oval, to 5 in. long, arrow-shaped at base: fls. unisexual. Eu., Asia; nat. in N. Amer.—One of the principal cult. forms is Large Belleville.

alpìnus. Per. to 3½ ft.: lower lvs. ovate-cordate, very large: panicles showy. Mts. of Eu.

aquáticus. Per. to 6 ft.: lower lvs. ovate-cordate: fls. bisexual. Ponds, Eu., N. Asia.

conglomeràtus. Per. to 3 ft.: lvs. ovate to lanceolate, to 5 in. long: fls. bisexual, in leafy racemes. Eu.; nat. in N. Amer.

flexuòsus. Per. to 18 in., sts. slender and flexuous, usually grooved: lvs. linear to oblong, to 12 in. long, base variable from cuneate to cordate: fls. bisexual or unisexual, margins of inner perianth-segms. with long curved spines. New Zeal.

Hydrolapáthum. Great Water-Dock. Per. to 6 ft.: lvs. oblong-lanceolate, to 2 ft. long, wavy-margined: fls. bisexual, in very large panicles. Eu.—Planted along ponds and streams.

hymenosépalus. Canaigre. Per. to 3 ft.: lvs. oblong to oblong-lanceolate, to 1 ft. long: fls. bisexual, the panicles to 1 ft. long. Okla. to Calif.—Tannin is produced from the tubers.

obtusifòlius. Bitter D. Per. to 4 ft.: lvs. oblong-lanceolate, to 14 in. long, rounded or cordate at base: fls. bisexual. Eu.; nat. in N. Amer.

occidentàlis. Per. to 3 ft.: lvs. lanceolate or ovate-lanceolate, to 1 ft. long: fls. bisexual. N. Amer.

Patiéntia. Spinach-Dock. Herb-Patience. Per. to 6 ft.: lvs. elliptic-ovate to lanceolate, to 1 ft. long: fls. bisexual, the panicles to 2 ft. long. Eu.; nat. in N. Amer.

púlcher. Per. to 3 ft.: lvs. oblong or fiddle-shaped, cordate, to 6 in. long: fls. bisexual. Eu.; nat. in N. Amer.

ròseus (*R. vesicarius* var. *roseus*). Ann. to 2 ft.: lvs. triangular-ovate, small: fls. unisexual, in short racemes, the valves veined with rose. Egypt to Persia.

scutàtus. French S. Low per., the sts. prostrate or ascending: lvs. cordate-ovate, those on the st. arrow- or fiddle-shaped: fls. unisexual. Eu., Asia.

venòsus. Per. to 1½ ft.: lvs. ovate to oblong, to 5 in. long: calyx red, in fr. with large wings to 1½ in. across. Sask. to Wash. and Nev.

RUNNER: a slender trailing shoot taking root at the nodes.

RUPTURE-WORT: *Herniaria.*

RÙSCHIA. *Aizoaceæ.* A segregate from Mesembryanthemum: S. African succulents with 3-angled lvs. usually with dark transparent dots: fls. rose, violet or white.

acuminàta. Branches ascending or decumbent, to 8 in. long: lvs. to 1 in. long and ¼ in. wide and thick, acute or acuminate: fls. white or pinkish, the petals filamentous.

Axthelmiàna (*M. Axthelmianum*). To 2 ft., much branched: lvs. about 1 in. long and ⅛ in. wide and thick, blue-green: fls. solitary, violet, ¾ in. across.

crássa (*M. crassum*). Plant robust, white-pubescent: lvs. ¾ in. long, glaucous: fls. 1–2, white, 1 in. across.

cymòsa (*M. cymosum*). To 1½ ft., with stiff branches: lvs. ascending, to 2 in. long and ⅕ in. wide and thick, glaucous: fls. in cymes, purple-rose, to ¾ in. across.

díchroa (*M. dichroum*). To 3½ ft.: lvs. 4–6, spreading, linear-oblong, to 2¼ in. long and ¼ in. wide, glaucous: fls. white with rose tips, 1¾ in. across, nearly sessile. Var. **álba** has snow-white fls. 2 in. across.

filamentòsa (*M. filamentosum*). Sts. prostrate, branched: lvs. to 2 in. long and ½ in. wide: fls. solitary, red, 2 in. across, the pedicels with 2 united bracts.

gibbòsa. To 1¼ in., branches erect or ascending: lvs. to ½ in. long and ⅛ in. wide and thick, glaucous: fls. solitary, rose, ¾ in. across.

hamàta (*M. hamatum*). Sts. thick, with stiff spreading branches: lvs. to ⅓ in. long and 1/12 in. wide: fls. solitary, purple or rose-purple, ½ in. across.

hexamèra (*M. hexamerum*). Sts. to 4 in. long: lvs. to 1 in. long and ½ in. wide and thick, keeled on back, velvety-papillose, glaucous: fls. solitary, white or pink. Var. **longipétala** has pink petals ½ in. long.

impréssa. To 2½ in., branches spreading: lvs. about ⅙ in. long and thick, with conspicuous impressed lines: fls. rose, ½ in. across.

karroòica (*M. karrooicum*). To 1 ft.: lvs. ascending, to 1 in. long and ⅓ in. thick, glaucous: fls. solitary, rose-purple, 2 in. across.

multiflòra (*M. multiflorum*). Erect, to 3 ft., with straight branches: lvs. separated, long-linear, glaucous-green, to 3 in. long: fls. white, 1 in. across.

muricàta. Branches decumbent, to 1 ft. long, toothed, rough, glaucous, suffused with rose: fls. solitary, pale rose, ½ in. across.

piscodòra (*M. piscodorum*). To 10 in., with slight fishy odor: lvs. to ¾ in. long and ⅕ in. wide and thick, glaucous: fls. solitary, rose, 1 in. across.

propínqua (*M. propinquum*). To 1 in.: lvs. ¼ in. long, ⅛ in. wide and 1/12 in. thick, margins and keels ciliate, glaucous: fls. pale rose, ⅓ in. across.

pygmæ̀a (*M. pygmæum*). To 3 in., tufted: lvs. united at base, to ⅓ in. long and ⅛ in. thick, inclosed in sheath, very small second pair of lvs. developing between first pair.

rígida (*M. rigidum*). Branches very stiff, erect, 1 ft. and more: lvs. less than ½ in. long: fls. white, petals about ¼ in. long.

sabulícola. To 1 ft., much branched: lvs. 1½ in. long, with 1 or 2 teeth, blue-green: fls. solitary, white, petals ¼ in. long.

serrulàta (*M. serrulatum*). Branches ascending: lvs. somewhat scimitar-shaped, thick, serrulate, more or less glaucous, to 1½ in. long: fls. purplish, the 2-toothed petals a little exceeding the calyx-lobes.

sólida (*M. solidum*). Sts. short, with decumbent stiff branches to 10 in. long: lvs. ascending, to 1 in. long and ¼ in. wide, glaucous: fls. 2 or 3, rose-purple, to ¾ in. across.

Steingroèveri (*M. Steingroeveri*). Lvs. to ½ in. long: fls. solitary, ½ in. across.

tumídula (*M. tumidulum*). To 2 ft., much branched: lvs. to 1 in. long and ⅙ in. wide: fls. in panicles, rose veined with darker, 1 in. across.

uncinàta (*M. uncinatum*). Sts. prostrate: lvs. to ⅓ in. long, with few teeth on keel, gray-green with darker dots: fls. solitary, rose, ¾ in. across.

uncinélla (*M. uncinellum*). Similar to *R. uncinata* but with lvs. ½ in. long with teeth on edges near tip: fls. rose, ½ in. across.

vaginàta (*M. vaginatum*). To 3 ft., much branched: lvs. 1 in. or more long, united about half way: fls. in many-fld. cymes, white, 1 in. across.

RÚSCUS. *Liliaceæ.* Shrubs with minute bract-like lvs., the apparent lvs. being leaf-like branchlets or cladodes, small greenish unisexual fls. attached on the midrib of the cladodes, solitary or clustered, and berry-like frs.; grown out-of-doors in S. U. S. and the dried artificially colored sprays of *R. aculeatus* frequently used in florists' decorations.

aculeàtus. Butchers Broom. To 3 ft., evergreen: lvs. or cladodes to 1½ in. long and 1 in. wide, spiny-pointed: berries red or yellow, to ½ in. across. Eu.

Hypoglóssum. To 1½ ft.: lvs. to 4 in. long and 1½ in. wide: berries red, ⅖ in. across. S. Eu.

Hypophýllum. To 1 ft.: lvs. to 3 in. long and 1½ in. wide: berries red, ⅓ in. across. Canary Isls. to Caucasus.

racemòsus: *Danaë racemosa.*

RUSH: *Juncus.* **Flowering-:** *Butomus umbellatus.* **Wood:** *Luzula.*

RUSSÈLIA. Coral-Blow. *Scrophulariaceæ.* Shrubs in trop. Amer. with opposite or whorled lvs. often reduced to scales on the branches and red 2-lipped tubular fls.

Russelias are often grown in greenhouses and in the open far South, also good as basket-plants as the bloom is nearly continuous. Of easy culture. Propagated by cuttings.

elegantíssima. Supposed hybrid between *R. equisetiformis* and *R. sarmentosa.*

equisetifórmis (*R. juncea. R. scoparia*). Coral-Plant.

Fountain-Plant. To 4 ft., much branched, branches rush-like, nodding or drooping, sts. sharply 4-angled: lvs. mostly reduced to bracts on the branches, but lanceolate to ovate and dentate when produced: fls. in 1–3-fld. clusters. Mex.; nat. in Fla. and W. Indies.

júncea: *R. equisetiformis.*

Lemòinei. Reputed hybrid between *R. equisetiformis* and *R. sarmentosa.*

multiflòra: *R. sarmentosa.*

sarmentòsa (*R. multiflora*). Similar to *R. equisetiformis* but with ovate toothed lvs. to 2 in. long, never reduced to scales, and fls. in many-fld. clusters. Mex.

scopària: *R. equisetiformis.*

RÙTA. Rue. *Rutaceæ.* Very aromatic or pungent per. herbs and subshrubs from the Medit. region eastward, with alternate simple or compound lvs., small yellow or greenish fls. in terminal clusters, perfect with 4–6 petals, 8–10 stamens and ovary sessile, and capsular fr.; grown for the medicinal properties and for general interest in herb gardens; hardy. Propagated by division and seeds.

albiflòra: *Boenninghausenia albiflora.*

chalapénsis. Differs from *R. graveolens* in the fringed petals and the carpels of the fr. pointed. Medit. region.

gravèolens (*R. officinalis*). Common R. Evergreen subshrub to 3 ft.: lvs. 2–3-pinnate: fls. yellowish, about ½ in. across: carpels of fr. obtuse. S. Eu.—An old inhabitant of herb gardens: lvs. sometimes variegated.

officinàlis: *R. graveolens.*

patavìna. Herb to 6 in.: lvs. simple, the lower ones oblong-spatulate, the upper lvs. 3-parted: fls. golden-yellow. S. Eu.—The plant grown under this name is sometimes *R. graveolens.*

RUTABAGA (*Brassica Napobrassica*). A hardier plant than the turnip (which see) and requiring a longer season of growth. The edible root has a long leafy neck, and the foliage is glaucous blue-green, smooth, very different from that of the turnip. Roots left in the ground may survive the winter and go to seed the following year, becoming more or less spontaneous.

Seeds of rutabagas are sown in the northern parts of the country in June or very early July, usually in drills about 18 inches apart; 1 to 2 pounds of seed are required to the acre. Bagas are not grown as an early summer vegetable.

RUTÀCEÆ. Rue Family. Trees and shrubs of more than 100 genera widely distributed in warm regions, with simple or compound lvs. (sometimes reduced to a single lft.), bisexual, polygamous or diœcious fls. with 3–5 sepals and petals, the same or twice the number of stamens, and fr. of various forms, often pulpy and edible. The family is commonly known in cult. by the citrus fruits; most of the genera yield essential oils and many have medicinal properties. The genera here treated are Acronychia, Ægle, Æglopsis, Agathosma, Atalantia, Balsamocitrus, Barosma, Boenninghausenia, Boronia, Calodendrum, Casimiroa, Chalcas or Murræa, Choisya, Citropsis, Citrus, Clausena, Cneoridium, Coleonema, Correa, Dictamnus, Diosma, Eremocitrus, Eriostemon, Evodia, Feronia, Feroniella, Fortunella, Glycosmis, Hesperethusa, Lavanga, Melicope, Microcitrus, Murræa, Orixa, Paramignya, Phebalium, Phellodendron, Poncirus, Ptelea, Ruta, Severinia, Skimmia, Swinglea, Thamnosoma, Triphasia, Vepris, Zanthoxylum.

RUTLAND BEAUTY: *Convolvulus sepium.*

RYDBERGIA: *Actinea grandiflora.*

RYE: *Secale cereale.* **Wild:** *Elymus.*

S

SABAL (*Inodes*). Palmetto. *Palmaceæ*. More than 25 species of stout spineless fan-lvd. palms native in the western hemisphere, many of them planted but the original habitat of some of them yet unknown. Some of the tallest species reach 60 ft. and more in height but in others, as *S. minor* and *S. Etonia*, the trunk usually does not rise much above the ground. Nativity of the genus is from the seacoast of N. C. through Mex. and Cent. Amer. and also the W. Indies to N. S. Amer. *S. Palmetto* is an abundant native tree in Fla. Fls. very small in long branching spadices that may droop when in fr., hermaphrodite, greenish; sepals and petals each 3; stamens 6: fr. a small globose or pyriform dark drupe with thin flesh, mostly 1-seeded. The genus divides itself into two sections on the conformation of the lf.: Sabal proper in which the petiole ends at the blade; Inodes, in which the petiole extends through the blade like a midrib and the lf. has a characteristic downward twist. The undivided part of the blade is the *palman*.

Palmettoes are simple in cultural requirements, thriving both in nature and in gardens in both moist and fairly dry lands. Fresh seeds germinate readily and in the following year the progeny may be transplanted. Whether the leaves on mature trees shed from the boles when a year or two old or hang dead and prone depends on vigor of tree, protection from wind and perhaps to some extent on the nature of the particular plant. The petioles usually break midway and the old bases or boots may persist for years; when the grounds are extensive enough to afford distance these trunk coverings may be highly attractive.

acaùlis: *S. minor.*

Adansònii: *S. minor.*

Beccariàna. Tall tree long retaining its boots: lvs. at maturity with many long hanging segms., palman occupying about ⅓ length of blade, both surfaces green: fr. short-pyriform, about ½ in. crosswise diam., grayish-black. Nativity unknown.—One of the palms passing as *S. princeps*.

bermudàna. Bermuda Palmetto. Stout tree to 30 or 40 ft., trunk likely to be inclined or crooked, soon becoming bare in exposed places: lf.-blade 6–9 ft. across, green on both surfaces, palman about 1 ft. long, filaments few or none: spadix much branched, usually shorter than lvs.; fls. sessile: fr. pyriform with narrow base, about ¾ in. across. Endemic in Bermuda.—Formerly called *S. Blackburniana*.

Blackbúrnia (*S. Blackburniana*). Palm of unknown origin and perhaps not grown in our territory, distinguished by spadix shorter than petiole and fr. ¾ in. across and much less than that endwise, not tapering to base. See *S. bermudana*.

causiàrum. Puerto Rican Hat Palm. Stout tree to 40 or 50 ft. but usually lower, trunk commonly soon becoming nude: lf.-blade about 2 in. across, palman about ⅓ its length, green on both surfaces but on some trees glaucous, filaments many: spadix usually exceeding lvs.; fls. slightly fragrant, white: fr. nearly or quite globose but with a very short tapering base, about ½ in. across. Puerto Rico.

Deeringiàna: *S. louisiana.*

Etònia. Apparently acaulescent, the caudex crooked or S-shaped and commonly not rising above ground: lvs. with continuing midrib, standing upright and rather stiff, deep green, very filiferous, the blade 3 ft. long; segms. about 40, extending to more than half depth of blade, deeply divided into long narrow points: fr. about ½ in. diam., black or nearly so, globose. Dry lands, peninsular Fla.

exúl. Victoria P. Large hardy tree with vivid green foliage, the lf.-bases on the trunk also green: main lf.-segms. about 2 in. broad and 3 ft. long: terminal branchlets of the spadix thickened: fr. solitary from each fl., nearly globular, about ¾ in. diam. Planted in Victoria, Tex., and elsewhere in that region; probably Mexican.

Ghiesbréchtii: old hort. name, not identified.

glàbra: *S. minor.*

glaucéscens: name in lists.

havanénsis: confused name; perhaps sometimes *S. minor*.

Jamesiàna: *S. Palmetto.*

longipedunculàta: listed name.

louisiàna (*S. Deeringiana*). Low tree, to 15 ft., of which the trunk may comprise ½ the height: lf.-blade green, to 6 ft. across but usually collapsed at apex of petiole when full grown inasmuch as petiole is not continuous: fr. depressed-globose, ½ in. or less across. Lowlands, S. La.

mauritiæfórmis: confused name, probably not to be employed for plants in the trade in U. S.

mìnor (*S. acaulis. S. Adansonii. S. glabra. S. pumila*). Dwarf P. Stemless palm, the caudex not rising above ground: lvs. glaucous or pale green, not filiferous, firm to stiff, middle segms. extending about half depth of blade and others much farther: spadix equalling or exceeding the lvs., with many short branches: fr. globose, about ⅓ in. diam. Ga. to Fla. and Tex., luxuriant when growing in swamps.

Palmétto (*S. Jamesiana*). Cabbage P. Tree to 50 or even 90 ft., trunk with remains of lf.-bases or becoming bare, bearing a relatively small globular rather dense head of green foliage: lvs. 5–8 ft. long and often broader, conspicuously filamentose, middle segms. extending more than half way to the continuing midrib and others still deeper, the points very long and narrow and decurved or hanging: spadix long and much branched, usually exceeding the lvs. in old trees: fr. nearly globose, black, ⅓–½ in. diam., 1-seeded. N. C. to Fla., near the coast except in Fla.

prínceps: old hort. name of no definite application unless to *S. Beccariana*.

pùmila: *S. minor.*

texàna. Texas P. To 50 ft., the trunk eventually shedding most of the lf.-bases, the crown globular in old trees: lvs. yellowish-green, 5–6 ft. long and as broad or broader, moderately filamentose, cut half or more to the continuing midrib into very long-pointed segms.: spadix much branched, equalling or exceeding the lvs.: fr. larger than in *S. Palmetto*, globular to nearly reniform and in the latter case perhaps ¾ in. across, sometimes 2- or 3-seeded. Tex. in the lower Rio Grande valley and in Mex.

umbraculífera. Stout and tall, to 50 or 60 ft. and more, soon becoming bare in exposed situations: lvs. very large, green., filaments not conspicuous: spadix shorter than lvs. and often hidden among them: fr. oblate-globular, ½ in. or more across, shiny. Hispaniola.—Probably the heaviest of the palmettoes.

uresàna. To 30 ft. or more: lvs. glabrous and very glaucous, somewhat waxy, 3 ft. or more long, with many segms., filaments many: fr. flattened-globose, ¾ in. diam., edible. Sonora, Mex.

SABÀTIA. *Gentianaceæ*. American ann. or bien. erect herbs with forking sts., usually opposite sessile lvs. and rose or white rotate large fls. terminating the branches; something like Centaurium.

angulàris. To 3 ft., branches opposite: lvs. ovate or oblong, to 1½ in. long: fls. rose-pink with greenish eye, to 1½ in. across, usually solitary at ends of branches. N. Y. to Fla. and La.

campéstris. To 15 in., sts. 4-angled, branches alternate: lvs. ovate-oblong, to 1 in. long: fls. lilac, 1 in. long, solitary, calyx as long as corolla. Mo., Kans. to Tex.

paniculàta. To 2½ ft., branches opposite: lvs. linear-oblong to lanceolate, to 1½ in. long, obtuse: fls. white, to ¾ in. across. Va. to Fla.

stellàris. To 2 ft., branches alternate: lvs. lanceolate-oblong to linear, to 2 in. long: fls. pink, rarely white, with yellow eye bordered with red, to 1½ in. across, solitary at ends of branches. Coast, Mass. to Fla.

SABIÀCEÆ. Sabia Family. Four genera of trees, shrubs or vines in trop. and warm-temp. Asia and Amer., with alternate simple or pinnate lvs., not showy bisexual or polygamous fls. having mostly 5 sepals, petals and stamens, superior 2-celled ovary, and indehiscent fr. Meliosma is sometimes planted for ornament outside botanic gardens.

SABINA: *Juniperus.*

SABÍNEA. *Leguminosæ*. W. Indian shrubs or small trees having deciduous even-pinnate lvs. of 6–15 pairs of lfts., large axillary papilionaceous fls. with diadelphous stamens, and fr. a compressed 2–valved legume. Grown in S. Fla. Propagated by seeds.

carinàlis. Small tree: lfts. 6–8 pairs, oblong, to ¾ in. long, glabrescent, apex rounded, truncate or emarginate, mucronate: fls. scarlet to deep crimson, to 1½ in. long, 3–5 in axillary fascicles: pods linear, long-stipitate, flatly compressed. Dominica.

SABULINA: *Arenaria.*

SACALINE: *Polygonum sachalinense.*

SACCHARODENDRON: *Acer.*

SÁCCHARUM. *Gramineæ.* Very tall stout per. grasses with broad lvs. and spikelets in large terminal fluffy silky panicles; native in tropics of Old World and one widely cult. for cane-sugar. See *Grasses.*

ciliàre. To 12 ft.: lvs. to 3 ft. and ½ in. broad: panicles to 1½ ft. long, linear-oblong, dense. S. W. Asia.

officinàrum. Sugar-Cane. To 15 ft., with solid canes: lvs. to 3 ft. long and 2 in. wide, with broad midrib and rough edges: panicles or "arrows" to 2 ft. long, plume-like with open and drooping branches, the spikelets with tufts of white hairs. Probably a cultigen.—Does not bloom regularly in the continental U. S. Propagated by pieces of the st., but seeds are sometimes produced in tropics with which breeding experiments are conducted.

SACCOLÀBIUM. *Orchidaceæ.* A small Old World genus of epiphytic orchids from Malaya, Philippines and Oceania, allied to Sarcochilus, none known to be in cult. and names in the trade are referred elsewhere as follows:

ampullàceum: *Ascocentrum ampullaceum.*

bellìnum: *Gastrochilus bellinus.*

Blùmei: *Rhynchostylis retusa.*

gigantèum: *Anota densiflora.*

miniàtum: *Ascocentrum miniatum.*

præmórsum: *Rhynchostylis retusa.*

trichòmum: uncertain name botanically.

violàceum: *Anota violacea.*

Wrìghtii: listed name.

SADLÈRIA. *Polypodiaceæ.* Low tree-ferns of Hawaii with tufted 2-pinnate fronds and linear sori in rows each side of rachis. Sometimes grown under glass. See *Ferns.*

cyatheoìdes. Trunk 5 ft. or more high: fronds leathery, dark green, to 3 ft. long, on stalks to 2 ft. long, segms. linear, to ½ in. long, with revolute margins.

SAFFLOWER: *Carthamus tinctorius.*

SAFFRON, FALSE: *Carthamus tinctorius.*

SAGE: *Salvia.* **Bethlehem-:** *Pulmonaria saccharata.* **-Brush:** *Artemisia tridentata* and *arbuscula.* **Jerusalem-:** *Phlomis fruticosa.*

SAGERÈTIA. *Rhamnaceæ.* Woody plants of Asia and warmer parts of N. Amer., with opposite lvs., small whitish bisexual fls. in clusters or spikes, and fr. a berry-like drupe; one species sometimes planted in S. U. S. Propagated by seeds and cuttings.

Michaùxii: *S. minutiflora.*

minutiflòra (*S. Michauxii*). Trailing or straggling, spiny: lvs. ovate, to 2 in. long, finely toothed, leathery, shining above: fls. in slender spikes to 1½ in. long: fr. purple, ⅛ in. across. N. C. to Fla. and Ala.

SAGÌNA. Pearlwort. *Caryophyllaceæ.* Little ann. and per. tufted herbs, sometimes used for edgings or in the rock-garden, having awl-shaped lvs. and very small fls.; natives of temp. and colder regions. Propagated mostly by division.

alpìna. A prostrate per. perhaps not distinct from *S. saginoides.*

glàbra. Creeping per., often rooting at nodes, sts. to 4 in. long: lvs. linear: fls. white. July–Aug. S. Alps. Var. **aùrea,** lvs. variegated yellow.

Linnæ̀i: *S. saginoides.*

pilífera: *S. subulata.*

procúmbens. Matted and spreading, to 3 in. high: lvs. linear, to ¼ in. long: fls. white, solitary, star-like. May–Aug. Asia; nat. in N. and S. Amer.

saginoìdes (*S. Linnæi*). Tufted per. to 4 in. high: lvs. linear or filiform, about ⅓ in. long: fls. white. Alpine and arctic Eu., Asia, N. Amer.

subulàta (*S. pilifera. Spergula pilifera*). Hardy per., evergreen, densely tufted, covering the ground like a sheet of moss: lvs. very small, stiff: fls. white, on long slender sts., covering the plant. July–Sept. Corsica. Var. **aùrea,** lvs. marked with yellow.

SAGITTÀRIA. Arrowhead. *Alismaceæ.* Bog and aquatic per. herbs with tuberous or knotted rootstocks, arrow-shaped, lanceolate or ovate lvs. and fls. unisexual, both kinds usually on the same plant, in whorls of 3 in racemes or panicles and having 3 white deciduous petals; native in temp. and trop. regions in many parts of the world. Arrowheads are grown in ponds and aquaria. Propagated by division, seeds, and underground tubers when produced.

Engelmanniàna. To 1½ ft.: lvs. to 8 in. long and ⅓ in. wide, basal lobes ⅓ or more length of blade: fls. to 1 in. across. Mass., to Del.

gigantèa: possibly a hort. form of *S. sagittifolia* or *S. graminea.*

gramínea. To 2 ft.: lvs. linear to elliptic: fls. to ½ in. across. Newf. to S. D. and Tex.—The plants in the trade as *S. sinensis* and *sinensis gigantea* apparently belong here.

guyanénsis: *Lophotocarpus guyanensis.*

japónica: *S. sagittifolia* var. *flore-pleno.*

lancifòlia. To 6 ft.: lvs. lanceolate to elliptic: fls. to 2 in. across. Del. south to Fla. and Mex., trop. Amer.

latifòlia (*S. variabilis*). To 4 ft.: lvs. variable, from linear-lanceolate to broad arrow-shaped with lobes half as long as blades: fls. to 1½ in. across. N. Amer.

montevidénsis. Giant A. To 6 ft.: lvs. arrow-shaped, with lobes as long as blade: fls. 2 in. and more across, with brownish-purple spot at base of petals. S. Amer.; nat. in S. U. S.

nàtans. Floating or sometimes erect to 1 ft.: lvs. linear to oblong-ovate. N. Eu., Siberia.—It is not certain that plants cult. under this name belong here.

papillòsa. To 1½ ft.: lvs. linear to linear-lanceolate, to 6 in. long, leathery: infl. usually simple. Tex., La.

sagittifòlia. Old-World A. To 4 ft.: lvs. variable, linear or arrow-shaped with lobes longer or shorter than blade: fls. about 1 in. across, spotted with purple at base of petals. Eu., Asia.—Produces underground tubers which are eaten in the Orient. Var. **flòre-plèno** (*S. japonica*) has double fls.

sinénsis: *S. graminea.*

subulàta. To 6 in.: lvs. stiff, linear or narrow-oblanceolate, to 1½ in. long: fls. few, to ¾ in. across. N. Y. to Fla. and Ala.

variábilis: *S. latifolia.*

SAGITTATE: like an arrowhead in form; triangular with the basal lobes pointing downward: see *hastate.*

SAHUARO: *Carnegiea gigantea.*

SAINFOIN: *Onobrychis viciæfolia.*

ST. ANDREWS-CROSS: *Ascyrum hypericoides.* **Johns-Bread:** *Ceratonia Siliqua.* **Johnswort:** *Hypericum.* **Peters-wort:** *Ascyrum stans.* **Thomas-Tree:** *Bauhinia tomentosa.*

SAINTFOIN: *Onobrychis viciæfolia.*

SAINTPAÙLIA. *Gesneriaceæ.* Small and condensed trop. African hairy perennials with basal long-stalked lvs., 2-lipped violet fls. in few-fld. cymes, the corolla-tube short, and capsular frs.; grown under glass and sometimes in window-boxes in warm countries. Propagated by seeds and by leaf-cuttings inserted in sand.

ionántha. African- and Usambara-Violet. Lvs. round or oblong-ovate, to 1½ in. long, toothed: fls. violet, to 1 in. across, with linear calyx-lobes: caps. narrow-oblong. Var. **cordàta** is listed with darker heart-shaped lvs. and darker fls. Var. **grandiflòra** has larger deep violet fls. Var. **variegàta** has lvs. variegated with yellow and white.

kewénsis. Similar to *S. ionantha* but with entire white-hairy lvs., oblong-linear calyx-lobes and much broader hairier caps.

SALAL: *Gaultheria Shallon.*

SALICÀCEÆ. Willow Family. Two genera of diœcious trees and shrubs mostly native in temp. regions of the northern hemisphere, having alternate simple lvs., the unisexual fls. without perianth borne in more or less silky-hairy catkins, 1 or many stamens, 1-celled ovary, and small capsular frs. Populus and Salix are planted for ornament and service. The systematology of the species is mostly difficult, and hybrids are many.

SALICÓRNIA. Glasswort. *Chenopodiaceæ.* Erect fleshy herbs native in salt marshes of Eu., Asia and N. Amer., of little hort. interest but sometimes listed: lvs. reduced to scales at the nodes and bearing the fls. in their axils, the stamens exserted.

europæ̀a (*S. herbacea*). Ann. to 2 ft., turning bright red in autumn: spikes to 3 in. long in fr. Eu., Asia, N. Amer.

herbàcea: *S. europæa.*

SALISBURIA ADIANTIFOLIA: *Ginkgo biloba.*

SÀLIX. Willow. Osier. *Salicaceæ.* Shrubs and trees, or alpine species nearly herbaceous, diœcious, with mostly lanceolate lvs. and little fls. borne in dense catkins before or after the lvs.; grown for ornament, screens, shelter, holding of banks, and some of the species for the twigs from which baskets are made; mostly moist land plants.

Willows are well adapted to moist situations and along stream banks, but most of them succeed also in almost any soil. A few species are dry-soil plants. They grow rapidly. Propagated by ripe-wood cuttings taken in the fall and planted at once or kept in the cellar until spring: also by seeds sown in pans on moss as soon as the capsules are ripe. Weeping or special varieties may be top-grafted on upright stock. They are soft-wooded plants.

acuminàta: *S. dasyclados.*

acutifòlia. Similar to *S. daphnoides* but smaller, with narrower lvs. and slenderer catkins. Russia to E. Asia.

aglàia: *S. daphnoides.*

álba. White W. To 75 ft.: lvs. lanceolate, to 4 in. long, finely toothed, with white silky hairs beneath: catkins with the lvs. Eu., Asia, N. Afr.; escaped in N. Amer. Var. **cálva** (*S. cærulea*) has more upright branches. Var. **chermesìna** (*S. vitellina* var. *britzensis*), branchlets bright red. Var. **serícea** (var. *regalis*), lvs. densely silky beneath. Var. **trístis** (var. *vitellina pendula*), branches bright yellow and drooping. Var. **vitellìna** (*S. vitellina*), branchlets yellow, lvs. glaucous beneath.

ambígua. Puzzle W. Hybrid between *S. aurita* and *S. repens*, low shrub with rather small silky-tomentose lvs.

americàna péndula: *S. purpurea* var.

amygdálina (*S. triandra*). Almond-leaved W. To 30 ft.: lvs. lanceolate or ovate-lanceolate, to 4 in. long, finely toothed, glossy dark green above, paler below: catkins with the lvs. Eu., Asia. Var. **glaucophýlla** (var. *discolor*) has lvs. grayish or whitish beneath.

amygdaloìdes. Peach-leaved W. Differs from *S. amygdalina* chiefly in the slender glandless petioles and cuspidate-acuminate lvs. N. Amer.

annulàris: *S. babylonica* var. *crispa.*

aurántha: listed name.

aùrea: hort. name for forms with yellow branchlets.

aurìta. Shrub to 6 ft.: lvs. obovate or oblanceolate, to 3 in. long, obscurely toothed, gray-tomentose beneath but becoming glabrous: catkins before or with the lvs. Eu., W. Asia.

babylónica. Weeping W. To 30 ft., with long drooping branches: lvs. narrow-lanceolate, to 6 in. long, finely toothed, grayish-green beneath: catkins with the lvs. China. Var. **aùrea,** branches golden-yellow. Var. **críspa** (*S. annularis*) has curled ring-like lvs. Var. **péndula** is synonymous with type. Var. **rámulis-aùreis,** branches yellowish, perhaps not distinct from var. *aurea.* Var. **Salamònii** is *S. sepulcralis.*

báltica: listed name.

blánda (*S. pendula. S. Petzoldii* var. *pendula. S. babylonica* var. *dolorosa. S. dolorosa*). Wisconsin Weeping W. Hybrid probably between *S. babylonica* and *S. fragilis*, with long drooping branches.

Bóckii. Shrub to 9 ft.: lvs. oblong or obovate, to ½ in. long, entire or slightly toothed, deep green above, bluish-white and silky beneath: catkins with lvs. in autumn. China.

brachycárpa. Shrub to 3 ft.: lvs. elliptic-oblong to oblanceolate, to 1 in. long, entire, hairy on both sides: catkins with the lvs. Man. to B. C. and Colo.

cærùlea: *S. alba* var. *calva.*

cæ̀sia. Shrub to 3½ ft., twigs glabrous: lvs. broadly ovate, obovate or oblong, to 1½ in. long, mostly acute, glabrous, gray-green above, pale beneath, short-petioled: catkins with the lvs., nearly ½ in. long. Cent Eu. to Cent. Asia.

Cáprea. Goat W. Sallow. To 25 ft.: lvs. broad-ovate to oblong, to 4 in. long, slightly toothed or entire, gray-pubescent beneath: catkins before the lvs. Eu., Asia. Var. **péndula,** Kilmarnock W., has crooked drooping branches; to be worked on other stocks. Var. **variegàta** has lvs. variegated with white.

cardinàlis: listed name of a willow having bright red twigs.

chlorophýlla: *S. planifolia.*

cinèrea. Gray W. Shrub to 15 ft.: lvs. elliptic to obovate-lanceolate, to 3½ in. long, wavy-margined, gray-pubescent beneath: catkins before or with the lvs. Eu., Asia. Var. **trícolor** has lvs. variegated with yellow and white or sometimes also with red.

daphnoìdes (*S. aglaia*). To 30 ft.: lvs. oblong- to narrow-lanceolate, to 4 in. long, finely toothed or nearly entire, glaucous beneath: catkins before or with the lvs. Eu., Asia.

dasyclàdos (*S. acuminata* of some). To 18 ft.: lvs. lanceolate, to 8 in. long, gray-pubescent beneath: catkins before the lvs. Eu.

díscolor. Pussy W. To 20 ft.: lvs. oblong, to 4 in. long, wavy-toothed or nearly entire, glaucous beneath: catkins before the lvs. N. S. to Va. and Mo.

doloròsa: *S. blanda.*

Donià̀na. Hybrid between *S. purpurea* and *S. repens*, with oblong or lanceolate lvs. glaucous beneath.

Elæágnos (*S. incana*). To 45 ft.: lvs. narrow-lanceolate, to 6 in. long, revolute at margins, white-tomentose beneath: catkins before the lvs. Eu., Asia Minor.

elegantíssima (*S. Sieboldii*). Thurlow Weeping W. Branches long and drooping: lvs. lanceolate, to 6 in. long, finely toothed, bluish-green beneath: catkins with the lvs. Japan(?).

Forbyàna: *S. rubra.*

frágilis. Brittle or Crack W. To 60 ft., twigs brittle at base: lvs. lanceolate, to 7 in. long, toothed, light green beneath: catkins with the lvs. Eu., Asia; escaped in E. U. S. Var. **bullàta** is a compact bushy form.

franciscàna: *S. lasiolepis* var. *Bigelovii.*

glàbra. Shrub to 4 ft.: lvs. broad-elliptic to oblong, to 3 in. long, wavy-toothed, glaucescent beneath: catkins with the lvs. Eu.

glaciàlis. Prostrate shrub: lvs. ovate to obovate, to ½ in. long, obtuse, entire or with few teeth at base, glabrous at maturity: pistillate catkins ovoid to globose, the scales black and nearly glabrous. Arctic coast of W. N. Amer. from Mackenzie River north to Pt. Barrow.

glaucophylloìdes. To 15 ft.: lvs. oval to oblong-lanceolate, to 5 in. long, finely toothed, glaucous beneath: catkins with the lvs. N. B. to Me. Var. **glaucophýlla** has thicker lvs. Ont. to Wis.

glaùcops. Shrub to 6 ft.: lvs. oblanceolate or obovate, to 2½ in. long, entire, pale beneath: catkins with the lvs. Alaska to Calif., New Mex., Utah.

grácilis: *S. petiolaris.*

gracilístyla. Shrub: lvs. oblong, to 4 in. long, finely toothed, grayish-pubescent beneath: catkins before the lvs. Japan, Korea.

grandifòlia. Shrub to 10 ft.: lvs. oval to obovate, to 6 in. long, wavy-toothed, light green beneath: catkins before or with the lvs. Eu.

hastàta. Halberd-leaved W. Shrub to 5 ft.: lvs. ovate to obovate, to 3 in. long, sometimes heart-shaped at base, finely toothed, glaucous beneath: catkins with the lvs. Eu., Asia.

Hèlix: probably *S. rubra.*

helvética. Shrub to 2 ft.: lvs. oblong or elliptic-lanceolate, entire, white-tomentose beneath: catkins with the lvs. Alps.

herbàcea. Dwarf W. Subshrub to 1 ft., sts. creeping, often subterranean, angled: lvs. suborbicular, to ¾ in. long, tip rounded or notched, bright glossy green, margins crenate-serrate: catkins small. Mts. of Eu., Asia, N. Amer. south to N. H.

hùmilis. Prairie W. Shrub to 8 ft.; lvs. oblong-lanceolate, to 4 in. long, slightly toothed, glaucous and tomentose beneath: catkins before the lvs. Newf. to Minn. to N. C.

incàna: *S. Elæagnos.*

irroràta. Shrub to 10 ft., branchlets with white bloom: lvs. oblong to linear-lanceolate, to 4 in. long, entire or slightly toothed, shining above, glaucous beneath: catkins before the lvs. Colo. to New Mex. and Ariz.

japónica. Shrub to 6 ft.: lvs. elliptic-oblong, to 5 in. long, sharply toothed, silky-pubescent becoming glabrous: catkins with the lvs. Japan.

jessoénsis. Tree to 90 ft., branchlets light brown, glabrous: lvs. narrowly lanceolate, to 3½ in. long, finely toothed, very silky when young less so above at maturity, petiole to nearly 2 in. long: catkins with the lvs., on short stalks, to 2 in. long. Japan.

Læstadiàna. Hybrid between *S. lapponum* and *S. Caprea*, with lvs. silky-pubescent beneath.

lævigàta. Red or Polished W. To 40 ft.: lvs. lanceolate, to 6 in. long, nearly entire, glaucous beneath: catkins with the lvs. Calif. to Ariz.

Lambertiàna: *S. purpurea* var.

lanàta. Shrub to 5 ft., twigs mostly woolly: lvs. elliptic-orbicular to oblong-ovate, to nearly 3 in. long, silky above becoming glabrescent, entire to undulate: catkins with the lvs., 2 in. or more long. N. Eurasia.

lappònum. Shrub to 5 ft., much branched: lvs. elliptic-oblong to lanceolate, to 2¼ in. long, entire, pubescent above, tomentose beneath: catkins before or with the lvs. Mts., Eu. to Siberia.

lasiándra. To 60 ft.: lvs. lanceolate, to 4 in. long, wavy-toothed, glaucous beneath: catkins with the lvs. B. C. to New Mex.

lasiólepis. Arroyo W. To 35 ft.: lvs. oblanceolate, to 4 in. long, nearly entire, glaucous beneath: catkins before the lvs. Wash. to Mex. Var. **Bígelovii** (*S. franciscana*) has lvs. pubescent below.

latifòlia. Hybrid between *S. Caprea* and *S. myrsinifolia*, with elliptic to oblong lvs. silky-pubescent when young.

laurifòlia: *S. pentandra.*

longifòlia. Sandbar W. Shrub to 12 ft. or tree to 25 ft.: lvs. linear-lanceolate, to 4 in. long, slightly toothed: catkins with the lvs. N. Amer.

lùcida. Shining W. To 18 ft.: lvs. ovate-lanceolate or lanceolate, to 5 in. long, finely toothed, shiny on both sides: catkins with the lvs. Newf. to Neb.

ludíficans. Hybrid between *S. aurita* and *S. phylicifolia*, with elliptic glabrous lvs.

lùtea. Shrub or tree to 20 ft., branchlets light yellow: lvs. lanceolate, to 3 in. long, toothed, yellowish-green. Man. to Mont. and Utah.

magnífica. To 18 ft.: lvs. elliptic, to 8 in. long, nearly entire, glaucous beneath: catkins with the lvs. China.

Matsudàna. To 40 ft.: lvs. narrow-lanceolate, to 3 in. long, sharply toothed, whitish beneath: catkins with the lvs. N. Asia. Var. **tortuòsa** is listed as having branchlets in spirals.

mollíssima. Hybrid between *S. amygdalina* and *S. viminalis* with lvs. gray-tomentose beneath.

multinérvis. Hybrid between *S. aurita* and *S. cinerea* with lvs. gray-pubescent beneath and small catkins.

muscìna is listed as a shrub but the name is of unknown botanical standing.

mutábilis. Erect or decumbent shrub, twigs yellowish-green: lvs. lanceolate, to 1½ in. long, serrate along upper half, blue-glaucous beneath, base obtuse, apex acuminate. Tyrol.

myricoìdes. A hybrid of *S. cordata* and *S. sericea* with pubescent branchlets; lvs. lanceolate, somewhat silky beneath, having small stipules.

myrsinifòlia (*S. nigricans*). Shrub to 12 ft.: lvs. orbicular-ovate to oblong-lanceolate, to 4 in. long, toothed, gray-green and glabrous or pubescent beneath: catkins before or with the lvs. Eu., Asia. Var. **cotinifòlia** is listed.

myrsinìtes. Shrub to 1½ ft.: lvs. elliptic to lanceolate, to 2 in. long, toothed, shining green on both sides: catkins with the lvs. Eu., Asia.

myrtilloìdes. Shrub to 1½ ft.: lvs. elliptic, entire, light green beneath: catkins before or with the lvs. Eu., Asia.

nìgra. Black W. To 35 ft.: lvs. lanceolate, to 5 in. long, finely toothed, pale green beneath: catkins with the lvs. N. Amer.

nígricans: *S. myrsinifolia.*

nìobe: probably *S. babylonica* var. *aurea.*

nivàlis. Tufted creeping shrub: lvs. oblong to ovate, to nearly ½ in. long, acute, smooth, dark green above, glaucous beneath, entire: catkins on leafy sts. Alta. to B. C., south to Mont. and Wash.

pátula. Hybrid between *S. Elæagnos* and *S. aurita* with lvs. gray-pubescent beneath.

Pèasei. Prostrate shrub, branches flexuous or decumbent, to 2 ft. long, very dark brown, lustrous: lvs. elliptical to narrowly obovate, to nearly 1 in. long and ¾ in. wide, crenate-dentate, dark green and lustrous above and below: catkins to 1¼ in. long. N. H.—Grows in wet shaded mountainous ravines.

péndula: *S. blanda.*

pentándra (*S. laurifolia*). Bay or Laurel W. To 60 ft.: lvs. elliptic, to 5 in. long, finely toothed, shining dark green above, paler beneath: catkins with the lvs. Eu., escaped in E. U. S.

petiolàris (*S. gracilis*). Shrub to 4 ft., twigs purple: lvs. lanceolate, to 3 in. long, serrulate, acuminate, base tapering, glabrous: catkins with the lvs. N. B. to Man. south to Tenn. and Wis.

petróphila. Creeping shrub to 4 in.: lvs. obovate to oblanceolate, to 2 in. long, entire: catkins with lvs. B. C. to Calif. and New Mex.

Pétzoldii péndula: *S. blanda.*

phylicifòlia. Shrub to 3 ft. or more: lvs. elliptic to lanceolate, to 3 in. long, toothed, grayish-green beneath: catkins before or with the lvs. Eu., Asia.

planifòlia (*S. chlorophylla*). Shrub to 10 ft., branchlets purplish: lvs. to 2 in. long, elliptic to lanceolate, glabrous, somewhat glaucous beneath: catkins with or before the lvs., small. N. U. S. and Canada.

Pontederàna (*S. sordida*). Hybrid between *S. purpurea* and *S. cinerea*, with lvs. silky and glaucous beneath.

purpùrea. Purple O. Shrub to 9 ft.: lvs. oblanceolate, to 4 in. long, finely toothed, paler beneath: catkins before the lvs. Eu., N. Afr., Asia. Var. **Lambertiàna** (*S. Lambertiana*) has purplish stouter branches. Var. **nàna** is listed as a dwarf form. Var. **péndula** (*S. americana pendula*) has slender drooping branches. Var. **grácilis** (var. *uralensis*) has slender branches and narrow lvs.

regàlis: *S. alba* var. *sericea.*

rèpens. Creeping W. Shrub to 3 ft., the st. prostrate: lvs. elliptic to lanceolate, to 2 in. long, nearly entire, silky when young. Eu., Asia. Var. **nítida** (var. *argentea*) has lvs. densely silky when young. Var. **rosmarinifòlia** (*S. rosmarinifolia*) has linear to oblong-lanceolate acute lvs.

reticulàta. Depressed shrub: lvs. oval to orbicular, green above roughly netted, whitish beneath: catkins slender from long peduncle. Arctic and Antarctic regions.

retùsa (*S. serpyllifolia*). Depressed shrub: lvs. obtuse to retuse at apex, small, rarely to ½ in. wide, entire, seemingly paralled-veined. Alpine regions of Eu. and Asia.

Reùteri. Hybrid between *S. Elæagnos* and *S. daphnoides* with lvs. silky-tomentose beneath.

rosmarinifòlia of the trade is *S. Elæagnos* or *S. repens* var.

rùbens. Hybrid between *S. fragilis* and *S. alba*, with lvs. usually glaucous beneath.

rùbra (*S. Forbyana. S. Helix*). Hybrid between *S. purpurea* and *S. viminalis*, shrub to 9 ft. with lanceolate lvs.

Salamònii: *S. sepulcralis.*

saximontàna. Densely tufted creeping shrub to 2 in. high: lvs. oblong or elliptic, to ¾ in. long, entire, glaucous beneath: catkins with the lvs. Mts., Wash. to New Mex.—Perhaps only a variant of *S. nivalis.*

Scouleriàna. To 30 ft.: lvs. oblong-obovate, to 4 in. long, nearly entire, silvery- or rusty-pubescent beneath but becoming glabrous. Alaska to Calif. and New Mex.

sepulcràlis (*S. Salamonii*). Hybrid between *S. babylonica* and *S. alba*, with drooping branches and lvs. silky-pubescent beneath.

serícea. Silky W. Shrub to 12 ft.: lvs. lanceolate, to 4 in. long, finely toothed, silky beneath: catkins before the lvs. Me. to Mich. and Va.

serpyllifòlia: *S. retusa.*

sesquitértia. Hybrid between *S. purpurea* × *aurita* and *S. phylicifolia*, shrub to 6 ft.

sibírica. Shrub to 3 ft., the branches red-brown: lvs. oval to oblong, ½ in. long: catkins with the lvs. Siberia.

Sièboldii: *S. elegantissima.*

silesìaca. Shrub: lvs. lanceolate or ovate, to 6 in. long, toothed, pale green beneath. Eu.

Smithiàna. Hybrid between *S. viminalis* and *S. Caprea*, shrub to 18 ft. with lvs. gray-pubescent beneath.

sórdida: *S. Pontederana.*

stipulàris. Large shrub: lvs. narrow-lanceolate, to 8 in. long, grayish-tomentose beneath. Eu.

stolonífera. Sprouting W. Plant prostrate, branches very slender, stolons leafless, subterranean to ⅛ in. diam.: lvs. to 1¼ in. long, oval to obovate, apex rounded or acute, base cuneate or obtuse, glaucous beneath, margins entire or with few small teeth: catkin-scales black, usually pubescent. Alaska.

subcærùlea. Shrub to 7 ft., twigs becoming glabrous and purple: lvs. lanceolate to oblanceolate, to 2¼ in. long, acute, glabrous above and white-silky beneath, margins mostly entire: catkins 1½ in. or more long. Wyo. to Wash. south to New Mex. and Calif.—Branchlets covered with conspicuous glaucous bloom in winter.

tetrápla. Hybrid between *S. phylicifolia* and *S. myrsinifolia*, of intermediate character.

triándra: *S. amygdalina.*

trístis. Shrub to 1½ ft.: lvs. oblanceolate, to 2 in. long, entire, white-tomentose beneath: catkins before the lvs. Me. to Fla. west to Minn. and Tenn.

uralénsis: *S. purpurea* var. *gracilis.*

Ùva-úrsi. Bearberry W. Prostrate shrub: lvs. obovate, to 1 in. long, entire or slightly toothed, shining above, glaucous beneath: catkins with the lvs. Alaska to Lab., south to mts. of N. Y.

viminàlis. Common O. To 30 ft.: lvs. lanceolate, to 10 in. long, entire, silvery-white and silky-tomentose beneath: catkins before the lvs. Eu., Asia: escaped in E. U. S.—The commonest species employed in basket-making.

vitellìna: *S. alba* var.

Wéntworthii: listed name.

Wilhelmsiàna. Shrub: lvs. linear, to 1½ in. long, nearly entire, becoming glabrous: catkins with the lvs. Asia.

Wimmeriàna. Hybrid between *S. purpurea* and *S. Caprea*, with lvs. grayish below.

SALLOW: *Salix Caprea.*

SALMONBERRY: *Rubus spectabilis.*

SALOA: *Blumenbachia.*

SALOMONIA: *Polygonatum.*

SALPICHRÒA. *Solanaceæ.* Herbs, subshrubs and shrubs, one sometimes used as cover planting in S. Calif. and mentioned for bee forage: lvs. entire, long-petioled: fls. small, white or yellow, solitary, tubular or urn-shaped: fr. a berry. Propagated by cuttings of half-ripened wood and kept in a close atmosphere; also from seeds when obtainable.

rhomboídea. Cocks-Eggs. Per. climber from a fleshy root, somewhat woody, with a strong odor: lvs. ovate-rhomboid, to ¾ in. long: fls. nodding, white, urn-shaped, ⅛ in. long: berry yellow or white, said to be edible. Argentina.—It was once offered in the trade as *Withania origanifolia.*

SALPIGLÓSSIS. *Solanaceæ.* Slender usually glandular-hairy herbs with alternate, entire, toothed or cut lvs., many colored usually large funnel-shaped fls. with wide throat, and capsular fr.; native in Chile.

Salpiglossis requires the usual treatment given half-hardy annuals but the young plants should not be allowed to become stunted before they are transplanted to the garden. When desired for winter bloom in the greenhouse, the seed should be sown in late summer.

gloxiniæflòra: hort. name for improved strain of *S. sinuata.*

grandiflòra: *S. sinuata.*

hýbrida: *S. sinuata.*

sinuàta (*S. grandiflora. S. hybrida. S. variabilis*). Painted-Tongue. Half-hardy branching ann. to 2½ ft.: lvs. elliptic- or oblong-linear, sinuate-toothed or cut: fls. to 2½ in. long and as wide, straw-colored, primrose, yellow through scarlet, nearly to blue, with much variation in veining and other markings. Var. **superbíssima** is unbranched and of more columnar habit.

variábilis: *S. sinuata.*

SALPINGÓSTYLIS. *Iridaceæ.* One bulbous herb native in N. Fla. and probably S. Ga. *S.* **cœléstina** (*Nemastylis* and *Ixia cœlestina*). To 1½ ft.: lvs. narrow-linear, 5–6 in. long: fls. violet with white eye, 2½ in. across, nodding, usually solitary, blooming only from just after sunrise to about 8 A.M.—The genus Salpingostylis was founded in 1931 by John K. Small to accommodate *Ixia cœlestina* of William Bartram (1791), an overlooked plant of the lower southeastern U. S.

SALSIFY: *Tragopogon porrifolius.* Black: *Scorzonera hispanica.*

SÁLSOLA. *Chenopodiaceæ.* Weedy herbs of wide distribution with stiff prickly lvs. and bisexual axillary small fls.; rarely grown in gardens for interest but of slight ornamental value.

Kàli. Saltwort. Ann. to 2 ft.: lvs. to ¾ in. long, grayish: fls. solitary. Eu., Asia, seashores of E. N. Amer.—A related species is *S. pestifer*, the Russian thistle.

SALTBUSH: *Atriplex.*

SALT TREE: *Halimodendron.*

SALTWORT: *Salsola Kali.*

SALVERFORM, SALVER-SHAPED: with a slender tube and an abruptly expanded flat limb, as that of the phlox.

SÁLVIA. Sage. *Labiatæ.* Many herbs, subshrubs and shrubs, with tubular 2-lipped fls. in whorls of 2 or more arranged in spikes, racemes or panicles, the colors ranging widely from scarlet through purple and violet to azure-blue, white and even pale yellowish, but not pure clear yellow.

Some species are grown for ornament in the garden or conservatory, others for culinary or medicinal purposes. *S. splendens*, scarlet sage, is the most widely cultivated of the ornamental sages. It is treated as an annual. It should be grown in masses with a good background of green, preferably in full sun, but it may be used to brighten shady places such as a woody recess; if well managed it will bloom continuously from July to frost. The other salvias require only simple treatment, as flower-garden and border subjects; and the sweet-herb species, *S. officinalis*, persists for years when once established.

acetabulòsa. Shrubby or suffrutescent per. to 3 ft., sts. ascending: lower lvs. pinnatisect, segms. of 1–2 pairs, upper lvs. entire, oblong, obtuse, hairy on both sides: fls. bluish-purple, calyx pilose-hispid, usually in whorls of 8–10 forming simple racemes. Asia.

apiàna (*Audibertia polystachya*). White S. To 10 ft., shrubby, white-tomentose: fls. white, to ¾ in. long. Calif.—One of the shrubs called "greasewood."

arbòrea: hort. name, probably for the shrubby form of *S. splendens.*

argéntea. Silver S. Bien. to 4 ft.: lvs. broad-ovate, to 8 in. long, lobed, white-woolly: fls. rose-white, purplish, whitish or yellowish, ¾ in. long, in panicles. Medit. region.—Although technically a bien., lateral rosettes are produced in successive seasons, thus prolonging the colony as if it were per.

atroviolàcea: *S. pratensis* var.

aùrea. Shrub 3 ft. or more, white-tomentose: lvs. ovate, to 1 in. long, entire, leathery: fls. golden-yellow, to 2 in. long, in racemes to 4 in. long. S. Afr.

azùrea. Per. to 3 ft. or more, glabrous except perhaps above: lvs. oblong to linear: fls. blue or white, about ½ in. long, calyx puberulent, in mostly simple open not very long racemes. S. C. to Fla. and Tex. Listed vars. are **angustifòlia** and **longifòlia.**—The plants cult. under this name (var. *grandiflora*) are mostly or wholly the more western *S. Pitcheri.*

ballotæflòra. Shrub to 10 ft., much branched: lvs. ovate-triangular, to ¾ in. long, crenate, tomentulose when young: fls. bluish-purple, in few-fld. panicles. Tex. and Mex.

Baùmgartenii: *S. pratensis* var.

Bertolònii. Per., erect or ascending: lvs. ovate-cordate, toothed or lobed, wrinkled, pubescent beneath: fls. red-purple or violet-blue, rarely white, in branched racemes. S. Eu.

bícolor. Spanish S. Bien. or per. to 3 ft.: lvs. broad-ovate, palmately lobed, sticky-pubescent: fls. bluish-violet and white, 1 in. long, in racemes to 2 ft. long. Spain, N. Afr.—See also *S. coccinea* var.

brachýcalyx: *S. indica.*

bracteàta. Subshrub to 1½ ft., pubescent: lvs. pinnately divided, the floral-lvs. entire and persistent, sometimes colored: fls. purplish, in racemes. Asia Minor.

brunellòdes: *S. prunelloides.*

cacaliæfòlia. Per. to 3 ft.: lvs. broad-triangular, pubescent: fls. deep blue, small, in branched racemes. Mex.

cádmica. Per. to 1 ft.: lvs. oblong or oval, to 1½ in.

long, entire or lobed: fls. white, 1 in. long, in racemes. Asia Minor.

cærùlea. Herb: lvs. ovate, to 4 in. long, pubescent above: fls. blue, 1½ in. or more long, in racemes to 6 in. long. Brazil.

candelàbrum. Subshrub to 3 ft.: lvs. oblong, to 4 in. long, entire, gray-tomentose beneath: fls. with upper lip white and lower violet streaked with white at throat. S. Spain.

cardinàlis: *S. fulgens.*

carduàcea. THISTLE S. Ann. to 2 ft., thistle-like, tomentose: lvs. basal, oblong, lobed, spiny-toothed: fls. lavender or bluish-purple, 1 in. long, in many-fld. head-like whorls 1½ in. diam. subtended by spiny bracts, calyx woolly. Calif.

carnòsa (*Audibertia* and *Audibertella incana*). To 2 ft., much branched, gray-pubescent: fls. blue, ½ in. long, stamens exserted. Wash., Ida., Ore.

clandéstina var. **angustifòlia** (*S. cleistogama*). Per. to 2 ft.: lvs. oblong, to 4 in. long, pinnatifid: fls. blue, ⅓ in. long, in racemes to 1 ft. long. S. Afr.

cleistógama: *S. clandestina* var. *angustifolia.*

coccínea (*S. rosea*). TEXAS S. Ann. or per. to 2 ft., pubescent: lvs. ovate, to 2½ in. long, toothed: fls. scarlet, to 1 in. long, in racemes to 8 in. long. S. C. to Fla. and Tex., trop. Amer. Var. **álba** has white fls. Var. **bícolor** has upper lip white, lower lip carmine-red. Var. **màjor** is somewhat shrubby, to 4½ ft., with larger bright scarlet-red fls.—The name *coccinea* is sometimes misapplied to *S. splendens.*

cólorans: *S. splendens.*

Columbàriæ. Ann. to 15 in.: lvs. mostly basal, 2-pinnatifid, to 2¼ in. long, very wrinkled: fls. blue, ½ in. long, in 1 or 2 whorls. Calif.

díchroa. Per. to 3 ft.: lvs. oblong-ovate, to 8 in. long, toothed, pubescent: fls. deep blue with white spot on lower lip, in racemes 1 ft. or more long. N. Afr. Var. **magnífica** is listed as an improved form.

farinàcea. MEALYCUP S. Per. to 3 ft., pubescent: lvs. ovate- to linear-lanceolate, to 4 in. long, toothed: fls. violet-blue, ½ in. long, in racemes to 8 in. long, calyx white or violet-tomentose. Tex. Var. **álba** has white fls.

fúlgens (*S. cardinalis*). CARDINAL S. MEXICAN RED S. Shrub to 3 ft.: lvs. ovate, to 3 in. long, toothed, white-woolly beneath: fls. bright scarlet, 2 in. long, in racemes to 1 ft. long. Mex.

globòsa. ROUNDTOP S. Bien. to 3 ft.: lvs. in a flattened rosette, deeply cut, white-tomentose: fls. large, white. Asia Minor.

glutinòsa. Per. to 3 ft., sticky-hairy: lvs. ovate-oblong, to 8 in. long, toothed: fls. pale yellow, 1½ in. long, in racemes. Eu., Asia.

Gràhamii. Shrub to 3 ft.: lvs. oval, to 1 in. long, nearly entire: fls. red, 1 in. long, in racemes 1 ft. or more long. Mex.

grandiflòra. Shrub to 2 ft. or more, sts. white-woolly: lvs. ovate, to 2½ in. long, toothed: fls. blue, to 2 in. long, in racemes. Asia Minor.

Gréggii. AUTUMN S. Shrub to 3 ft.: lvs. oblong, ½ in. long, entire: fls. red or purplish-red, 1 in. long, in racemes to 4 in. long, in autumn. Tex., Mex. Var. **álba** has white fls. Var. **ròsea** has pale red fls.

Heèri. Subshrub to 5 ft.: lvs. ovate to lanceolate, toothed, wrinkled, pubescent beneath: fls. scarlet, ¾ in. long, in racemes. Peru.

hìans. Per. to 2 ft., herbaceous, sts. hairy: lvs. ovate, acuminate, long-petiolate: fls. blue, in whorls of 6, racemes somewhat branched. Cashmir.

hispánica. Ann. to 2 ft.: lvs. ovate, to 3 in. long, toothed: fls. pale blue, in racemes to 4 in. long. S. Amer., Mex.

Hórminum. Ann. to 1½ ft., pubescent: lvs. oblong to ovate, floral-lvs. often colored: fls. lilac to purple, ½ in. long, in racemes. Medit. region. Var. **violàcea** has light violet-blue fls.

Hóveyi: *S. ianthina.*

iánthina (*S. Hoveyi*). Per. to 2 ft.: lvs. ovate, toothed, wrinkled, floral-lvs. colored: fls. purple-violet, large. Probably Mex. or Peru.

incàna: *S. carnosa.*

índica (*S. brachycalyx*). Coarse per. to 4 ft. with rough broad basal lvs. to 10 in. long: lvs. ovate to oval, sinuate-toothed, the uppermost sessile: fls. in separated whorls, ¾ in. or more long, upper lip blue-purple and strongly arching, lower spotted. Syria.

interrúpta. Shrub to 4 ft.: lvs. pinnately divided, the terminal lfts. largest, to 6 in. long, wrinkled, white-tomentose beneath: fls. bluish-white, in racemes to 2 ft. long. N. Afr.

involucràta. ROSELEAF S. Subshrub: lvs. ovate or oblong-ovate, to 5 in. long, toothed, floral-lvs. bract-like, colored: fls. rose, 1 in. or more long, calyx red or purplish, in dense racemes to 6 in. long. Mex., Cent. Amer.

japónica. Per. to 1½ ft.: lvs. ovate, to 4 in. long, pinnately divided into deeply toothed segms.: fls. dark lilac or blue, in racemes to 5 in. long. Japan.

Jurisícii. Per. to 18 in. or more, sts. sparingly long-pilose: lvs. 1–2-pinnatisect, to 4 in. long, segms. narrowly linear-oblong: fls. small, purple, in branched racemes. Serbia.

lanceolàta. Per. to 1½ ft.: lvs. oblong-lanceolate, to 3 in. long, slightly toothed: fls. purplish, ½ in. long, in racemes to 6 in. long. Neb. to Tex. and Mex.

leucántha. MEXICAN BUSH S. Shrub to 2 ft.: lvs. linear-lanceolate, to 6 in. long, toothed, white-tomentose beneath: fls. white, ¾ in. long, the calyx lavender-tomentose, in racemes to 10 in. long. Mex.

leucophýlla (*Audibertia* and *Ramona nivea*). PURPLE S. To 4 ft., sts. woody, white-tomentose: lvs. triangular-oblong, to 2½ in. long, obtuse, crenulate: fls. rose-purple to bluish, to ½ in. long. Calif.

lyràta. Per. to 2 ft., pilose, not much branched: basal lvs. lyrate, to 3 in. long, toothed, hispidulous on both sides, st.-lvs. oblong-lanceolate, few: fls. bluish-purple, to 1 in. long, in 6–fld. whorls, racemes lax, little branched. Conn. to Fla. west to Ill. and Tex.

mellífera (*Audibertia* and *Ramona stachyoides*). BLACK S. Shrub to 7 ft., sts. often glandular-pubescent: lvs. oblong-elliptic, to 2½ in. long, obtuse, green above, whitened beneath, crenulate: fls. pale blue, often tinged rose and occasionally white, to ½ in. long. Calif.—A bee plant.

mexicàna. Herb: lvs. ovate or oblong, to 3 in. long, toothed, pubescent: fls. blue, in racemes to 1 ft. long. Mex. —Name has been used for *S. splendens.*

Montbrètii. Per. to 1½ ft.: lvs. oblong or lanceolate, to 5 in. long, white-tomentose beneath: fls. blue, 1 in. long, in racemes to 9 in. long. Asia Minor, Syria.

Múnzii. Distinguished from *S. mellifera* by its more compactly rounded habit, more obovate lvs., darker blue fls. and usually unbranched infl. Calif.

napifòlia. Differs from *S. verticillata* in the verticillate whorls of only 8–12 fls. each, rather than 20–30. Smyrna.

nemoròsa: the plant in cult. under this name is usually *S. superba;* some of it may be *S. sylvestris.*

nilótica. Per.: lvs. ovate, entire, lower lvs. lyrate, to 6 in. long: fls. pale blue, in long raceme-like panicles. Trop. Afr.

nùtans. Hardy per. to 3 ft.: lvs. ovate-oblong, to 5 in. long, toothed, pubescent beneath: fls. violet, ⅓ in. long, in racemes to 1½ in. long, nodding as the fls. open. S. E. Eu.

officinàlis. GARDEN S. Hardy subshrub used for seasoning, usually white-woolly: lvs. oblong, 2 in. or more long, toothed or entire, wrinkled: fls. purple, blue or white, ¾ in. long, in racemes. Medit. region. Var. **albiflòra** has white fls. and **rubriflòra** red. Var. **trícolor** has gray-green lvs. veined yellowish and pink becoming velvety-red.

pàtens. GENTIAN S. Half-hardy per. to 2½ ft., sticky-hairy: lvs. ovate or arrow-shaped, toothed: fls. blue, 2 in. long. Mts. of Mex.

Pítcheri (*S. azurea* var. *grandiflora*). Per. to 4 ft., closely grayish-pubescent: lvs. linear or broadly so: fls. blue or white, to 1 in. long, calyx densely pubescent, spicate racemes long and rather dense. Minn. and Ill. to Kans. and Tex.—See *S. azurea.*

praténsis. Hardy per. to 3 ft., root sometimes tuberous: lvs. cordate-ovate, toothed, wrinkled, slightly spotted with blood-red: fls. bright blue, seldom red or white, 1 in. long, in racemes. Eu. Var. **álba** has white fls., **atroviolàcea,** dark violet-purple, **Baùmgartenii,** violet, **ròsea,** rose-pink, **rubicúnda,** rose-red. Var. **Tenòrei** is *S. Tenorei.*

prunelloìdes (*S. brunellodes*). Per. to 1½ ft.: lvs. ovate-oblong, toothed: fls. blue, in long-stalked racemes. Mex. Var. **purpùrea,** fls. purplish-red.

pulchélla. Herb or subshrub: lvs. broad-ovate, to 3 in. long, toothed: fls. red, 1 in. long, in long racemes. Mex.

Regeliàna. Per. to 1½ ft. or more, pubescent: lvs. ovate-cordate, to 3 in. long, obtuse, crenate: fls. lavender-purple, about ½ in. long, in axillary whorls, stamens included, glabrous. Russia.

ríngens. Hardy shrub to 2 ft.: lvs. irregularly pinnately cut, pubescent: fls. reddish-purple or light blue, to 1½ in. long, in racemes. Greece.

Roemeriàna. Per. to 2½ ft., pubescent: lvs. very broadly ovate to kidney-shaped, wider than long, to 1¾ in. across, the lower ones occasionally compound, sinuate-toothed: fls. scarlet-red, to 1 in. long, in panicles to 1 ft. long. Tex.—Material in the trade may be *S. coccinea* or *S. splendens,* either distinguishable by lvs. longer than wide.

ròsea: *S. coccinea.*

rugòsa. Herb: lvs. oblong or sometimes ovate, to 8 in. long, toothed, pubescent and rugose: fls. white or purple and white, ¾ in. long, in racemes to 1 ft. long. S. Afr.

rùtilans. A plant with scarlet fls. to 1 in. long, of uncertain botanical standing; possibly a form of *S. splendens.*

Schiedeàna. To 5 ft.: lvs. ovate, to 3 in. long, toothed, slightly pubescent: fls. blue, ⅓ in. long, in dense whorls in spikes to 5 in. long. Mex.

Sclàrea. CLARY. Hardy bien. to 3 ft.: lvs. broad-ovate, to 9 in. long, hairy, toothed, floral-lvs. colored rose and white: fls. whitish-blue, to 1 in. long, in panicled racemes. S. Eu. Var. **turkestánica** has white fls. tinged pink, with involucral bracts to twice as long as calyces or more.

sclerótina: catalogue name, perhaps for *S. serotina.*

serótina. Per. to 2½ ft., finely pubescent: lvs. ovate to orbicular, to 1½ in. long, obtuse, crenate-serrate: fls. blue to white, to ⅓ in. long, in dense cylindrical panicles. S. Fla. to trop. Amer.

Séssei. Shrub to 15 ft.: lvs. ovate, to 5 in. long, toothed: fls. scarlet, 2 in. long, in loose panicled racemes, the calyx red. Mex.

Síbthorpii. Per. to 4 ft. or more: lvs. ovate, lower ones to 9 in. long and 4 in. wide, doubly serrate: fls. light blue, in long branched panicles. N. Medit. region.

spathàcea (*Audibertia* and *Ramona grandiflora*). CRIMSON S. Per. to 3 ft.: lvs. white-tomentose beneath: fls. to 1½ in. long, crimson, in dense clusters. Calif.

spléndens (*S. colorans*). SCARLET S. Shrub to 8 ft., but cult. as an ann.: lvs. ovate, to 3½ in. long, toothed, glabrous, floral-lvs. and bracts colored: fls. scarlet, 1½ in. long, in racemes, the calyx scarlet. Brazil. Var. **álba** has white fls. Var. **compácta,** of smaller compact habit. Var. **grandiflòra** is listed.

supérba. Strong herb to 3 or 4 ft., with lanceolate serrulate lvs. and purple fls. with red bracts; supposed to be a sterile hybrid of which one parent is probably *S. sylvestris;* known erroneously in cult. as *S. nemorosa.*

sylvéstris (*S. valentina*). Hardy per. to 3 ft.: lvs. oblong-lanceolate, to 4 in. long, toothed, pubescent beneath, floral-lvs. colored: fls. purple-violet, small, in long slender racemes. Eu. and Asia. Var. **álba** (var. *flore-albo*) has white fls.

Tenòrei (*S. pratensis* var. *Tenorei*). Differs from *S. pratensis* in upper lvs., sts. and calyces not glandular: fls. dark blue. N. E. Medit. region.

tiliæfòlia. Herb: lvs. broad-ovate, to 1½ in. long, toothed: fls. blue, very small, in dense racemes to 3 in. long. Mex.

triangulàris. Per. to 1½ ft.: lvs. ovate, to 1¼ in. long, toothed, pubescent: fls. blue, ½ in. long, in racemes to 8 in. long. S. Afr.

tubífera. Herb or subshrub to 3 ft. and more: lvs. broad-ovate, toothed, nearly glabrous or white-pubescent beneath: fls. purplish-red, to 1¼ in. long, in racemes to 6 in. long. Mex.

turkestánica: *S. Sclarea* var.

uliginòsa. BOG S. Per. to 6 ft.: lvs. oblong-lanceolate, to 4 in. long, toothed: fls. blue or white, ¾ in. long, in racemes. Brazil, Argentina, Uruguay.

valentìna: *S. sylvestris.*

variegàta: hort. name referable to forms of *S. officinalis* and *S. pratensis.*

verbascifòlia. Per. to 1 ft.: lvs. broad-ovate, lobed, thick and wrinkled, white-tomentose below: fls. white with blue hairs, to ¾ in. long, in panicles. Caucasus.

verbenàca. VERVAIN S. Hardy per. to 2 ft.: lvs. oblong or ovate, lobed, to 4 in. long: fls. blue, rarely white, to ½ in. long, in long racemes. Eu. and Orient.

verticillàta. LILAC S. Per. to 3 ft., pubescent: lvs. broad-ovate, cordate or lyrate-pinnatifid, to 3 in. long: fls. lilac-blue, ⅓ in. long, in dense remote whorls. Eu., Asia Minor, Caucasus.

virgàta. Per. to 6 ft., pubescent: lvs. broad-ovate, cordate, toothed: fls. light blue, to 1 in. long, in large branched panicles. S. Eu., Orient.

viscòsa. CLAMMY S. Per. to 3½ ft., sticky-pubescent: lvs. ovate-oblong, to 1 ft. long, upper ones nearly sessile: fls. pink to red, in whorls of 4–6 in racemes or loose panicles to 14 in. long, corolla about 2½ times as long as calyx. Asia Minor.

SALVÍNIA. *Salviniaceæ.* Floating flowerless (cryptogamous) annuals with small entire lvs. or fronds pimpled above; widely distributed. Grown in aquaria or greenhouse tanks, forming colonies on the surface of the water. Propagated by spores, or a single plant soon spreads.

auriculàta (*S. natans. S. brasiliensis*). Fronds nearly round, about ⅜ in. across. Trop. Amer.

brasiliénsis: *S. auriculata.*

nàtans of the trade: *S. auriculata.*

SALVINIÀCEÆ. SALVINIA FAMILY. Two genera of free-floating aquatic ferns having two kinds of spores borne under the fronds. Azolla and Salvinia are grown in aquaria.

SAMANÈA. *Leguminosæ.* Trop. American trees and shrubs with 2-pinnate lvs., fls. in heads, and flattened nearly straight pods; planted in the tropics for shade trees. Propagated by seeds.

Sàman (*Pithecellobium* and *Inga Saman*). RAIN-TREE. MONKEY-POD. SAMAN OF ZAMAN. To 80 ft. with branches spineless, often spreading to 100 ft.: fls. yellowish with very long pink stamens, many in dense umbel-like heads: pods to 8 in. long. W. Indies, Cent. Amer.

SAMARA: indehiscent winged pericarp, as of the maple and ash.

SAMBÙCUS. ELDER. *Caprifoliaceæ.* Shrubs or small trees, rarely herbs, of wide distribution, having opposite pinnate lvs. with toothed lfts., small white wheel-shaped fls. in compound terminal corymbs or panicles, and fr. a small berry-like drupe that in some species is edible and in other species poisonous.

Elders are effective when planted in mass, and are also somewhat grown for the fruit which is edible in some species. Most of the elders are hardy North and thrive in rich rather moist soil. Propagated by seeds, cuttings and some kinds by suckers.

acutîloba: *S. canadensis* var.

aùrea: yellow-lvd. races of *S. canadensis* and *S. nigra.*

cærùlea (*S. glauca*). BLUE E. To 50 ft.: lvs. of 5–7 oblong lfts. to 6 in. long: fls. yellowish-white, in umbel-like cymes 6 in. across, June–July: fr. blue-black, glaucous. B. C. to Calif. and Utah. Var. **nèo-mexicàna** (*S. intermedia*) has 3–5 grayish-green lanceolate lfts. Ariz., New Mex. Var. **velùtina** (*S. californica*) has densely pubescent lvs. Calif.

califórnica: *S. cærulea* var. *velutina.*

callicárpa (*S. racemosa* var. *callicarpa*). To 20 ft. and sometimes tree-like: lfts. oblong to obovate, pubescent underneath particularly on rib, sharp-toothed to tip: fr. scarlet, in showy clusters. Calif. to Wash.

canadénsis. AMERICAN OF SWEET E. To 12 ft., stoloniferous, with white pith: lvs. of usually 7 oval or lanceolate lfts. to 6 in. long: fls. white, in umbel-like cymes to 10 in. across, June–July: fr. purple-black, edible (with pomological vars.). N. S. to Fla. and Tex. Var. **acutîloba** (var. *laciniata*) has much dissected lfts. Var. **aùrea** has golden-yellow lvs. and red frs. Var. **chlorocárpa** has greenish frs. Var. **máxima** is a larger form with cymes to 15 in. across.

Ébulus. DWARF E. Herbaceous per. to 4 ft., with many sts.: lfts. narrow-oblong and long-pointed, sharp-serrate: fls. white tinged pink, in broad cymes: fr. small, black. Eu., N. Afr., Asia.

glaùca: *S. cærulea.*

intermèdia: *S. cærulea* var. *neo-mexicana.*

leiospérma. The western form of *S. pubens,* nearly glabrous and frs. almost smooth. Alaska to Wash. and Wyo.

melanocárpa. To 12 ft.: lvs. of 5–7 oblong-lanceolate lfts. to 6 in. long: fls. yellowish-white, in an ovoid cyme to 3 in. across, July–Aug.: fr. black. B. C. to Calif.

microbòtrys. Shrub to 6 ft., sts. light brown, pith of young sts. white: lfts. 5–7, ovate-lanceolate, to 4 in. long, sharply toothed: fls. nearly white, in hemispherical cymes to 2 in. across: fr. scarlet. Colo. to Calif.

nìgra. EUROPEAN E. To 30 ft.: lvs. of usually 5 oval lfts. to 5 in. long: fls. yellowish-white, in umbel-like cymes to 8 in. across, May–June: fr. shining black. Eu., W. Asia, N. Afr. Some of the hort. vars. are: **álbo-variegàta,** lvs. variegated with white; **argéntea,** lvs. predominantly white; **aùrea** (var. *foliis-luteis*), lvs. golden-yellow; **aùreo-variegàta,** lvs. variegated with yellow; **heterophýlla,** lfts. irregularly dissected; **laciniàta,** lfts. deeply dissected; **latisécta,** lvs. said to be more finely cut than the former var.; **pyramidàlis,** habit columnar; **rotundifòlia,** lfts. usually 3, broad-ovate; **variegàta** is listed.

pùbens. AMERICAN RED E. To 15 ft., pubescent when young, with brownish-red pith: lvs. of 5–7 oblong lfts. to 4 in. long: fls. in rather loose pyramidal cymes to 4 in. long in which the lower branches are spreading, May: fr. scarlet, not edible. N. B. to Ga. and Colo. Var. **arboréscens** is tree-like. Var. **leucocárpa** has white frs. Var. **máxima** is listed as having cymes larger than type.

racemòsa. EUROPEAN RED E. To 12 ft., glabrous, pith of sts. brown: lvs. of 5–7 ovate or oval lfts. to 3 in. long: fls.

yellowish-white, in dense ovoid panicles to 3 in. long with lower branches of it usually reflexed, Apr.–May: fr. scarlet. Eu., W. Asia. Var. **laciniàta,** lfts. dissected. Var. **plumòsa,** lfts. toothed to about middle, and golden-yellow in **plumòso-aùrea.** Var. **tenuifòlia,** lfts. finely dissected.

Sieboldiàna. To 20 ft.: lvs. of usually 7 oblong lfts. to 8 in. long: fls. yellowish-white, in ovoid panicles to 3 in. long, Apr.–May: fr. scarlet. Japan, China.

SÁMOLUS. *Primulaceæ.* Small per. smooth herbs of wide distribution, having basal or alternate entire lvs. and small white fls. in racemes or panicles; sometimes planted for interest in moist places, but not showy.

Valerándi. To 1 ft.: lvs. obovate or oblong: fls. to ⅛ in. across, in racemes. Eu., Asia; sparingly intro. into N. Amer. —The native *S. floribundus* is larger but with smaller fls.

SAMPHIRE: *Crithmum maritimum.*

SAMUÈLA. DATE YUCCA. *Liliaceæ.* Trees resembling Yucca, with sharp-pointed narrow filiferous lvs. and white fls. in dense panicles, the perianth-segms. united; planted in Calif.

carnerosàna. To 18 ft., the trunk usually simple: lvs. to 1½ ft. long and 3 in. wide: fls. to 4 in. across, the tube 1 in. long: fr. to 3 in. long. Mex.

Faxoniàna. To 15 ft., trunk simple or branched at top: lvs. to 4 ft. long and 3 in. wide: fls. to 4 in. across, the tube ½ in. or less long: fr. to 3 in. long. W. Tex.

SANCHÈZIA. *Acanthaceæ.* Herbs or shrubs of S. Amer. with large opposite lvs. and orange, red or purple tubular fls. subtended by bracts and usually borne in spikes; one species grown as a foliage plant in the greenhouse and out-of-doors in S. U. S., as well as for its heavily bracted spikes of showy bloom. Propagated by cuttings.

nóbilis. Shrub to 5 ft.: lvs. oblong-ovate, to 1 ft. long, abruptly acuminate: fls. yellow, 2 in. long, with narrow revolute rim, stamens exserted, bracts red, to 1½ in. long. Ecuador. Var. **glaucophýlla** has lvs. variegated or blotched along veins with white or yellow. Var. **variegàta** is listed.

spectábilis: hort. name, probably for *S. nobilis* var. *glaucophylla.*

SANDALWOOD: *Santalum.* **Bastard:** *Myoporum sandwicense.* **Tree, Red:** *Adenanthera pavonina.*

SANDBOX-TREE: *Hura crepitans.*

SANDERSÒNIA. *Liliaceæ.* One S. African per. herb with tuberous root, adapted to greenhouse cult., belonging to the Uvularia tribe. **S. aurantìaca.** To 2 ft.: lvs. alternate, linear or lanceolate, to 4 in. long, sessile: fls. bright yellow, to 1 in. long, solitary on slender drooping stalks, Nov.

SANDWEED: *Hypericum fasciculatum.*

SANDWORT: *Arenaria.*

SANGUINÀRIA. *Papaveraceæ.* One low spring-blooming per. herb with red juice, native in E. N. Amer. on rich lands and sometimes transplanted to the wild-garden. **S. canadénsis.** BLOODROOT. Lvs. basal, palmately lobed, to 1 ft. across: fls. white, sometimes tinged with pink, to 1½ in. across, solitary on scapes about 8 in. high: fr. a narrow caps. to 1 in. long: rootstocks prominent. Var. **mûltiplex** has double fls.

SANGUISÓRBA. BURNET. *Rosaceæ.* Hardy per. herbs native in north temp. zone, with alternate pinnate lvs., small bisexual or unisexual fls. without petals borne in heads or spikes, and fr. an achene inclosed in the calyx-tube. Grown in borders and *S. minor* for the lvs. used in flavoring. Propagated by seeds and division. See *Poterium.*

canadénsis (*Poterium canadense*). To 6 ft.: lfts. 7–17, oblong, to 3 in. long, toothed: fls. bisexual, white, in spikes to 6 in. long. Newf. to Mich. and Ga. Var. **latifòlia** (*S. sitchensis*) is smaller with teeth of lfts. more rounded and less acute. N. W. Amer.

dictyocárpa (*Poterium dictyocarpum*). Perhaps not distinct from *S. minor* and from which it reputedly differs in its more ovoid fruiting calyx whose margin is non-ciliate. Cent. and N. Eu.

dodecándra (*S. Vallistellinæ*). To 3 ft.: lfts. 13–19, linear-oblong, toothed: fls. bisexual, greenish-yellow, in drooping spikes 2 in. and more long. Eu.

horténsis: catalogue name.

mèdia: the plant cult. under this name may be *S. canadense.*

mìnor (*Poterium Sanguisorba*). To 2 ft.: lfts. 7–19, oval, to ¾ in. long, deeply toothed: fls. bisexual and unisexual, greenish, in dense heads about ½ in. long, fruiting calyx acute, ciliate. Eu., Asia, E. N. Amer.

muricàta (*S. polygama. Poterium muricatum*). Differs from *S. minor* in its glabrous lvs. with lfts. slightly longer stalked and margins of fr. calyces winged. Cent. and S. Eu.

myriophýlla: listed name.

obtùsa (*S. obtusata. Poterium obtusum*). To 3 ft.: lfts. about 13, oblong, toothed: fls. crimson, in spikes to 3 in. long, nodding at tips. Japan. Var. **álba,** fls. white.

obtusàta: *S. obtusa.*

officinàlis. To 5 ft.: lfts. 7–13, lanceolate-oblong, to 3 in. long, toothed: fls. dark purple, in spikes about 1 in. long. Eu., Asia; somewhat nat. in N. Amer.

polýgama: *S. muricata.*

sitchénsis: *S. canadensis* var. *latifolia.*

spinòsa: *Poterium spinosum.*

tenuifòlia (*Poterium tenuifolium*). To 4 ft. or more: lvs. mostly basal, lfts. 13–21, linear-oblong, to 3 in. long, deeply toothed: fls. white or varying to purple, in spikes to 2 in. long. N. Asia.

Vallistéllinæ: *S. dodecandra.*

SANSEVIÈRIA. BOWSTRING-HEMP. *Liliaceæ.* Stiff and erect per. herbs with short thick rootstocks, very thick and erect long basal lvs. which are often variegated and mottled, and whitish or yellowish narrow fls. in racemes or spikes on slender scapes, the perianth-segms. united into a tube.

Sansevierias are commonly grown as durable porch and house plants in the North and out-of-doors in the South; some kinds are naturalized in warm countries. Of easy culture in a rather heavy soil. Propagated by division; also by cuttings of the leaf about 3 inches long and placed in sand, from which a stolon-like part is produced.

æthiòpica. Subshrub, stemless: lvs. to 16 in. long, linear-lanceolate, running out into white awl-like tips to 3 in. long, erect-spreading, margins red or white, more or less glaucous, sometimes transversely dark green banded: fls. white, on infl. to 30 in. long. S. Afr.—By some authors combined with *S. zeylanica.*

Cràigii: hort. name for form said to have variegated lvs.

cylíndrica (*S. sulcata*). Lvs. to 5 ft. long and 1¼ in. thick, cylindrical or slightly flattened, striped and transversely banded with dark green: fls. white or tinged with pink, 1½ in. long. Trop. Afr.

grácilis. St. to 8 in. long and ¼ in. diam.: lvs. terete, to 2 ft. long and ½ in. diam., slightly sheathing at base, apex spinose-acute, dull green with bright green longitudinal striations, glabrous: fls. white, in lax racemes to 3 in. long, perianth-tube to ¾ in. long, lobes to ½ in. long, linear and revolute. Trop. Afr.

grandicúspis. Lvs. to 20 in. long and 1½ in. wide, nearly flat or channelled, narrowed into green point to 2 in. long, transversely banded with pale green, lined down back. Habitat unknown.

guineénsis: *S. thyrsiflora.*

hùmilis: listed name of unknown botanical standing.

Kírkii. Lvs. to 6 ft. or more long and 3½ in. wide, flat or concave, the petiole deeply channelled, wavy-margined, grayish-green mottled or slightly barred with pale green, lined on back: fls. greenish, to 5 in. long. Trop. Afr.

Lauréntii: *S. trifasciata* var.

párva. To 1½ ft.: lvs. to 18 in. long, narrowly lanceolate, recurved and spreading, very concave with green awn-like tip to 3 in. long, inflexible, variegated: fls. pale pinkish-white within and much darker without, arranged in pairs on raceme to 1 ft. high. British E. Afr.

pùmila: name of uncertain application, but probably a juvenile form of *S. grandicuspis.*

subspicàta. To 1½ ft.: lvs. to 2 ft. long, lanceolate with slender petiole, dark green, mature lvs. not variegated: fls. white, solitary or in pairs in raceme to 1½ ft. high. S. Afr.

suffruticòsa. Lvs. to 2 ft. long and ¾ in. wide, cylindrical, slightly banded with pale green, lined with darker green, rough: fls. whitish or greenish-white, ½ in. long. E. Afr.

sulcàta: *S. cylindrica.*

thyrsiflòra (*S. guineensis*). Lvs. to 1½ ft. long and 3½ in. wide, nearly flat but narrowing into channelled petiole, margined with yellow and banded transversely with pale green: fls. greenish-white, 1½ in. long, fragrant. S. Afr.

trifasciàta var. **Lauréntii.** Resembling *S. zeylanica* but lvs. longitudinally striped with golden-yellow. Belgian Congo.

zeylánica. Lvs. to 2½ ft. long and ¾ in. wide, concave at middle, transversely banded with light green and lined down back: fls. greenish-white, 1½ in. long. Ceylon. Var. **Mandaiàna** is listed.—Plants are not likely to be true to name.

SANTALÀCEÆ. Sandalwood Family. More or less parasitic herbs or shrubs, of 27 widely distributed genera, having alternate or opposite entire lvs., bisexual or unisexual fls. with 3–6-lobed perianth, 3–6 stamens, usually inferior 1-celled ovary, and fr. a nut or drupe. Buckleya is sometimes cult.; sandalwood of commerce is obtained from Santalum.

SÁNTALUM. Sandalwood. *Santalaceæ.* Evergreen trees or shrubs native in India, Malaya, Australia and Polynesia, with opposite lvs., bisexual fls. in panicles, and drupaceous frs. Oil is extracted from the sweet-scented wood which is used as a perfume.

álbum. White S. Small tree: lvs. ovate to ovate-lanceolate, to 2 in. long: fls. yellowish turning to red, in short panicles: fr. black. India.—Sometimes planted in warm countries.

SANTOLÌNA. *Compositæ.* Grayish low evergreen shrubs or rarely herbs with aromatic alternate small lvs. pinnately toothed, lobed or finely divided, and many-fld. heads of yellow or rarely white disk-fls.; pappus none; native mostly in the Medit. region.

Santolinas are employed as low border or edging plants. Propagated by cuttings taken in spring from plants wintered over in a frame or they may be taken from the plants in the fall before frost.

alpìna: a confused name, the material in cult. probably referable to *Anthemis montana.*

Chamæcyparíssus (*S. incana*). Lavender-Cotton. Evergreen subshrub to 2 ft.: lvs. pinnate into minute segms., silvery-gray-tomentose: heads solitary, to ¾ in. across, yellow, globular. Medit. region.—Often persisting in cemeteries and old yards.

incàna: *S. Chamæcyparissus.*

lindávica: listed name.

pinnàta. Per. to 1 ft. or more: lvs. small and narrow, deeply pinnatifid into narrow divisions: heads ½ in. or more across, solitary terminating stiff sts. Italy.

rosmarinifòlia. To 2 ft.: lvs. linear, to 1 in. long, fleshy, entire or slightly toothed: heads solitary, globular. S. Eu.

tomentòsa: probably *S. Chamæcyparissus.*

vìrens (*S. viridis*). Per., spreading, to 15 in. high: lvs. very narrowly linear, acutely serrate, to 2 in. long and 1/16 in. wide: heads yellow, to ⅝ in. across, solitary on stout peduncles. Medit. region.

víridis: *S. virens.*

SANVITÀLIA. *Compositæ.* Ann. American herbs with opposite usually entire lvs. and small solitary heads, the rays white or yellow, the disks brown or purple; pappus of awns or teeth or none.

One sanvitalia is grown as a flower-garden annual; it prefers a light or open soil and full sunlight. Propagated by seed.

procúmbens. Ann. with trailing sts., hairy: lvs. ovate, to 1 in. long: heads ¾ in. across, rays yellow, disk dark purple. Mex.

SAPINDÀCEÆ. Soapberry Family. A heterogeneous assemblage, mostly trees and shrubs, but in a few cases herbaceous and tendril-climbing, of about 125 genera, sometimes evergreen, the larger number in trop. regions of both hemispheres: lvs. usually alternate and pinnately or palmately compound: fls. unisexual or polygamous, having 4–5 sepals and petals or apetalous, 5–10 stamens, and superior 2–4-celled ovary: fr. of many kinds, often berry-like or drupe-like, sometimes a caps. or nut or winged body, in some cases a greatly inflated pod. Several genera are grown for the edible fr. and for ornament, as Alectryon, Blighia, Cardiospermum, Cupania, Diploglottis, Dodonæa, Euphoria, Harpullia, Kœlreuteria, Litchi, Melicocca, Paullinia, Sapindus, Serjania, Ungnadia, Xanthoceras.

SAPÍNDUS. Soapberry. *Sapindaceæ.* Trees and shrubs of trop. regions with commonly pinnate lvs., small regular polygamous fls. in panicles or racemes, and fr. a fleshy or leathery berry; grown in the S. for ornament.

The fruits are rich in saponin which is employed for cleansing purposes in some countries. They thrive in sandy or dry and rocky soil. Propagated by seeds and cuttings in spring.

Drúmmondii. Deciduous tree to 50 ft.: lvs. of 8–18 lanceolate lfts. to 3 in. long: fls. yellowish-white, in panicles to 10 in. long: fr. round, yellow turning black, to ½ in. across. Mo. to Mex.

Mukoróssii. Evergreen brittle tree: lvs. of 8–13 oblong-ovate or -lanceolate lfts. to 6 in. long, the lf.-stalk narrowly winged: fr. yellow or orange-brown, ¾ in. across. India to Japan.—The fr. has a large content of saponin; planted in Fla.

Saponària. Evergreen tree to 30 ft.: lvs. of 7–9 elliptic to oblong-lanceolate lfts. to 4 in. long, the lf.-stalk usually broadly winged: fls. white, the panicles to 10 in. long: fr. round, orange-brown and shining, to ¾ in. across. Trop. Amer.

trifoliàtus. Small tree: lfts. elliptic-lanceolate, to 4 in. long, acuminate, leathery, glabrous: fls. white, in terminal pubescent panicles: fr. 2–3-lobed, to ¾ in. long. Old World tropics.

SÀPIUM. *Euphorbiaceæ.* Trees and shrubs of the tropics with milky juice, alternate simple lvs., monœcious fls. without petals borne in spikes, and capsular fr.; several species furnish rubber and the waxy seed-covering of *S. sebiferum* is used in making candles, soap, and dressing for cloth. Propagated by seeds or cuttings or varieties are top-grafted on seedling stocks.

sebíferum (*Stillingia sebifera*). Chinese Tallow-Tree. Vegetable-Tallow. Tree to 40 ft.: lvs. rhombic-ovate, to 3 in. long, abruptly acuminate: spikes to 4 in. long: fr. ½ in. across, the 3 large white seeds adhering to the central column. China, Japan; nat. in S. U. S.—With us it is known as a shade, ornamental or specimen tree; it has something the aspect of a poplar.

SAPODILLA: *Sapota Achras.*

SAPONÀRIA. Soapwort. *Caryophyllaceæ.* Herbaceous erect or spreading annuals and perennials with flat broad lvs. and red, pink or white fls. in cymes or panicles; native in Eu., Asia and N. Afr., a few grown in rockeries and borders. Of easy cult., thriving in any soil. Propagated by seed or division.

bellidifòlia. Glabrous tufted per. to 16 in.: lvs. spatulate: fls. yellow, in heads about 1 in. across at top of sts. S. Eu. to Greece.

cæspitòsa. Tufted, with sts. to 6 in. high: lvs. linear: fls. rose, in 2–3-fld. cymes. Pyrenees.

calábrica (*S. multiflora*). Ann., sticky-hairy above: lvs. oblong-lanceolate: fls. pale rose, about ½ in. across, solitary in axils forming leafy panicles, spring. Italy, Greece. Var. **álba,** fls. white.

caucásica: *S. officinalis* var.

cerastioìdes. Ann. to 2 ft.: lvs. obovate to suborbicular, obtuse, glaucous: fls. in terminal dichotomous corymbose panicles, petals bifid with linear obtuse lobes, calyx-teeth ovate and obtuse, pedicels glandular-hairy. Caucasus.

lùtea. Tufted, to 6 in.: lvs. linear: fls. yellow, in dense heads, stamens violet. Eu.

multiflòra: *S. calabrica.*

ocymoìdes. Per., trailing, much branched, to 9 in., soft-hairy: lvs. ovate-lanceolate: fls. bright pink, in broad loose cymes, calyx purple, May–Aug. Cent. and S. Eu. Var. **álba,** fls. white. Var. **multiflòra** is said to be larger and more floriferous. Var. **spléndens,** fls. larger and deeper rose. Var. **versícolor,** fls. white turning rose.

officinàlis (*Silene Saponaria*). Bouncing Bet. Stout glabrous per., little branched, to 3 ft.: lvs. ovate-lanceolate, to 3 in. long: fls. pink or whitish, about 1 in. across, in dense terminal corymbs. May–Sept. W. Asia; widely nat. in N. Amer. Vars. **álba, ròsea** and **rùbra** are listed color forms. Double-fld. forms are **flòre-plèno, caucásica** and **caucásica flòre-plèno.**

semperflòrens nàna: hort. name of a dwarf robust long-blossoming form, probably of *S. ocymoides* although said to be non-trailing.

Vaccària (*Vaccaria vulgaris, parviflora* and *pyramidata. Lychnis Vaccaria*). Cow-Herb. Ann., glabrous, to 3 ft.: lvs. ovate-lanceolate: fls. deep pink, ⅓ in. across, in loose cymes. Eu.; widely nat. in N. Amer. Var. **álba** has white fls. Var. **ròsea** has pale pink fls.

Weìnmannii: a form of *S. cæspitosa*, to 3 in. high, with paler fls. and shorter calyx.

SAPÒTA. *Sapotaceæ.* Evergreen tree cult. in the tropics for its delicious fr., native of trop. Amer. **S. Áchras** (*Achras Sapota*). Sapodilla. To 75 ft.: lvs. oblong to elliptic, to 5 in. long, shining: fls. white, to ½ in. across, solitary, axillary: fr. to 3½ in. diam., rough, brown with yellow-brown translucent flesh and black shining seeds.—The milky latex of this tree is the chief source of Gum Chicle, important in the chewing-gum industry.

Botanical names of sapodilla and sapote are confused, due to different interpretations of the historic records. Sapodilla is *Sapota Achras* of Philip Miller, 1768, although also known as *Achras Sapota*. Sapote or marmalade-plum is *Achras Zapota* of Linnæus, 1753; it has also been called *Lucuma mammosa, Achradelpha mammosa* and *Calocarpum Sapota*. The usage in Hortus has been checked, but general agreement is not attained.

The sapodilla grows well in any usual soil but seems to prefer fertile sandy loam. Trees should not be planted closer than 25–30 feet; they require little pruning as their growth is more or less compact. Propagation is usually by seed but a better method, perhaps, is by shield-budding on common seedling stocks. Grafting and layering are also methods in India.

SAPOTÀCEÆ. Sapodilla Family. Mostly trop. and subtrop. trees and shrubs in both hemispheres, with milky juice, alternate simple and entire lvs., regular bisexual fls. having 4–6 separate sepals, gamopetalous corolla, as many stamens as corolla-lobes, superior ovary, and fr. a berry. There are more than 30 genera in the family of which several yield edible fr. and one gutta-percha. Those known to hort. are Achras, Argania, Bumelia, Chrysophyllum, Lucuma, Mimusops, Palaquium, Sapota, Sideroxylon.

SAPOTE: *Achras Zapota.* **Black:** *Diospyros Ebenaster.* **White:** *Casimiroa edulis.*

SARÀCA. *Leguminosæ.* Trees with pinnate lvs., fls. in panicled racemes, and flattened leathery or woody pods; native in trop. Asia; grown for ornament in trop. regions and sometimes under glass.

caulifiòra. Bush-like tree: lfts. 1 ft. or more long: fls. scarlet. India.

índica. Asoka. Sorrowless Tree of India. Small tree: lfts. to 9 in. long: fls. orange-red, fragrant: pods to 10 in. long. India, Malaya.

SARCÁNTHUS. *Orchidaceæ.* Old World epiphytes with non-pseudobulbous sts. bearing distichous fleshy flat or terete lvs. and lateral racemes or panicles of very small fls.; sepals and petals similar; lip spurred and joined to base of footless column. See *Orchids* for cult.

Williamsonii. Lvs. cylindrical, filiform: panicles exceeding lvs., loosely fld.; fls. amethyst-purple. Burma.

SARCOBÀTUS. Greasewood. *Chenopodiaceæ.* A spiny much branched shrub of W. N. Amer., having alternate linear fleshy lvs. with some of the branches leafless and spine-like; plants may be diœcious or monœcious, staminate fls. in catkin-like spikes and pistillate fls. solitary in axils. One species, **S. vermiculàtus,** is known. To 10 ft., usually glabrous, branches whitish: lvs. to 1½ in. long, obtuse or subacute: staminate infl. to 1 in. long, cylindrical, wing of pistillate calyx to ½ in. wide. Alkaline regions of W. Neb. to Wyo., Nev. and New Mex.—The wood is very hard, yellow and used for fuel.

SARCOCAÙLON. *Geraniaceæ.* Much branched, fleshy, spiny, suffrutescent shrubs of S. and Cent. Afr. distinguished technically from other genera of the family by fls. with 15 monadelphous stamens; spines represent persistent hardened lf.-petioles which may bear lf.-blades when very young, but normal lvs. occur in axils of thorns.

Búrmannii. To 20 in. high, sts. terete, to 1¼ in. diam.: lvs. obovate-cuneate, to ¾ in. long, fleshy, margins incised-crenate: fls. white with rose-pink center, to 2 in. across, solitary. S. Afr.

rígidum. To 20 in. high, sts. irregularly subconstricted, to 1¼ in. diam., spines about 1¼ in. long: lvs. obcordate, to ⅝ in. long, mucronate, margins entire: fls. rose-pink, to 2 in. across, solitary. Cent. Afr.

SARCOCHÌLUS. *Orchidaceæ.* Epiphytic orchids of the Old World, with non-pseudobulbous leafy sts. and lateral infl. either racemose or paniculate; dorsal sepal and petals similar; lateral sepals broader, running down the column-foot; lip 3-lobed, spurred or shoe-shaped. See *Orchids* for cult.

Calcèolus: *Thrixspermum Calceolus.*

pállidus (*S. unguiculatus*). Lvs. distichous, to about 14 in. long and almost 3 in. wide: infl. racemose, few- to many-fld., shorter than lvs.; fls. up to 2¼ in. across; sepals and petals cream-white; lip cream-white or flesh color barred with red-brown or violet. Blooming all year. Malaya, Philippines.

unguiculàtus: *S. pallidus.*

SARCOCÓCCA. *Buxaceæ.* Evergreen long-leaved Asian shrubs with alternate entire lvs. and unisexual fls. without petals borne in short axillary racemes; sometimes planted for the attractive foliage; useful in southern states. Propagated by seeds and cuttings.

Chíngii: listed name.

Hookeriàna. To 6 ft.: lvs. lanceolate, to 3 in. long: fr. black. Himalayas. Var. **hùmilis** (*S. humilis*), to 4 ft., with shorter lvs. and stamens.

hùmilis: *S. Hookeriana* var.

prunifórmis: *S. saligna.*

ruscifòlia. To 6 ft.: lvs. ovate, to 2 in. long, lustrous dark green above: fls. whitish: fr. red. China.

salígna (*S. pruniformis*). Lvs. lanceolate-oblong, to 5 in. long, caudate-acuminate: fls. yellow: fr. purple. Himalayas.

SARCÒDES. *Monotropaceæ.* Bright red or crimson saprophytic herb of W. U. S., distinguished from Monotropa by its sympetalous corolla and in the absence of a receptacular disk beneath the ovary. **S. sanguínea.** Snow-Plant. To 15 in., sts. covered with ovate to ligulate fleshy scales to ⅝ in. long: fls. red, to ½ in. long, in terminal racemes. In coniferous forests on mts. in W. Nev., Lower Calif. north to S. Ore., blossoming as soon as snow melts in June–July.

SARCOGLÓTTIS. *Orchidaceæ.* American terrestrial orchids closely allied to Spiranthes and sometimes considered to be generically inseparable, but differing in having generally larger fls., recurved lateral sepals decurrent on the ovary and reflexed terminal lobe of lip.

pícta (*Spiranthes picta*). To about 2 ft. high: lvs. elliptic-oblanceolate, to about 18 in. long: racemes to about 12 in. long; fls. whitish, green or brown, about 2 in. long. Oct.–June. Cent. Amer., Trinidad, S. Amer.

SARCOPODIUM: *Dendrobium.*

SARCOSTÉMMA. *Asclepiadaceæ.* Succulent, leafless, trailing or twining herbs of semi-desert trop. regions of Old World, having yellowish-green to whitish fls. in umbels. S. **viminàle.** Trailing or shrubby suffrutescent shrub, occasionally with bract-like minute ovate lvs.: corolla pale greenish to sulfur-yellow, rotate to subcampanulate. May be grown in sandy soil as pot-plant under glass; propagated by cuttings or seed. This plant, or a related species, may be in cult. as *Euphorbia pendula.*

SARGENTODOXA: see *Lardizbalaceæ.*

SAROTHRA: *Hypericum gentianoides.*

SARRACÈNIA. Pitcher-Plant. *Sarraceniaceæ.* American insectivorous plants sometimes grown as curiosities: stemless perennials with basal hollow lvs. or "pitchers" which are winged or keeled on one side and with a lid at top, solitary nodding yellow to crimson fls. with an umbrella-like stigma, and capsular frs.

Pitcher-plants are natives of moist or swampy places and should be grown in pots of fine sandy muck standing in about 1 inch of water. They withstand temperatures nearly to freezing (below freezing in native places when dormant), and *S. purpurea* is hardy North. Propagated by seeds which are obtained only by cross-pollination.

Cátesbæi: *S. Sledgei.*

Drúmmondii. Pitchers to 4 ft. long, green below veined with purple, the lid nearly erect and wavy-margined: fls. purple, to 4 in. across. Ga., Fla., Ala.

flàva. Pitchers to 3 ft. long, yellowish-green with crimson throat or sometimes entirely crimson, the lid slightly bent over mouth: fls. yellow, to 4 in. across. Va. to Fla.

Jònesii. Pitchers to 2½ ft. long, green, sometimes inconspicuously veined with red, the lid curving over mouth: fls. dark red, 2 in. long. N. C. to Fla. and Miss.

mìnor (*S. variolaris*). Pitchers to 2 ft. long, veined toward top with green and purple and blotched with white or yellow, the lid bent over mouth: fls. pale yellow, to 2 in. across. N. C. to Fla.

psittácina. Pitchers decumbent, to 6 in. long, veined and spotted with purple and white, the lid strongly bent: fls. purple or greenish-purple, to 2 in. across. Ga., Fla., Ala.

purpùrea. Pitchers to 10 in. long, green to dark purple, the lid nearly erect: fls. purple or greenish-purple, to 2 in. across. Lab. to Fla. and Rocky Mts.

rùbra. Pitchers to 20 in. long, veined with purple, the lid slightly bent: fls. crimson, fragrant, to 2 in. across. N. C. to Fla.

Slédgei (*S. Catesbæi*). Pitchers to 2½ ft. long, veined with purple, the lid erect or slightly bent: fls. yellow fading to white, to 2½ in. across. Ala. to Tex.—There is another *Catesbæi* which is a hybrid between *S. flava* and *S. purpurea.*

variolàris: *S. minor.*

SARRACENIÀCEÆ. Sarracenia Family. Three genera of specialized insectivorous low herbs native in N. and S. Amer., Darlingtonia, Heliamphora and Sarracenia, sometimes cult. as fanciers' plants or for botanical demonstration. The family is characterized by basal tubular pitcher-like or trumpet-form lvs., bisexual fls. having 5 sepals and petals, numerous stamens, superior 3–5-celled ovary, and capsular frs.

SARSAPARILLA: *Aralia.*

SÁSA. *Gramineæ.* Bamboo shrubs, mostly dwarf or not very tall, with cylindrical culms, persistent lf.-sheaths, lvs. crowded at ends of branches, tessellate, and narrow spikelets borne in loose panicles, stamens usually 6; native in E. Asia and the Philippines. Many of them stand as far north as Washington and Philadelphia. See *Bamboo.*

álbo-marginàta: *S. Veitchii.*

argénteo-strìàta: see *Pleioblastus viridi-striatus.*

aùreo-strìàta: see *Pleioblastus viridi-striatus.*

aurícoma: *Pleioblastus viridi-striatus.*

chrysántha (*Arundinaria* and *Bambusa chrysantha*). To 6 ft.: lvs. to 5 in. long and ¾ in. wide, glabrous, often variegated with yellow. Japan.

dísticha: *Pleioblastus distichus.*

hùmilis: *Pleioblastus humilis.*

japónica: *Pseudosasa japonica.*

paniculàta: *S. senanensis.*

pùmila: *Pleioblastus pumilus.*

pygmæ̀a: *Pleioblastus viridi-striatus* var. *vagans.*

senanénsis (*S. paniculata*). To 6 ft., st.-sheaths with ciliate tongue: lvs. to 1 ft. long and 3 in. wide, shining above, glaucous beneath. Japan. Var. **nebulòsa** (*Arundinaria* and *Bambusa palmata*) has purplish sts. and st.-sheaths spotted with brown.

tessellàta (*Arundinaria tessellata. A. Ragamowskii. Bambusa tessellata. B. Ragamowskii*). To 5 ft.: lvs. to 1½ ft. long and 4 in. across, toothed, glaucous and pubescent beneath. Japan.

variegàta: *Pleioblastus variegatus.*

Veìtchii (*S. albo-marginata. Arundinaria* and *Bambusa Veitchii*). To 3 ft., usually lower: lvs. to 8 in. long and 2½ in. wide, glaucous and pubescent beneath, edges turning yellow, lf.-sheaths with bristly tips. Japan.

SÁSSAFRAS. *Lauraceæ.* Aromatic deciduous trees, one native in N. Amer., one in Asia, one on Isl. of Formosa, with alternate entire or lobed lvs., unisexual or bisexual fls. before the lvs., and drupaceous fr. having a fleshy pedicel. Of easy cult. Propagated by seeds, suckers, and root-cuttings.

álbidum (*S. officinale. S. variifolium*). Sassafras. To 60 ft. or more: lvs. ovate, to 5 in. long, entire or 1–3-lobed at apex, pale beneath: fls. yellow, in racemes to 2 in. long: fr. dark blue, with bright red stalks. Me. to Fla. and Tex.

officinàle: *S. albidum.*

variifòlium: *S. albidum.*

SATIN-FLOWER: *Lunaria.* **-Leaf:** *Chrysophyllum oliviforme.*

SATURÈJA (incl. *Calamintha*). Savory. *Labiatæ.* Aromatic herbs and subshrubs of warm countries, grown in borders for their bloom and also as sweet herbs: lvs. narrow, entire or broader and toothed: fls. whorled, in simple spikes or raceme-like panicles.

Savory is propagated by seed sown in the permanent position; also by division and cuttings of the new growth, in the case of the perennials.

Ácinos (*C. Acinos*). Ann. to 6 in.: lvs. ovate, obtuse, slightly toothed: fls. in separated whorls, purple-blue. Eu.; nat. in E. N. Amer.

alpìna (*C. alpina*). Alpine S. Per., much branched and woody at base, 6 in.: lvs. ovate, ½ in. long, slightly toothed: fls. purple. Medit. region.

amœ̀na: listed name.

ánnua. Ann. to 5 in.: lvs. ovate, acute, to ½ in. long, serrate, glabrous, petioled: fls. many in dichotomous cymes, calyx about as long as corolla. Russia.

Calamíntha (*C. officinalis* and *C. montana. Clinopodium Calamintha*). Calamint. Small hairy-pubescent per., with creeping rootstocks, 1–2 ft. high: lvs. broad-ovate, obtuse, dentate: fls. small, in separated leafy whorls, lilac. Eu.—Sometimes confused as to name with *S. montana.*

Chándleri. To 3 ft., clump-forming: lvs. orbicular-ovate, to ¾ in. long, obtuse, remotely crenulate, petioles ⅛ in. long: fls. white, upper lip of corolla 2-cleft and lower lip 3-cleft, lobes obtuse. Calif.

chinénsis (*C. chinensis*). Per. with ascending hairy sts.: lvs. ovate, acute, toothed: fls. in very dense whorls. China.

coccínea: *Clinopodium coccineum.*

córsica. Low suffrutescent herb, subglabrous or twigs pilose: lvs. ovate, to ⅛ in. long, acute, often appressed silvery-hairy beneath: fls. rose-pink, to ⅛ in. long, solitary or in pairs, corolla about twice as long as calyx. Corsica.

croática: *Micromeria croatica.*

cuneifòlia: *S. montana.*

glabélla (*C. glabella*). Per. with decumbent hairy sts. to 2 ft.: lvs. narrowly oblong, about 1 in. long, usually glabrous: corolla purplish, about twice as long as calyx, verticillate whorls of 6–10 fls. Ky. to Ind. south to Tenn. and Ark.

grandiflòra. Per. to 18 in. or more: lvs. ovate, to 3 in. long, acute, coarsely dentate, usually sparsely pilose or hispid: fls. purple, to 1½ in. long, few in short peduncled cymes, calyx about ½ in. long with awl-shaped lobes. Eu.

horténsis (*C. hortensis*). SUMMER S. Ann. to 1½ ft.: lvs. soft, oblong-linear, to 1½ in. long: fls. pink, purplish or white. Eu.; nat. in E. U. S.

illýrica: *S. montana.*

intricàta. Suffrutescent per., densely tufted: lvs. obovate, to ½ in. long, mucronate, base wedge-shaped, margins usually 2-toothed and ciliate, glabrous: fls. white, usually solitary in lf.-axils, glandular-punctate on outside. Spain.

montàna (*C. montana* and *officinalis. S. cuneifolia. S. illyrica. S. pygmæa*). WINTER S. Per. or subshrub to 15 in.: lvs. stiff, oblong-linear, to 1 in. long, sessile and bases joined by ridge: fls. white or purplish. Eu., N. Afr.

Népeta (*C.* and *Clinopodium Nepeta*). Per. to 16 in.: lvs. ovate, to 1 in. long, slightly toothed: fls. purplish or white. Eu., Asia; nat. in N. Amer.

pygmæa: *S. montana.*

rupéstris. Subshrub to 1½ ft., woody at base: lvs. ovate, small, entire to crenate-dentate, obtuse, glabrous to canescent: corolla slightly longer than calyx, fls. in dense whorls. S. E. Eu.

stenophýlla: listed name.

SAURÓMATUM. *Araceæ.* Per. herbs with a large solid corm-like underground tuber from which arise the short scape and large pedate lf., one species sometimes planted for ornament and curiosity: somewhat arisæma-like but scape separate from petiole-sheath: native in Himalayas and Afr. Some forms stand in N. Y. with protection in winter.

guttàtum (*Arum guttatum*). Tuber 3–6 in. diam.: scape 2–4 in. long, direct from tuber, usually before lf.: spathe narrow and long-tailed, 1–2 ft. or more, dull purple or yellowish spotted and blotched purple, blade oblong-lanceolate: lfts. or segms. 5–15, long oblong-lanceolate, pointed, 6–12 in. long. Himalayas and subtrop. E. Asia.—Variable, and has been grown in one of its forms as *Arum cornutum* and "red calla." Var. **pedàtum** (*S.* and *Arum pedatum*). Petiole green, not spotted: spathe about 1 ft. long, yellowish and purple-spotted inside. Var. **punctàtum** (*S. punctatum*). Petiole spotted: spathe brown-spotted at base, striate. Var. **simlénse** (*S. simlense*). Small or depauperate: lf. 5-parted: spathe 4 in. or less long. Var. **venòsum** (*S.* and *Arum venosum*). Lf.-segms. 7–11, petiole with long spots.

nùbicum. Differs from *S. guttatum* in blade of spathe being elongate-lanceolate and sterile fls. filiform, more numerous and not club-shaped.

pedàtum: *S. guttatum* var.

punctàtum: *S. guttatum* var.

simlénse: *S. guttatum* var.

venòsum: *S. guttatum* var.

SAURURÀCEÆ. LIZARDS-TAIL FAMILY. Per. herbs of 3 genera in N. Amer. and Asia, having alternate entire lvs., small fls. without perianth in racemes or spikes that are sometimes subtended by corolla-like bracts, 6 or 8 stamens, ovary of 3 or 4 carpels, and capsular frs. Anemopsis, Houttuynia and Saururus may be planted.

SAURÙRUS. LIZARDS-TAIL. *Saururaceæ.* Herbs in wet or moist situations, with heart-shaped lvs. and fls. in dense terminal spikes or racemes. Propagated by division or seeds.

cérnuus. To 5 ft., with long rootstocks: lvs. ovate, to 6 in. long, palmately veined: fls. white, fragrant, in spikes to 6 in. long. Conn. to Fla. and Tex.

SAUSAGE-TREE: *Kigelia pinnata.*

SAUSSÙREA. *Compositæ.* Herbs mostly of the north temp. zone with alternate entire, toothed or pinnate lvs. and heads of purple or bluish disk-fls.; pappus of bristles. Sometimes planted for ornament. The name Saussurea has been applied also to Hosta.

albéscens. Per. to 10 ft., st. simple, erect: lvs. oblong-ovate, to 12 in. long, acuminate, entire or sinuate-lobed, pubescent beneath: heads to ¾ in. across, red. Himalayas.

deltoídea. Per. to 8 ft.: lvs. triangular-ovate or lower lyrate-pinnatifid, to 1½ ft. long, white-tomentose beneath: heads to 1½ in. across, in leafy panicles. Himalayas.

SAVANNAH FLOWER: *Echites tomentosa.*

SAVIN: *Juniperus Sabina.*

SAVORY: *Satureja.*

SAXEGOTHÆA. *Podocarpaceæ.* Evergreen tree native to Chile, **S. conspícua.** To 45 ft.: lvs. yew-like, linear, to 1 in. long, dark green above, with 2 broad white bands beneath: male fls. in short spikes: fr. cone-like, about ½ in. across, with several seeds.—To be grown far south in E. U. S. and in Calif. For cult. see *Conifers.*

SAXÍFRAGA. SAXIFRAGE. ROCKFOIL. *Saxifragaceæ.* Varied group of many attractive herbaceous perennials, a few ann. or bien., by some authors arranged in several genera: lvs. usually basal and clustered, those on the sts. commonly smaller: fls. white, pink, purple or yellow, in racemose, paniculate or cymose clusters, blooming commonly in late spring and early summer: native in temp. and subarctic regions, mostly in the mts. and in rocky places, many adapted to the rock-garden, a few to the border, while one (*S. sarmentosa*) is often grown as a window- and basket-plant.

Saxifrages are much prized by fanciers but are relatively little grown in North America. They require the usual treatment for rock-garden or border perennials. Increased by seed, by division and in some species by runners, also by the bulblets which some kinds produce.

The species of Saxifraga are divided into sections in order to show natural relationships and to facilitate identification. The species of a given section possess in common the characteristics of that section and such are not repeated, for the most part, in the brief diagnoses given. The distinguishing characters of the sections of the genus follow:

Diptera: flowers irregular, having definitely unequal petals: plants generally hairy, runners usually present.

Tetrameridium: flowers 4-merous, without petals: leaves opposite, pitted.

The following sections have regular 5-merous flowers, often with a double perianth:

Boraphylla: rhizome subterranean, the secondary shoots permanently attached: ovary free: leaves without pits on upper surface, no lime secreted: fls. white: seed fusiform or spindle-shaped; capsule somewhat inflated, splitting above the middle.

Hirculus: differs from Boraphylla in its yellow to orange flowers and capsule not inflated, splitting below the middle.

Miscopetalum: differs from Hirculus in its obovate seed, and white flowers.

Robertsonia: differs from Boraphylla in the rhizome being above ground and fls. occasionally pink to carmine-red.

Cymbalaria: leaves brown-striate: flowers yellow: seed globose.

Tridactylites: annual or biennial, without pits on foliage leaves, rhizomes absent: flowers usually white.

Nephrophyllum: biennial or perennial, rarely annual, rhizome subterranean, secondaries with shortened bulbous internodes separating from the stem with age: leaves usually not persisting through winter, pits absent from cotyledons and foliage leaves: flowers white.

Dactyloides: perennials differing from Nephrophyllum in absence of bulbous structures, rhizomes above ground, leaves usually persisting through winter, herbaceous, not setose: flowers white, pink or red, rarely yellow.

Trachyphyllum: differs from Dactyloides in leaves not herbaceous, commonly very setose: flowers usually yellow, occasionally white.

Xanthizoon: rhizomes above ground, branched from the base: leaves alternate, pits present on margins and on apex of cotyledons, covered with bristly hairs, not lime incrusted.

Euaizoonia: rhizomes above ground, secondary shoots separating early from rhizomes, more or less stoloniferous, their apex with a rosette of leaves: leaves alternate, pits present, lime incrusted.

Kabschia: differs from Euaizoonia in secondary shoots remaining attached to the perennial rhizome.

Porphyrion: differs from Kabschia in leaves decussately opposite.

Hybrids: not a botanical section of the genus. Many horticultural and natural hybrids occur and are in cultivation, whose parents belong in different sections. These are sometimes difficult of identification, and as complete descriptions as practicable are given.

To economize space in the following brief diagnoses of species, or of plants under Latin names, letters are employed to distinguish the section to which the plant belongs: B, *Boraphylla*; C, *Cymbalaria*; Da, *Dactyloides*; Di, *Diptera*; E, *Euaizoonia*; H, hybrid; Hi, *Hirculus*; K, *Kabschia*; M, *Miscopetalum*; N, *Nephrophyllum*; P, *Porphyrion*; R, *Robertsonia*; Te, *Tetrameridium*; Tra, *Trachyphyllum*; Tri, *Tridactylites*; X, *Xanthizoon*.

The section *Engleria* is encountered in trade publications. This is a segregate from Kabschia and is not considered botanically distinct by the more recent monographers of the genus.

adscéndens (*Muscaria adscendens*). Tri: to 5 in., sticky-pubescent: lvs. cuneate, 3–5-lobed, to ⅓ in. long: fls. white, very small, in corymbs. B. C. to Colo., Eu.

ǽmula: *Bergenia media.*

æstivàlis (*Micranthes æstivalis*). B: to 10 in.: lvs. cordate-orbicular, coarsely toothed, to 6 in. long: fls. white, very small, in panicles. Alaska to Wash., Siberia.

affìnis: *S. hypnoides.*

aizoìdes (*Leptasea aizoides*). X: to 6 in.: lvs. linear-oblong or oblong, to ½ in. long, thick: fls. yellow, to ⅕ in. long, solitary or several. Arctic N. Amer., Eu., Asia.

Aizoón (*Chondrosea Aizoon*). E: to 20 in.: lvs. in dense basal rosettes, narrow-spatulate, to 1¼ in. long, with incrusted white teeth: fls. creamy marked with purple, to ½ in. across. Arctic N. Amer., Eu., Asia. Varieties and forms listed in the trade include: **álba,** fls. white; **atropurpùrea,** fls. rose-purple; **balcàna** (*S. balcana*), fls. white with large red spots; **baldénsis,** lvs. ashy-gray, short and thick, N. Italy; **brevifòlia,** fls. white; **califórnica** (*S. carinthiaca*), fls. white; **Chúrchillii,** lvs. gray, more pointed in stiff rosettes; **cristàta,** lvs. narrow and silvery, fls. cream-colored; **cultràta,** to 14 in., basal lvs. narrow, serrate and obtuse, fls. cream-colored, Carpathian Mts.; **dénsa,** rosettes small, very silvery; **emarginàta,** to 10 in. with loose rosettes and creamy fls.; **flavéscens,** fls. lemon-yellow; **Hàinoldii,** to 1 ft. with large rosettes and rose fls.; **labradórica,** very small; **lagaveàna,** to 6 in., rosettes small and silvery, fls. creamy, thick and wax-like; **Lámbertii,** reported as a hybrid; **lùtea,** fls. yellow; **màjor,** lvs. oblong-linear not widening much at apex; **mínima,** very small, fls. white (var. *minor*); **notàta,** lvs. margined with silver; **paradóxa,** lvs. bluish, fls. white; **pectinàta,** lvs. margined with silver, fls. white spotted red; **Pórtiæ,** dense clusters of silvery-lvd. rosettes, fls. creamy; **Réx,** to 10 in., fls. cream, large; **ròsea,** fls. bright pink; **rosulàris,** lvs. of rosettes incurved, fls. white; **Stabiàna** (*S. Stabiana*), to 8 in., lvs. to 1 in. long.

Álbertii. K: to 1 in., densely tufted: lvs. lingulate-oblong to linear-lanceolate, concave above: fls. yellow, in panicles. Turkestan.

Állionii: *S. moschata* var.

alpìna: name of uncertain application.

altíssima. E: to 2 ft.: lvs. in basal rosettes, broadly tongue-shaped, to 4 in. long, with cartilaginous teeth: fls. white, slightly spotted with purple, ½ in. across. Tyrol.

ambígua. Hybrid between *S. media* and *S. aretioides:* to 2½ in.: fls. purple, red or coppery. Pyrenees.

Ándrewsii. Hybrid between *S. Aizoon* and *S. Geum:* to 6 in.: fls. white spotted with red.

anormàlis: listed as having lvs. in rosettes, lightly lime pitted, fls. yellow; the name has no known botanical standing, and the plant may be a hort. hybrid.

apennìna: *S. cuneifolia* var. *subintegra.*

aphýlla. Da: to 1 in., loosely tufted: lvs. spatulate-lanceolate, entire or 3–5-toothed, to ½ in. long: fls. light yellow, very small, usually solitary. Mts., Eu.

apiculàta. Hybrid between *S. Rocheliana* and *S. sancta:* to 3½ in.: fls. yellow. Var. **álba,** fls. pure white or pale cream. Var. **Mályi** (*S. Malyi*) has deeper yellow fls.

aquática. Da: to 20 in.: lvs. orbicular, about 1 in. wide, 3-lobed: fls. white, ¾ in. across. Pyrenees.

arachnoídea. N: tufted, with procumbent sts. to 1 ft. long, densely hairy: lvs. 3–5-lobed, to ¾ in. long: fls. yellow. Cent. Eu.

árco-válleyi. K: rosettes to ⅜ in. across: fls. bright red, to ½ in. across. A hort. hybrid.

Árendsii. Hybrid of mixed parentage which probably includes *S. exarata* and *S. decipiens:* to 4 in., with light green dissected lvs. in dense tufts: fls. rose to blood-red, to ¾ in. across. Var. **spléndens** has larger and deeper red fls.

aretioìdes. K: to 2 in., densely tufted: lvs. leathery and stiff, linear, to ¼ in. long, the margins cartilaginous: fls. golden-yellow, ½ in. across. Eu.

argùta (*Micranthes arguta*). B: to 1½ ft.: lvs. nearly orbicular, cordate, wavy-toothed, to 1 ft. long: fls. white with yellow spots, very small, in panicles. B. C. to Calif. and New Mex.

áspera. Tra: to 6 in. with creeping sts.: lvs. linear-lanceolate, ciliate with stiff hairs, shining: fls. yellowish-white, in few-fld. panicles. Mts., Eu. Var. **bryoìdes** is densely tufted, to 3 in.

atropurpùrea: *S. moschata* var.

austromontàna (*Leptasea austromontana*). Tra: to 3 in., densely tufted: lvs. lanceolate, about ½ in. long, ciliate: fls. white spotted with yellow, ½ in. across. B. C. to New Mex.

balcàna: *S. Aizoon* var.

baldénsis: *S. Aizoon* var.

bathoniénsis: *S. decipiens* var.

Beesiàna: listed as having purple foliage in winter and rose fls.; probably a Bergenia.

Bellárdii: *S. lingulata* var.

Bertolònii. Hybrid between *S. Friderici-Augustii* and *S. porophylla:* to 3 in.: fls. red.

Biasoléttii. Hybrid whose reputed parentage is *S. Grisebachii* and *S. porophylla* var. *Sibthorpiana* forma *thessalica:* lvs. narrow-spatulate, acute: sts. red: fls. reddish-purple.

bìdens (*Micranthes bidens*). B: lvs. erect or nearly so, to 2½ in. long, oblong to oval, more or less ciliate: fls. white, sepals reflexed at maturity, petals clawed and 2-toothed at apex; scapes erect to 16 in., fls. clustered in cymules. Mont., Utah, Nev.

Biléckii. Hybrid of *S. Ferdinandi-Coburgii* and *S. tombeanensis:* cespitose, to 3 in.: lvs. linear, obtuse, fleshy, small: fls. yellow, large.

Boeckelèri. Hybrid of *S. Ferdinandi-Coburgii* and *S. Stribrnyi:* small plant of tufted rosettes less than 1 in. across, fl.-sts. to 3 in. tall: basal lvs. linear-spatulate, to ⅜ in. long, fleshy, white-pitted: fls. yellow tinged red.

Bóngardii (*Spatularia Brunoniana*). B: to 16 in.: lvs. oblanceolate, to 2½ in. long, toothed, hairy: fls. white with yellow spots, petals unequal, sometimes replaced by bulblets. Alaska to Ore.

Bòrisii. Hybrid between *S. marginata* and *S. Ferdinandi-Coburgii:* to 3 in.: fls. yellow.

Bòryi. K: to 1½ in., tufted: lvs. oblong, spatulate: fls. white, to ⅓ in. long. S. E. Eu.

Bòydii. Hybrid between *S. aretioides* and *S. Burseriana:* fls. yellow. Var. **álba,** fls. white or pale cream-colored.

bráchypus (*Micranthes brachypus*). B: to 8 in.: lvs. oblong or elliptic, to 5 in. long, slightly toothed: fls. white, very small, in narrow panicles. Mts., Colo., Nev.

brevifòlia: *S. Aizoon* var.

bronchiàlis. Tra: to 8 in., tufted: lvs. stiff, linear, to ½ in. long, ciliate: fls. yellowish-white, spotted with reddish, ½ in. across. Asia, Alaska.

Brunoniàna. Hi: to 5 in., laxly tufted, glabrous, shoots to 4 in. long: lvs. stiff, linear-lanceolate, to ⅝ in. long, mucronate, ciliate: fls. to ¾ in. across. Cent. Asia.

Búcklandii. Probably a hort. form of *S. cuneifolia,* differing in having 2 or 3 yellow spots on each petal.

Burnáttii. Hybrid of *S. cochlearis* and *S. Aizoon:* rosettes like *S. cochlearis:* fls. white, large. A natural hybrid of the Maritime Alps.

Burseriàna. K: to 4 in. deeply tufted: lvs. stiff, linear-subulate, to ½ in. long, the margins cartilaginous: fls. white, usually solitary, 1 in. across. Eu. Var. **crenàta,** petals crenate. Var. **màjor** (vars. *grandiflora, magna* and *tridentina*) has larger fls. Var. **mínima** (var. *minor*) is smaller, to 1½ in. Var. **speciòsa,** fls. larger on bright red scapes. Var. **sulphùrea,** fls. yellow.

bursiculàta. Garden hybrid of *S. Burseriana* var. *major* and *S. apiculata:* to 3 in., rosettes silvery-gray: lvs. linear-subulate, acutely pointed: fls. white, large, usually 3–4 in infl.

cæ̀sia. K: to 3 in., densely tufted: lvs. linear-oblong, ⅕ in. long: fls. white, about ½ in. across, 1–2 together. Eu.

cæspitòsa (*Muscaria cæspitosa*). Da: to 6 in., tufted: lvs. 3-lobed, about ½ in. long: fls. white, ½ in. or less across. N. N. Amer., N. Eu., N. Asia.

calábrica: listed as belonging in the Euaizoonia section with fls. white.

califórnica: *S. Aizoon* var.; not to be confused with the Pacific coast species of the same name, which is probably not in cult.

Cámposii (*S. Wallacei*). Da: to 6 in.: lvs. 3-lobed, shining: fls. white, ¾ in. across. Spain.

canaliculàta. Da: to 8 in., tufted: lvs. 3-parted, ½ in. across, the lateral lobes 2–3-parted, middle lobe entire, sticky below, very stiff, petiole deeply grooved: fls. white, ⅓ in. long, in panicles. Pyrenees.

cànis-dalmática. E: listed with fls. white finely spotted red; lvs. heavily lime incrusted.

capillàris: *S. cuneifolia.*

capíllipes: *S. cuneifolia* var. *subintegra.*

carinthìaca: *S. Aizoon* var. *californica.*

cartilagínea (*S. Kolenatiana*). E: to 9 in.: lvs. in rosettes, oblong, to 1 in. long, the margins cartilaginous: fls. white, rose or purple, about ½ in. across. Asia Minor.

catalaùnica. E: to 2 ft., densely tufted: lvs. obovate, margins white-crustate, glaucous: fls. white, in panicled cymes. Spain.

caterhaménsis: *S. Cotyledon* var.

caucásica. K: basal lvs. to 1¼ in. long, lanceolate, margins pitted: fls. yellow, to ⅜ in. across, in corymbs. Caucasus. Var. **Desoulàvyi** (*S. Desoulavyi*), has smaller but strongly ciliate lvs.

ceratophýlla: *S. trifurcata.*

Cholentiàna: catalogue name.

chrysántha. Hi: low tufted plant to 2 in. tall with creeping sts.: lvs. basal, imbricated in rosette, oblong, smooth, fleshy: fls. yellow, large, usually 1–3 in terminal infl., on slender glandular-pubescent peduncles. Mts. of Colo. and N. Mex.

Chúrchillii: *S. Aizoon* var.

circuénta: listed name of plant said to be similar to *S. catalaunica.*

Clárkei. Garden hybrid of *S. Vandellii* and *S. media:* to 2½ in.: lvs. to 4 in. long, linear-oblong to linear-subulate, glandular-hairy: fls. rose, to ⅜ in. across, usually in 1–2-fld. infl.

Clarmayiàna. Garden hybrid, listed as producing cream-colored fls. and placed in Euaizoonia section.

cochleàris. E: to 9 in., densely tufted: lvs. linear-spatulate, to 1 in. long, margins cartilaginous: fls. white, to ¾ in. across. Alps. Var. **longifòlia** is listed as a hybrid with "fine white plumes." Var. **màjor** has larger white fls. Var. **mìnor,** lvs. silvery, in minute rosettes.

columbiàna (*Micranthes columbiana*). B: to 1 ft.: lvs. oblong or elliptic, to 4 in. long, finely toothed or wavy: fls. white or greenish, very small, in panicles. Wash., Ore. to Mont.

conífera. Da: to 3 in., densely tufted: lvs. oblong-linear, leathery, margins ciliate: fls. white. Spain.

cordifòlia: *Bergenia cordifolia.*

coriophýlla: *S. marginata* var.

cortusæfòlia. Di: to 1½ ft.: lvs. roundish, to 3 in. long, 5–11-lobed, fleshy: fls. white, to ¾ in. long, in loose panicles. E. Asia. Var. **Fórtunei** (*S. Fortunei*) has kidney-shaped lvs. to 2 in. long and 4 in. wide, usually 9-lobed, and smaller fls. with toothed petals. Japan.

corymbòsa (*S. luteo-viridis*). K: to 6 in., densely tufted: lvs. spatulate, to 1 in. long, with cartilaginous margins: fls. pale yellow or yellowish-green, ¼ in. across. Eu.

Cotylèdon. E: to 2 ft.: lvs. in rosettes, tongue-shaped, to 3 in. long, toothed: fls. white veined with pink, fragrant, to ¾ in. across. Mts. of Eu. Var. **caterhaménsis,** to 3 ft., fls. white spotted red. Var. **icelándica** (*S. icelandica*), the largest form of the species, with large flat rosettes and bronzy leathery lvs. Var. **longifòlia,** lvs. silvery, fls. white. Var. **montavoniénsis,** lvs. glossy, fls. white with red sts. Var. **nepalénsis** is var. *pyramidalis.* Var. **norvégica,** listed as producing "arching sprays" of white fls. Var. **prolífera,** sts. decumbent, bearing 20–30 rooting rosettes. Var. **pyramidàlis** (var. *nepalensis, S. pyramidalis, S. nepalensis*) grows to 4 ft.

crassifòlia: *Bergenia crassifolia.*

cristàta: probably spelling error for *S. crustata.*

crustàta (*S. incrustata*). E: to 1 ft., densely tufted: lvs. linear, to 1½ in. long, crustated with lime: fls. white, sometimes marked with purple at base, ⅖ in. across. Tyrol.

cuneàta. Da: to 6 in., loosely tufted: lvs. cuneate, ½ in. long, 3-lobed, leathery and shining: fls. white, ¼ in. long, in loose panicles. S. Eu.

cuneifòlia (*S. capillaris*). R: to 1 ft.: lvs. in rosettes, broad-spatulate, to 1½ in. long, rounded and toothed at apex: fls. white, yellowish at base, ¼ in. across. Eu. Var. **infundibulifórmis** with "spoon-shaped lvs." is listed; it may not differ materially from the type. Var. **subíntegra** (*S. apennina, S. capillipes*) has nearly entire lvs.

cuscutæfórmis. Di: to 6 in., with thread-like stolons: lvs. basal, oval, to 2 in. long, coarsely toothed or wavy, veined with white: fls. white, 1 in. across, petals very unequal. Japan.

Cymbalària. C: ann. or bien. to 1 ft.: lvs. kidney-shaped or ovate, to 1 in. long, lobed or crenate: fls. yellow, to ½ in. across. Caucasus, Asia Minor.

dactyloìdes: a section of Saxifraga comprising the mossy saxifrages.

dalmática: listed as in Kabschia section with "minute spiny cushions, fls. white in trusses."

decípiens. Da: to 1 ft. but usually lower, tufted: lvs. obovate-cuneate, cut into 3–5 linear lobes: fls. white, about ½ in. across. Eu.—By some authorities considered a subspecies of *S. cæspitosa.* Runs into many hort. vars., a few of which are: **álba,** fls. white; **Árkwrightii,** fls. to 1 in. across; **bathoniénsis** (*S. bathoniensis*), fls. scarlet; **grandiflòra,** to 8 in., fls. red fading pink; **grándis,** to 6 in., fls. rose; **hýbrida,** a strain of red-fld. hybrids; **ròsea,** fls. rich rose-red; **sanguínea,** fls. deep blood-red.

Delavàyi: *Bergenia Delavayi.*

dénsa: *S. moschata* var.

Desoulàvyi: *S. caucasica* var.

Èastwoodiæ (*Heterisia Eastwoodiæ*). B: to 16 in.: lvs. nearly orbicular, to 3 in. across, deeply cordate and shallowly lobed, long-petioled: fls. white. Wash. to Calif.

elàtior: *S. Hostii.*

Elízabethiæ. Hybrid between *S. Burseriana* and *S. sancta:* to 2 in.: fls. yellow.

Éngleri. Hybrid between *S. Aizoon* and *S. cuneifolia:* to 4 in.: fls. very small.

Eudoxiàna. Hybrid of *S. Ferdinandi-Coburgii* and *S. sancta:* lvs. silvery, sts. tinged red: fls. deep orange-yellow, usually 2–3 in head.

exaràta. Da: to 6 in., tufted: lvs. 3-parted or -lobed: fls. white varying to rose or purple. Mts. of S. Eu.

Férdinandi-Còburgii. K: to 2 in., densely tufted: lvs. oblong, to ½ in. long, ciliate: fls. yellow, about ½ in. across. Macedonia.

ferrugínea (*Spatularia ferruginea*). B: to 6 in., covered with reddish hairs: lvs. spatulate or oblanceolate, to 2½ in. long, toothed: fls. white, ⅛ in. long, in cymes. Alaska to B. C.

flagellàris (*Leptasea flagellaris*). Hi: erect stoloniferous plant to 8 in.: lvs. obovate to lanceolate: fls. golden-yellow, to nearly 1 in. across, almost sessile, in corymbs of 1–10. N. Eu., Asia, N. Amer. in Rocky Mts. to Ariz.—A moisture-demanding bog plant.

flavéscens: *S. Aizoon* var.

Fórtunei: *S. cortusæfolia* var.

Fránzlii: listed as belonging to the Kabschia section, with "spiny lvs. and golden-yellow fls."; the name is unknown botanically.

Freìsei. K: a hybrid, perhaps in part of *S. porophylla,* listed with lvs. spiny, fls. rose-pink.

Frìderici-Aùgustii. K: to 6 in., tufted: lvs. linear-lanceolate or spatulate, entire: fls. violet-purple, in spike-like racemes. S. E. Eu., Asia Minor.

Gaudìnii. Da: hybrid between *S. Aizoon* and *S. Cotyledon:* rosettes silvery-gray: fls. white.

geranioìdes. To 10 in., tufted: lvs. palmately 3-lobed, the lobes 2–3-toothed: fls. white, ⅓ in. long. Mts. of Eu.

Gèum (*Micranthes Geum*). R: to 1 ft.: lvs. nearly orbicular, to 1 in. across, coarsely toothed, on very long petioles: fls. white, ¼ in. across. Eu., Newf. Var. **dentàta,** lvs. sharp-toothed, fls. white spotted with yellow or purple. Var. **mìnor** is listed as a small-lvd. form.

glaciàlis. Hi: to 2 in.: rosette lvs. narrowly spatulate, to ⅓ in. long, obtuse, margins sparsely and minutely fimbriate, st.-lvs. lanceolate-obovate: fls. yellow within and orange-yellow to purplish outside, in subcorymbose infl., petals elliptic, acutish. Szechuan, China.

globulífera. Da: to 4 in., tufted: lvs. spatulate, ½ in. long, usually 3-lobed, petioles dilated at base: fls. white, ⅖ in. across. S. Spain, N. Afr.

Godseffiàna. Hybrid between *S. sancta* and *S. Elizabethiæ:* to 4 in.: fls. deep yellow.

grandiflòra: *S. sibirica,* which is doubtfully in cult.; material so listed may be hort. forms or races of other species.

granulàta. Meadow S. N: to 20 in., bulbous at base and with numerous bulblets in axils of basal lvs.: lvs. kidney-shaped, to 1 in. long and 1½ in. wide, lobed: fls. white, 1 in. across. Eu., N. Afr. Var. **flòre-plèno** has double fls.

Greènwoodii. A hort. hybrid of Euaizoonia section better known as Greenwood: fls. creamy-yellow.

Grìsebachii (*S. montenegrina*). K: to 8 in., tufted: lvs. spatulate, to 1½ in. long, the margins cartilaginous: fls. purple, ⅙ in. or less across; infl. spicate. Medit. region.

Gúsmusii. Hybrid between *S. thessalica* and *S. corymbosa:* fls. reddish-pink.

Haàgii. Hybrid between *S. Ferdinandi-Coburgii* and *S. sancta:* to 3 in.: fls. golden-yellow, to ½ in. across.

Hàinoldii: *S. Aizoon* var.

Haùssmannii. Hybrid between *S. mutata* and *S. aizoides:* to 8 in.: fls. yellow.

Hawórthii. Da: lvs. pale green, in dense cushions to 6 in. high: fls. white, to ½ in. across. Hort. origin, name of uncertain botanical standing.

Heìnrichii. Hybrid of *S. aretioides* and *S. Stribrnyi:* basal lvs. linear-lanceolate, short, acuminate: fls. yellow becoming reddish, to ¼ in. across, usually 6–8 on scape to 3½ in. tall.

hibérnica: *S. Sternbergii.*

hirsùta. R: similar to *S. Geum* but with cordate-ovate or oval lvs. pinnately- rather than palmately-nerved. Eu.

Hòstii (*S. elatior*). E: to 2 ft.: lvs. in rosettes, tongue-shaped, to 4 in. long, wavy-margined and incrusted with lime: fls. white sometimes dotted with purple, ½ in. across, in many-fld. panicles. Eu.

Huetiàna. C: ann. or bien. to 6 in.: lvs. kidney-shaped, 5–7-lobed: fls. bright yellow, ⅗ in. across. Asia Minor.

hypnoìdes (*S. affinis. S. sponhemica*). Da: to 6 in., having many barren shoots: lvs. linear, 1/13 in. long, sometimes 3–5-lobed and ½ in. long: fls. white, to 1 in. across. Eu. Var. **gemmífera** (*S. Kingii*) is a compact form. Var. **ròsea,** fls. rose.

icelándica: *S. Cotyledon* var.

incrustàta: *S. crustata.*

integrifòlia (*Micranthes integrifolia*). B: to 1½ ft., very sticky: lvs. obovate, entire or slightly wavy, to 7 in. long; fls. white, small, in panicles. Calif.

intermèdia. Hybrid of *S. Grisebachii* and *S. Stribrnyi:* differs from *S. Grisebachii* in its racemose infl. and longer pedicels: fls. red.

irrígua. N: to 1 ft.: lvs. in rosettes, kidney-shaped, ½ in. long, deeply 3-lobed and the lobes toothed, on petioles to 2 in. long: fls. white, to 1 in. across, in many-fld. panicles. Eu.

Írvingii. Hybrid between *S. Burseriana* var. and *S. Friderici-Augustii:* to 1 in. or more: fls. pink with deeper center.—Some authors think *S. lilacina* is also involved in the parentage.

Jénkinsii: listed name.

juniperifòlia (*S. juniperina*). K: to 3 in., tufted: basal lvs. stiff, lanceolate, to ¾ in. long, ciliate, st.-lvs. to ⅜ in. long: fls. yellow, ⅓ in. across. Caucasus. Var. **pseùdo-sáncta** (*S. pseudo-sancta*) differs in st.-lvs. to ¾ in. long.

juniperìna: *S. juniperifolia.*

Kéllereri. Hybrid between *S. Friderici-Augustii* and probably a form of *S. Burseriana:* habit of former with rosettes to 2 in. across, lvs. longer and narrower, pitted with white dots: fls. pink, darker in center, cylindrical, petals not reflexed, on sts. to 5 in. tall.

kestoniénsis. Hybrid probably of *S. Burseriana:* 3 in.: fls. white on bright red sts., early-flowering.

kewénsis. Hybrid between *S. Burseriana* var. *macrantha* and *S. Friderici-Augustii:* lvs. linear-lanceolate, in cushions, sts. glandular-hairy: fls. with rose petals and deep red sepals, bracts red tipped green.

Kíngii: *S. hypnoides* var. *gemmifera.*

Kolenatiàna: *S. cartilaginea.*

Kýrillii. Hybrid between *S. marginata* and *S. Ferdinandi-Coburgii:* 3 in.: fls. pale yellow.

lævigàta: listed name.

lagaveàna: *S. Aizoon* var.

Landaùeri: listed name.

lantoscàna: *S. lingulata* var.

lasiophýlla: *S. rotundifolia* var. *repanda.*

latepetiolàta. N: to 10 in., densely tufted: lvs. kidney-shaped, to 1¾ in. long, 3-parted into lobed segms., glandular-hairy, petiole broadly winged: fls. white, small. Medit. region.

Leichtlínii: *Bergenia ligulata* var. or *S. lingulata* var.

leucanthemifòlia (*S. Michauxii. Hydatica petiolaris*). B: to 1½ ft.: lvs. oblanceolate, to 7 in. long, coarsely toothed: fls. white, ¼ in. across. Va. to Ga.

ligulàta: *Bergenia ligulata.*

lilácina. K: to 1 in., tufted: lvs. oblong, to ⅙ in. long, margins cartilaginous: fls. pale lilac with purple lines, ½ in. across, solitary. Himalayas.

Líndsayi: listed name of plant said to belong in section Dactyloides and having white fls.

lingulàta. E: to 1 ft., tufted: lvs. linear-spatulate, to 3 in. long, the margins recurved and incrusted: fls. white, ⅓ in. across. S. Eu. Vars. listed include: **Álbertii,** larger than type, foliage bluish-gray, lime incrusted, fls. white spotted red, probably of hybrid origin; **álbida,** foliage silvery; **austràlis,** lvs. longer and broader; **Bellárdii,** a large glabrous form; **cochleàris** is *S. cochlearis;* **lantoscàna** (*S. lantoscana*), lvs. short and blunt; **Leichtlínii,** fls. rose-red, probably of hybrid origin; **ròsea,** fls. rose, perhaps not distinct from var. *Leichtlinii;* **supérba,** larger creamy-white fls. in arching plumes, an improved form of var. *lantoscana.*

longifòlia. E: to 2 ft.: lvs. in rosettes, linear-spatulate, to 3 in. long, margins incrusted: fls. white, rarely purple-spotted, ½ in. across, in many-fld. panicles. Pyrenees.—A short-lived plant of rocky crevices, perhaps best treated as a bien. Vars. include: **cochleàris** is *S. cochlearis;* **Cotylèdon** is *S. Cotyledon;* **grandiflòra** has larger fls.; **Lòwnii** is listed as a hybrid with pinkish fls. and **màjor** with white fls.; **magnífica,** rosettes to 1 ft. across and panicles large.

lùtea: *S. Aizoon* var.

lùteo-víridis: *S. corymbosa.*

Lỳallii (*Micranthes Lyallii*). B: to 1 ft.: lvs. obovate, coarsely toothed, to 2½ in. long: fls. white with yellow spots, in few-fld. panicles. Alaska to Mont.

Macnabiàna. Hybrid between *S. Cotyledon* and *S. lingulata:* fls. white spotted with purple.

Málýi: *S. apiculata* var.

marginàta. K: to 3 in., tufted: basal lvs. obovate, lower margins ciliate, upper cartilaginous, to ½ in. long: fls. white, to ½ in. across, usually 5–7 in a corymbose infl. on erect black-glandular-pilose stalks. S. Italy. Var. **coriophýlla** (*S. coriophylla. S. Rocheliana* var.). Lower lvs. small, oblong, with few pits: fls. ivory-white. Bosnia, N. Albania. Var. **Rocheliàna** (*S. Rocheliana*). Lvs. spatulate, light gray-green, horizontally spreading: fls. white, scape not as prominently glandular-pilose as type. S. E. Eu.

Marìæ-Therèsiæ. Hybrid between *S. Burseriana* var. *major* and *S. Grisebachii:* with small rosettes to ¾ in. across: fls. rose, sessile, usually 6–8 on fleshy sts. to 3½ in. tall, petals small and narrow.

mèdia. K: to 3 in., tufted: lvs. oblong- or linear-spatulate, to 1 in. long, margins cartilaginous: fls. purple, ⅙ in. long, in branched panicles. Eu.

Megásea: see *Bergenia.*

Mertensiàna (*Heterisia Mertensiana*). B: to 1 ft.: lvs. cordate-orbicular, to 3 in. across, toothed, long-stalked: fls. white with yellow spots at base. Alaska to Calif. Var. **glandipilòsa** is glandular-pilose.

Michaùxii: *S. leucanthemifolia.*

micranthidifòlia (*Micranthes micranthidifolia*). B: to 3 ft.: lvs. elliptic or oblanceolate, to 1 ft. long: fls. white, small, in narrow panicles. Pa. to Ga. and Tenn.

montavoniénsis: *S. Cotyledon* var.

montenegrìna: *S. Grisebachii.*

moschàta. Da: to 5 in.: lvs. linear, entire or 2–3-lobed: fls. yellowish, rarely purplish or white. Eu. Var. **Állionii** (*S. Allionii*), fls. white. Var. **atropurpùrea** (*S. atropurpurea*), fls. dark purple. Var. **dénsa** has densely packed foliage. Var. **Rhèi** (*S. Rhei*), fls. rose.

muscoìdes. Da: to 2 in., densely tufted: lvs. linear, ¼ in. long: fls. white or yellowish, ¼ in. across. Eu. Var. **álba,** fls. white. Var. **atropurpùrea,** fls. dark red, probably of hybrid origin. Var. **dénsa** has densely packed foliage.

mutàta. E: to 1 ft., with thick rhizome: lvs. in rosettes, thick, spatulate, to 3 in. long, very obtuse, the margins cartilaginous: fls. yellow or orange, about ½ in. across. Eu.

Nelsoniàna (*Micranthes Nelsoniana*). B: to 8 in.: lvs. cordate-orbicular or kidney-shaped, to 6 in. long, toothed: fls. white, small, in compact heads. Alaska to B. C.

nepalénsis: *S. Cotyledon* var. *pyramidalis.*

Newcombei (*Spatularia Newcombei*). B: to 10 in., glandular-hairy: lvs. spatulate, to 3 in. long, coarsely toothed: fls. white with yellow spots at base of petals, in corymbs. Queen Charlotte Isls.

nivàlis (*Micranthes nivalis*). B: to 6 in. high, usually less: lvs. ovate, thick, coriaceous, dark green above and purplish-red beneath: fls. white, in cymules on erect glandular-viscid scapes. Circumboreal, including N. S.

Obrístii. Hybrid between *S. Burseriana* and *S. marginata:* to 4 in.: fls. ivory-white, to 1 in. across.

obscùra. Supposed to be a hybrid between *S. pubescens* and *S. geranioides:* to 8 in., tufted: fls. white. Pyrenees.

occidentàlis (*Micranthes occidentalis*). B: to 8 in.: lvs. ovate or oblong, to 2½ in. long, toothed, often red-pubescent beneath: fls. white, small, in cymes. Alta. to Mont.

ochroleùca. Hybrid between *S. Burseriana* var. *minor* and *S. sancta:* habit of former with smaller lvs. and pale yellow fls.

odontolòma. B: to 1½ ft.: lvs. basal, orbicular, to 3 in. across, coarsely toothed: fls. white, in loose panicles. Wash., Ore.

oppositifòlia (*Antiphylla oppositifolia*). P: to 2 in., densely matted: lvs. obovate, keeled, to ⅓ in. long, ciliate: fls. rose or purple, to ½ in. across. Eu., Asia, N. N. Amer. Var. **pyrenàica** has large crimson fls. Var. **spléndens** has large purplish-crimson fls.

orbiculàris: *Bergenia crassifolia* var.

palmàta: a name of uncertain application.

paradóxa: *S. Aizoon* var.

Paulìnæ. Hybrid between *S. Burseriana* var. *minor* and *S. Ferdinandi-Coburgii:* to 2 in.: fls. pale yellow, ¾ in. across.

pectinàta. Hybrid between *S. Aizoon* and *S. crustata:* fls. white spotted with purple.

pedemontàna. Da: to 4 in., tufted: lvs. 3-lobed, the lobes toothed, to ¾ in. long, petioled: fls. white, to 1 in. across. S. Eu.

peltàta: *Peltiphyllum peltatum.*

pensylvánica (*Micranthes pensylvanica*). SWAMP S. B: to 3 ft., with thick rhizome: lvs. basal, oblong to spatulate, to 1 ft. long, ciliate: fls. greenish, to ¼ in. across. Me. to Va. and Mo.

petiolàris: *S. rivularis.*

Pétraschii. Hybrid between *S. tombeanensis* and *S. marginata* var. *Rocheliana:* to 2 in.: fls. white, 1 in. across.

porophýlla. K: to 5 in., tufted: lvs. oblong-spatulate to linear, to ½ in. long, the margins cartilaginous: fls. pink or purple, ⅕ in. across. S. Eu. Var. **montenegrìna** is listed; perhaps referable to *S. Grisebachii.*

Pórtiæ: probably synonymous with *S. lingulata* var. *australis;* also a var. of *S. Aizoon.*

primuloìdes: *S. umbrosa* var.

prolífera: *S. Cotyledon* var.

pseùdo-Kótschyi. Hybrid between *S. marginata* var. *Rocheliana* and *S. Kotschyi:* differs from the former in its more spatulate lvs. and yellow fls.; from the latter in its longer petals and acutely apiculate lvs.

pseùdo-sáncta: *S. juniperifolia* var.

pulchélla: name of uncertain application.

punctàta. B: to 1½ ft.: lvs. reniform-orbicular, wavy-toothed: fls. white, ⅛ in. long, in loose panicles. Eu.

púngens. Hybrid between *S. marginata* var. *Rocheliana* and *S. juniperifolia:* to 2 in.: fls. golden-yellow.

purpuráscens: *Bergenia purpurascens.*

pyramidàlis: *S. Cotyledon* var.

pyrenàica: *S. oppositifolia* var.

ranunculifòlia: *Hemieva ranunculifolia.*

retùsa. P: tufted, to 2 in.: lower lvs. imbricated, oblong-lanceolate, 3-cornered: fls. ruby- or purple-red, in 1–4-fld. clusters. S. Eu. in high mts.

Rhèi: *S. moschata* var.

rhomboídea (*Micranthes rhomboidea*). B: to 1 ft.: lvs. ovoid, to 2½ in. long, toothed: fls. white, ⅙ in. long, in cymes forming heads. Mont., Wyo., Colo.

rivulàris (*S. petiolaris*). N: tufted plant to 3 in.: basal lvs. kidney-shaped, palmately 3–7-lobed, petioles 3–5 times longer than blades, upper lvs. short-petioled and 3-lobed: fls. white, sometimes tinged purple, usually 1–5 on axillary peduncles to 3 in. long. Circumboreal, in N. Amer. to White Mts. and in Rocky Mts. to Mont.

Rochelиàna: *S. marginata* var.

Rosìniæ: listed as a hort. hybrid.

rotundifòlia. M: to 2 ft.: lvs. in rosettes, kidney-shaped, to 2 in. across, coarsely toothed, on petioles much longer than lvs.: fls. white spotted with red or purple, to ¾ in. across. Eu., Asia. Var. **repánda** (*S. lasiophylla*), lvs. wavy-toothed, densely pubescent.

rubicúnda: listed name.

rufídula (*Micranthes rufidula*). B: to 6 in.: lvs. ovate or oval, to 1½ in. long, toothed, red-tomentose beneath: fls. white, ⅕ in. long, the stalks purple. B. C.

Salomònii. Hybrid between *S. Burseriana* and *S. marginata* var. *Rocheliana:* to 2 in.: fls. white, ¾ in. across.

sáncta. K: to 2 in., tufted: lvs. stiff, lanceolate, ⅛ in. long, the margins ciliate and cartilaginous: fls. orange-yellow, ⅓ in. across. Medit. region.

sanguínea of hort. is *S. decipiens* var.

sarmentòsa (*Sekika sarmentosa*). STRAWBERRY-GERANIUM. Di: to 2 ft., with filiform stolons resembling the strawberry: lvs. orbicular-cordate, to 4 in. across, coarsely toothed, on long petioles, reddish below, veined with white above: fls. white, to 1 in. across, 2 petals much longer than others. E. Asia.—A favorite basket and vase plant.

scárdica. K: to 4 in., tufted: lvs. oblong to lanceolate, to ½ in. long, stiff, keeled beneath, margins cartilaginous: fls. white or rose, ⅓ in. long, in corymbs. Medit. region.

Schleìcheri: *S. stellaris.*

Schóttii. Hybrid between *S. corymbosa* and *S. Stribrnyi:* to 3 in.

Séndtneri: listed name.

serratifòlia: *S. umbrosa* var.

spléndens: a name applied to many hort. forms and of uncertain application.

sponhémica: *S. hypnoides.*

squarròsa. K: to 3 in., densely tufted: lvs. linear or linear-lanceolate, ⅛ in. long, with narrow cartilaginous margin: fls. white, to ⅓ in. long. Mts., Eu.

Stabiàna: *S. Aizoon* var.

Stánborgii: listed name.

stellàris (*S. Schleicheri*). B: to 6 in.: lvs. obovate, to 2 in. long, toothed: fls. white, star-like, to ⅓ in. across. Eu., Asia, N. Amer.

stenoglóssa. E: to 1 ft.: lvs. linear, to 1 in. long, sharp-toothed: fls. white, in panicles. Probably Eu.

Stérnbergii (*S. hibernica*). Da: lvs. 3–5-parted, ciliate: fls. creamy-white. Ireland.

Stràcheyi: *Bergenia Stracheyi.*

Stríbrnyi. K: to 5 in., tufted: lvs. oblong-spatulate, to 1 in. long, with margins cartilaginous: fls. purple, ⅓ in. across, nodding. Cent. Eu.

Stùartii. Hybrid with *S. Stribrnyi* as one parent: to 4 in.: fls. pale yellow or purple, ⅓ in. across.

Súndermannii. Hybrid of *S. marginata* and *S. Burseriana:* tufted plant with rosettes to ⅝ in. across: lvs. deltoid, to ¼ in. long, upper surface concave, margins chalky-white: fls. white, to ¾ in. across, petals with wavy margins and twice as long as sepals, infl. of 1–2 fls. on green sts.

supérba: probably *S. lingulata* var.

taygetèa. R: to 6 in.: lvs. kidney-shaped, ½ in. long, slightly 5–9-lobed: fls. white spotted purple, ⅓ in. long, in panicles. Greece.

tellimoìdes: *Boykinia tellimoides.*

tenélla. Da: to 4 in., tufted: lvs. linear-subulate, to ½ in. long: fls. white or yellowish, very small. Mts., Cent. Eu.

tennesseénsis (*Micranthes tennesseensis*). B: to 1 ft.: lvs. elliptic-ovate to orbicular-reniform, to 5 in. long: fls. white with yellow eye, in open cymules, petals to ⅕ in. long. Tenn.

thessálica: a form of *S. porophylla* with very narrow lvs.

tiroléensis. Hybrid between *S. cæsia* and *S. squarrosa:* to 3½ in.: fls. white.

Tólmiei. B: to 5 in.: lvs. linear, ⅓ in. long, imbricated on the short sts.: fls. white, very small. B. C. to Calif.

tombeanénsis. K: to 2 in.: lvs. ovate- to linear-lanceolate, 3-angled, ⅛ in. long: fls. white, ½ in. long. Alps, S. Eu.

tricuspidàta (*Leptasea tricuspidata*). Tra: to 8 in.: lvs. linear, to ¾ in. long, with 3 spine-tipped lobes at apex: fls. white, small. N. N. Amer.

trifurcàta. Da: to 8 in.: lvs. kidney-shaped, to ¾ in. across, palmately 3-parted, the segms. toothed or lobed, on very long petioles: fls. milk-white, to ¾ in. across. Pyrenees. Var. **ceratophýlla** (*S. ceratophylla*) does not differ from the species.

umbròsa. LONDON PRIDE. R: to 1 ft.: lvs. thick, ovate to oblong, to 2½ in. long, the margins cartilaginous, often reddish beneath, petioled: fls. white or pink, to ⅓ in. across. Eu. Var. **Cólvillei** is said to grow to 6 in. with many pink to white fls. Var. **primuloìdes** (*S. primuloides*), to 6 in., lvs. primrose-like, fls. rose-pink. Var. **serratifòlia** (*S. serratifolia*), lvs. erect, sharply serrate.

valdénsis. E: to 3 in., densely tufted: lvs. spatulate-linear, to ⅓ in. long, keeled, purplish beneath: fls. white, ⅕ in. long, in corymbs. Mts., Cent. Eu.

Vandéllii. K: differs from *S. Burseriana* in fls. several to many, not solitary. Alps, Cent. Eu.

vespertìna (*Leptasea vespertina*). E: to 5 in.: lvs. oblong, to ⅓ in. long, spine-tipped: fls. white, often spotted yellow, small. Alaska to Ore.

virginiénsis (*Micranthes virginiensis*). B: to 1 ft.: lvs. in rosettes, ovate to oblong, to 3 in. long, toothed: fls. white, about ⅓ in. across. N. B. to Ga. and Tenn.

víridis: listed name for plant said to belong in section Euaizoonia.

Wállacei: *S. Camposii.*

Wildiàna. Hybrid between *S. Aizoon* and *S. Geum:* to 8 in.: fls. white, to ⅓ in. across.

Zelébori: listed name for plant which may be only a form of *S. Aizoon.*

Zimméteri. Hybrid between *S. Aizoon* and *S. cuneifolia.*

SAXIFRAGÀCEÆ. Saxifrage Family. A widely distributed family mostly of temp. regions, of various character and habit; about 75 genera of herbs, shrubs and trees, having usually bisexual regular fls. with 4–5 sepals and petals, 4–10 stamens, 2–5 carpels, and fr. a caps. or berry; differs from Rosaceæ in technical characters. Several genera are grown for ornament and the currant and gooseberry for the edible frs.; genera herein treated are Abrophyllum, Anopterus, Astilbe, Bauera, Bensonia, Bergenia, Bolandra, Boykinia, Cardiandra, Carpenteria, Carpodetus, Chrysosplenium, Decumaria, Deinanthe, Deutzia, Elmera, Escallonia, Fendlera, Francoa, Hemieva, Heuchera, Hydrangea, Itea, Jamesia, Kirengeshoma, Leptarrhena, Lithofragma, Mitella, Parnassia, Peltiphyllum, Philadelphus, Pileostegia, Quintinia, Ribes, Rodgersia, Saxifraga, Schizophragma, Suksdorfia, Tanakæa, Tellima, Tiarella, Tolmiea, Whipplea.

SAXIFRAGE: *Saxifraga.* **Golden:** *Chrysosplenium.*

SCABIÒSA. Scabious. Mourning Bride. Pincushion-Flower. *Dipsaceæ.* Herbs ann. or per. and perhaps bien., with opposite entire or divided lvs. and 4–5-lobed fls. in terminal long-stalked composite-like showy heads subtended by herbaceous involucral bracts, the calyx bristly; Old World, often weedy.

Scabiosas are popular flower-garden subjects and thrive in any good soil and sunny exposure. Propagated by seeds, and perennials also by division.

africàna. Lvs. obovate, irregularly toothed, to 6 in. long and 2 in. wide, upper lvs. undivided or pinnatifid, soft-tomentose. S. Afr.

agréstis: *S. gramuntia.*

amœna. Per. to 3 ft.: lvs. lyrate-pinnatifid: fls. pale blue or lilac, in globose heads. W. Asia.

atropurpùrea. Sweet Scabious. Erect ann. (or grown as such) to 3 ft. and more, cult. in many forms: basal lvs. lyrate-pinnatifid, st.-lvs. pinnate into oblong toothed lobes: fls. dark purple, rose or white, in ovate or oblong heads to 2 in. across. S. Eu. Some of the hort. vars. are: **candidíssima,** fls. white and often double; **compácta,** of compact habit; **flòre-plèno,** fls. double; **grandiflòra** (var. *maxima*), fls. large; **màjor,** tall; **nàna** (var. *minor*), smaller, much branched; **pùmila,** dwarf.

austràlis: *Succisa australis.*

brachiàta. Ann. to 1 ft.: lower lvs. ovate-oblong, upper ones pinnate-dissected with terminal lobe large and obovate: fls. pale blue. Greece.—By some considered as *Tremastelma palæstinum.*

canéscens. Per., erect or ascending: lvs. simple, pinnatifid or pinnately lobed, segms. lanceolate, entire: heads bluish-violet, on long peduncles. Cent. Eu.

caucásica. Per. to 2½ ft.: basal lvs. lanceolate-linear, entire, st.-lvs. divided: fls. light blue, in flattish heads to 3 in. across, the involucre gray-tomentose. Caucasus. Var. **álba** has white fls. Var. **cærùlea,** fls. light blue, large. Var. **goldingénsis** has large deep lavender fls. Var. **magnífica** has large lavender-blue fls. Var. **perfécta,** fls. large and fringed.

Columbària. Per. to 2 ft.: basal lvs. ovate, toothed, st.-lvs. pinnately cut into linear segms.: fls. blue, in ovate heads to 1½ in. across. Eu., Asia, Afr. Var. **anthemifòlia,** lvs. 2–3-pinnatifid, fls. said to be pink, to 2½ in. across. Var. **ròsea,** fls. pink, is listed.

Físcheri. Per., much branched: lvs. pinnately cut into linear entire segms.: fls. bluish-purple. Dahuria.

geórgica. Per. to 2 ft., sts. branched, usually white-pilose: lvs. pinnately divided or lyrate, terminal segms. oblong-lanceolate, larger than laterals: heads pale yellow, on long peduncles, involucral bracts broadly triangular. Eurasia.

gigantèa: listed name of doubtful application.

goldingénsis: *S. caucasica* var.

graminifòlia. Per. to 1 ft.: lvs. linear, entire, silvery: fls. pale blue, in flattish heads to 1½ in. across. Eu.

gramúntia (*S. agrestis*). Per. to 2½ ft.: basal lvs. lyrate, st.-lvs. 2–3-pinnatisect, segms. narrowly linear: fls. lilac, the marginal ones radiating. S. Cent. Eu.—By some authors treated as a variant of *S. Columbaria.*

grandiflòra: *S. atropurpurea* var.

japónica. Per. to 2 ft.: lvs. pinnately divided into narrow segms.: fls. violet-blue, in heads to 2 in. across. Japan.

lùcida. Per. to 1 ft.: basal lvs. ovate-oblong, serrate, st.-lvs. pinnatisect, segms. lanceolate: fls. rose-lilac, in dense hemispherical heads to 1½ in. across. Cent. Eu.

lyràta: doubtful name.

lyrophýlla: *Knautia lyrophylla.*

macedónica: *Knautia macedonica.*

miesántha: listed name of unknown botanical standing.

mìnor aùrea: *S. atropurpurea* var. *nana.*

ochroleùca. Per. to 1½ ft.: basal lvs. lyrate-pinnatifid, st.-lvs. 1–2-pinnate into oblong or linear segms., whitish-pubescent: fls. yellow. Eu., Asia. Var. **Webbiàna** (*S. Webbiana*) has lower lvs. white-villous and usually dissected. S. E. Eu. to Asia Minor.

palæstìna. Erect ann., branched: lvs. oblong, dentate or lyrate, hairy; involucral bracts oblong-lanceolate: fls. pale yellow, rarely lilac, heads large. Balkan region, Cent. Eu.

parnassiæfòlia: probably error for *S. parnassii.*

parnássi: *Pterocephalus parnassi.*

pennsylvánica: an erroneous catalogue name for *Cephalaria tatarica.*

Pèteri: listed name.

prolífera. Carmel Daisy. Ann. to 2 ft.: lvs. oblong-lanceolate to linear: fls. cream-colored, in nearly sessile heads to 2 in. across. Asia Minor to N. Afr.

pterocéphala: *Pterocephalus parnassi.*

pyrenàica (*S. vestita*). Per. to 1½ ft., white-tomentose: basal lvs. oval-lanceolate, toothed, st.-lvs. pinnately divided: fls. blue-lilac. S. Eu.

rhodopèa: a form of *S. ochroleuca.*

silenifòlia. Per. to 1 ft.: lower lvs. spatulate, entire, upper pinnate into linear segms.: fls. lilac. S. E. Eu.

speciòsa. Tufted per. to 2 ft.: lvs. oblong, pinnatifid at base, to 2 in. long, pubescent: fls. lavender to mauve, outer ones to ¾ in. long, head nearly flat, to 2 in. across. Himalayas.

stellàta. Ann. to 1½ ft.: basal lvs. toothed, st.-lvs. pinnately divided: fls. blue, in globose heads 1 in. across. S. Eu.

suavèolens. Per. to 1½ ft., glabrescent: basal lvs. entire, oblong-lanceolate, st.-lvs. pinnatifid, segms. linear, entire: fls. blue, fragrant, in nearly hemispherical heads to 2 in. across. Cent. Eu. to Asia Minor.

Succìsa: *Succisa pratensis.*

sylvática: *Knautia sylvatica.*

triniæfòlia. To 2½ ft.: foliage glabrescent, lower lvs. bipinnatifid, to 4 in. long, segms. of upper ones linear, somewhat fleshy and bristle-tipped: heads yellow, to 1½ in. across. Greece to Bulgaria.

vestìta: *S. pyrenaica.*

Webbiàna: *S. ochroleuca* var.

SCABIOUS: *Scabiosa.* **Shepherds-:** *Jasione.*

SCABROUS: rough; feeling roughish or gritty to the touch.

SCALE: a name given to many kinds of small mostly dry and appressed leaves or bracts; a vestige.

SCAPE: leafless peduncle arising from the ground; it may bear scales or bracts but no developed foliage leaves and may be one- or many-flowered. Tulips are borne on scapes.

SCARIOUS: leaf-like parts or bracts that are not green, but thin, dry, and membranaceous, often more or less translucent.

SCARLET-BUSH: *Hamelia erecta.* **Lightning:** *Lychnis chalcedonica.* **Plume:** *Euphorbia fulgens.* **Runner:** *Phaseolus coccineus.*

SCELÈTIUM. *Aizoaceæ.* S. African per. separated from Mesembryanthemum (which see for cult.), the lvs. several times broader than thick and naturally withering to a skeleton. S. **tortuòsum** (*M. tortuosum*). Branches long and procumbent, leafy at top: lvs. ovate-lanceolate, somewhat recurved, tapering to both ends, about 1 in. long: fls. white, 2 in. across.—The plants of this genus are poisonous.

SCHAUÈRIA. *Acanthaceæ.* Trop. herbs or shrubs with opposite entire lvs. and tubular 2-lipped yellow or red fls. in terminal spikes, the calyx-lobes and bracts very long and narrow and giving a shaggy appearance to the fl.-cluster; one species grown in the greenhouse. Propagated by cuttings.

flavícoma. To 4 ft.: lvs. ovate or ovate-lanceolate, to 6 in. long, shining: fls. pale yellow, 1½ in. long. Brazil.

SCHEÈLEA. *Palmaceæ.* Heavy feather-lvd. palms of trop. Amer., not known to be cult. within our limits; see note under *Attalea.*

SCHEFFLÈRA. *Araliaceæ.* Trop. shrubs or small trees with compound lvs. and polygamous or diœcious fls. borne in umbels, heads or racemes; for outdoor cult. in S. U. S.

actinophýlla. To 30 ft.: lvs. digitately compound into 6–8 elliptic-oblong entire lfts. to 6 in. long: fls. greenish, in panicles to 1½ ft. long. Australia.

digitàta. Tree to 25 ft.: lvs. digitately compound into 7–10 oblong toothed lfts. to 7 in. long: fls. greenish, to ⅛ in. across, in panicles to 1 ft. long. New Zeal.

SCHÌMA. *Theaceæ.* Evergreen trees or shrubs native in trop. Asia, with alternate simple lvs.; showy fls., and fr. a woody caps.; one species grown in S. Calif.

Wállichii. Tree to 100 ft.: lvs. elliptic-oblong, to 7 in. long, nearly entire: fls. white, fragrant, to 2 in. across, in short terminal racemes: fr. ¾ in. across. India to Sumatra.

SCHÌNUS. *Anacardiaceæ.* Trees with simple or compound lvs., small fls. in racemes or panicles, 10 stamens, and round 1-seeded drupaceous fr.; polygamo-diœcious; native mostly in S. Amer., a few grown in sub-trop. regions, and in greenhouses N. Planted as lawn and avenue trees, but *S. Molle* is subject to black scale and is sometimes a menace. Propagated by seeds or cuttings.

dependens. Shrub or small tree to 15 ft.: lvs. simple, oblong, usually entire: fls. yellow, in short axillary racemes: fr. deep purple. W. S. Amer.

latifòlius. Lvs. simple, to 3 in. long and 1 in. wide: fls. white, in short racemes. Chile.

lentiscifòlius. Shrub to 3 ft.: lvs. of 4–6 pairs of oval or lanceolate nearly entire lfts.: fls. white, in loose panicles to 3 in. long: fr. pink or whitish. Brazil.

Mólle. California Pepper-Tree. Peruvian Mastic-Tree. Evergreen tree to 20 ft., with graceful hanging branches: lvs. of many linear-lanceolate entire or toothed lfts.: fls. yellowish-white, in much branched terminal panicles: fr. rose-color. American tropics.

terebinthifòlius. Brazilian Pepper-Tree. Christmas-Berry-Tree. Tree to 20 ft., of more rigid habit than *S. Molle:* lvs. usually of 7 oblong lfts. very dark green above and lighter below: fr. bright red. Brazil.

SCHISÁNDRA (commonly but not originally spelled *Schizandra*). *Magnoliaceæ.* Twining shrubs native in Asia and 1 in N. Amer., with simple lvs., unisexual red or white fls. in axillary clusters, and mostly red berry-like frs. in drooping racemes.

Both sexes should be planted if the decorative fruit is desired. *S. chinensis* is hardy North. Propagated by seeds, cuttings of green wood under glass, root-cuttings, layers and suckers.

chinénsis. Climbing to 25 ft.: lvs. obovate, to 4 in. long, toothed, shining above: fls. white or pinkish, ½ in. across, fragrant, May–June, stamens 5: berries scarlet. N. E. Asia, Japan.

coccínea. Lvs. ovate to elliptic, to 6 in. long, acute to acuminate, fleshy, slender-petioled: fls. crimson. S. C. to Fla.—Not hardy N.

sphenanthèra. To 18 ft.: lvs. broadly obovate to ovate, to 4 in. long, margins minutely toothed: fls. greenish outside and orange within, to 1 in. across, stamens many: berries brownish-red. Cent. and W. China.

SCHISMATOGLÓTTIS. *Araceæ.* Soft or herbaceous plants native in the Malay Archipelago, having lanceolate, cordate or arrow-shaped lvs. usually variegated, and unisexual fls. borne on spadices shorter than the cylindrical spathes; grown in greenhouses where a temperature of 70° should be maintained throughout the winter. For cult., see *Dieffenbachia.*

asperàta. Lvs. ovate or obovate, to 5 in. long and 3 in. wide, deep green minutely white-dotted above, pale and black-dotted beneath, the petioles about length of blades. Borneo. Var. **álbo-maculàta** (*S. crispata*) has lvs. silvery above except the margins and nerves.

calyptràta. Lvs. to 3 ft. long, blade about 1 ft. long and ½ ft. across, lobes to 2 in. long, ovate: spathe-tube to 1½ in. long, green, limb pale yellow, to 2¾ in. long; spadix shorter than tube. N. W. Malaya.

crispàta: *S. asperata* var. *albo-maculata.*

decòra: *S. pulchra.*

marantæfòlia var. **maculàta:** see *Aglaonema commutatum.*

neo-guineénsis (*S. novo-guineensis. Colocasia neo-guineensis*). Lvs. ovate-cordate, to 10 in. long and 6 in. wide, bright green irregularly spotted with yellowish-green, the petioles twice longer than the blades: spathes about 3 in. long with green tube and white limb. New Guinea.

pícta. Lvs. ovate- or oblong-cordate, to 8 in. long and 5 in. wide, pale green marked with white dots on either side of midrib, the petioles 1 ft. long: spathes about 2½ in. long, greenish-yellow. Java.

púlchra (*S. decora*). Lvs. cordate-ovate, 5 in. long and 2½ in. wide, irregularly variegated with silvery-white, the petioles to 6 in. long: spathes 3 in. long, pale green. Borneo.

Roebelínii: an unidentified trade name; possibly *Aglaonema Robelinii.*

siaménsis: an unidentified trade name; perhaps *Aglaonema siamense.*

SCHIVERÉCKIA. *Cruciferæ.* Eurasian little perennials like Alyssum and Draba, differing in technical characters; one species is sometimes grown in rock-gardens.

Bornmùelleri. To 2½ in. and more, pubescent: basal lvs. in rosettes, oblong-elliptic, to ⅓ in. long, entire: fls. white. Asia Minor.

podólica (*Alyssum podolicum*). Tufted, 2–4 in. high, grayish: lvs. narrow-oblong to oblanceolate, ½ in. or less long: fls. white, in short racemes. S. E. Eu., Asia Minor.

SCHIZÆA. *Schizæaceæ.* Small mostly trop. ferns with thread-like simple or divided lvs., the sori borne in rows along the segms. of fertile lvs. which form terminal spikes. See *Ferns.*

pusílla. Curly-Grass-Fern. Sterile lvs. linear and grass-like, exceeded by the fertile lvs. or stalks which are 3–5 in. long and terminated by a close pinnate fertile portion. Coast, Newf. to N. J., well known in pine barrens.—Sometimes planted: it looks more like a little grass than a fern.

SCHIZÆÀCEÆ. Schizea-Fern Family. About 4 genera of mainly trop. ferns, often climbing, with simple or pinnate lvs. and sori in rows on specialized segms., which may be spike-like. Lygodium is grown in greenhouses and Schizæa may be planted in the open.

SCHIZANDRA: *Schisandra.*

SCHIZÁNTHUS. Butterfly-Flower. *Solanaceæ.* Erect annuals or biennials with very irregular fls. grown in the garden and greenhouse for the showy profuse bloom and dainty much-cut foliage: fls. variously colored, in terminal cymes or panicles, the corolla-tube long or short, the limb spreading, irregular and deeply cut: native to Chile.

These plants are of easy cultivation. Seed sown indoors in fall produces flowering plants in early spring or late winter. Sown in the garden in spring for summer and autumn bloom.

excélsior compáctus: hort. form of *S. pinnatus.*

grácilis. Similar to *S. pinnatus* but with smaller fls. having shorter upper lip and much narrower lateral lobes.

Gràhamii. To 5 ft.: fls. typically lilac or rose, middle segm. of upper lip yellow or orange, not notched, corolla-tube as long as calyx, stamens slightly exserted.

grandiflòrus: *S. pinnatus.*

hýbridus: hort. race of large-fld. plants of unknown origin.

papilionàceus: *S. pinnatus.*

pinnàtus (*S. grandiflorus. S. papilionaceus*). To 4 ft. or more: fls. to 1¼ in. across, the color and markings varying greatly, lower lip usually lilac or violet, the upper paler, its middle segm. with a yellow blotch near the base and spotted with purple or violet, corolla-tube shorter than calyx, stamens prominently exserted. Color vars. are **candidíssimus, carmíneus, lilácinus.**

retùsus. To 2½ ft.: fls. to 1¾ in. across, the large middle segm. of upper lip mostly orange and notched, corolla-tube as long as calyx, stamens slightly exserted. Var. **álbus** has white fls. with middle segm. of upper lip yellowish. Var. **ròseus** has rose-pink fls. Var. **trimaculàtus** has purplish-red fls. with 3 golden-yellow purple-bordered spots.

wisetonénsis. Hybrid between *S. pinnatus* and *S. Grahamii:* intermediate between the parents: fls. from white through bluish and pink to carmine-brown, middle segm. of upper lip mostly suffused with yellow, corolla-tube shorter than calyx, stamens slightly exserted. Var. **compáctus** is a denser low-growing form.

SCHIZOBASÓPSIS. *Liliaceæ.* S. African bulb grown as a curiosity in greenhouses. **S. volùbilis** (*Bowiea volubilis*). Bulb 5 in. thick, sending up a twining green st. which is much branched below and performs the function of the absent lvs.: fls. small, green or greenish-white, the perianth-segms., distinct.—Plants should be kept dormant from May to early Oct., at which time the bulbs should be repotted and kept well watered. Propagated by seeds or sometimes by division of the bulbs.

SCHIZOCARP: a dry fruit which splits into two one-seeded halves as in the Umbelliferæ and the maples.

SCHIZOCÉNTRON. *Melastomaceæ.* One Mexican creeping herb sometimes grown in greenhouses and baskets. **S. élegans** (*Heeria* and *Heterocentron elegans*). Forming a dense mat: lvs. ovate, to ½ in. long: fls. purple, 1 in. across, solitary. For **ròseum** see *Heterocentron.*—Propagated by cuttings.

SCHIZOCODON: *Shortia.*

SCHIZOLÒBIUM. *Leguminosæ.* Tall trees native in Brazil and Panama, one cult. in warm regions. **S. parahỳbum** (*S. excelsum*) has bipinnate fern-like lvs. white beneath, yellow fls. in large erect racemes, and flattened 1-seeded pods. Brazil.

SCHIZONOTUS: *Holodiscus, Sorbaria.*

SCHIZOPÉTALON. *Cruciferæ.* Little delicate ann. from Chile, **S. Wálkeri,** sometimes grown in the flower-garden or in frames or a cool house for its attractive white fragrant fringed fls. Seeds sown in the open in early May produce flowering plants late in June and through the summer. Sometimes seeds are sown in autumn and the plants carried over cool under glass, for bloom in early spring. The plant grows 9 in. to 1 ft. or more high, erect, bearing the fls. in a terminal upright raceme.

SCHIZOPHRÁGMA. *Saxifragaceæ.* Woody plants climbing by aërial rootlets, differing from Hydrangea in the marginal sterile fls. which comprise only 1 long-stalked unlobed sepal; the loose terminal clusters of white fls. are showy: lvs. bright green, opposite, long-petioled. Like *Hydrangea petiolaris* (with which it is sometimes confused) the young plants produce small leaves and little growth if unsupported and allowed to trail over the ground. Propagation is by seeds, greenwood cuttings under glass, and by layers.

hydrangeoìdes. JAPANESE HYDRANGEA-VINE. Climbing to 30 ft.: lvs. deciduous, broad-ovate to nearly orbicular, to 4 in. across, toothed, pale beneath: cymes to 9 in. across; marginal calyx-lobe white, ovate, to 1½ in. long. Japan; hardy N.

integrifòlium. Climbing to 12 ft.: lvs. deciduous, ovate, to 3 in. long, nearly or quite entire: cymes 10 in. across; marginal calyx-lobe ovate, 1½ in. long. China; not hardy N. Var. **denticulàtum,** lvs. toothed. Var. **mòlle** has lvs. more densely hairy beneath and longer sterile sepals.

SCHIZÓSTYLIS. CRIMSON FLAG. KAFIR-LILY. *Iridaceæ.* S. African herbs with fleshy roots, not bulbous or cormous, narrow lvs., and red fls. borne in spathes, the tube slender. Grown in the greenhouse for winter bloom and for cut-fls. Propagated by division of roots.

coccínea. To 2 ft.: lvs. to 1½ ft. long, grass-like: fls. 2 in. across, deep crimson, tube straight and 1 in. or more long.

SCHLUMBERGÈRA. *Cactaceæ.* Brazilian cacti much like Zygocactus but the fl. regular or essentially so and nearly rotate rather than elongated: sts. much branched, joints short and mostly flattened and crenate or serrate: fls. purple to scarlet, with very short tube and stamens in 2 clusters: fr. angled rather than terete. Cult. as for Zygocactus. See *Cacti.*

Brídgesii (*Epiphyllum Bridgesii*). Epiphytic; joints flattened, green, margins somewhat crenate: fls. purple to crimson, to 2½ in. long, terminal, regular. Brazil, Bolivia.

Gaértneri (*Epiphyllopsis Gaertneri. Epiphyllum Makoyanum*). EASTER CACTUS. Habit more or less upright with drooping branches; joints oblong to obovate and crenate, about 1½ in. long, with 6–12 bristles from the areoles: fls. scarlet, to 3 in. long.

Makoyàna: *S. Gaertneri.*

Russellìana (*Epiphyllum Russellianum*). Epiphytic, to 1 ft. long, erect or pendent; joints about 1 in. long, upper ones flattened, the lower terete, green becoming brown, bristles few, short: fls. reddish-purple, to 2 in. long, terminal. Brazil.

SCHMALTZIA: *Rhus.*

SCHOLAR-TREE, CHINESE: *Sophora japonica.*

SCHOMBÚRGKIA. *Orchidaceæ.* Epiphytes native in trop. Amer., with pseudobulbs bearing 2–3 lvs. and fls. in terminal racemes or panicles; sepals and petals more or less wavy; lip 3-lobed and united with the base of column. Cult. as for Cattleya; see *Orchids.*

críspa. Pseudobulbs fusiform, with 2–3 lvs. to 10 in. long: infl. to 3 ft. long, many-fld. at the apex; fls. to 2½ in. across; sepals and petals wavy on margin, yellowish- or reddish-brown; lip whitish tinged with rose, with 5 keels. British Guiana.

Húmboldtii. Pseudobulbs nearly cylindrical, to 8 in. tall: lvs. 2–3, thick and leathery, to 10 in. long: scapes to 4 ft. high, paniculate, many-fld.; fls. to 3 in. across; sepals and petals wavy-margined, pale lilac or rose-purple, the latter becoming darker toward tip; lip bright purple with yellow on disk. Venezuela.

supérbiens: *Lælia superbiens.*

Thomsonìana. Pseudobulbs subcylindric, 2–3-lvd.: lvs. leathery, to 8 in. long: infl. longer than lvs., loosely paniculate, to 15–fld.; fls. 2½ in. wide; sepals and petals wavy-margined, whitish-cream or yellowish; lip yellow near base, deep maroon-purple above. June. W. Indies.

tibícinis. Pseudobulbs subcylindric, hollow, to 24 in. long, with 2–4 lvs. to 11 in. long, leathery: infl. to 10 ft. high, racemose or paniculate, many-fld.; fls. to about 3½ in. across; sepals and petals very wavy-margined, red-brown, lilac or burnt orange; lip whitish with yellow center and lilac apex. Feb.-Aug. Cent. Amer.

undulàta. Pseudobulbs fusiform, to 12 in. high, 2–3-lvd.: lvs. to 9 in. long: infl. to 3 ft. long, at apex loosely racemose; fls. to 1½ in. across; sepals and petals wine-purple, very wavy; lip with lateral lobes pale rose and mid-lobe purple. Dec.–July. Trinidad, Venezuela, Colombia.

SCHONLANDIA: *Corpuscularia.*

SCHÒTIA. *Leguminosæ.* African shrubs and small trees with pinnate lvs., red fls. in short panicles, and flattened leathery pods; grown in the greenhouse or in the open in warm regions.

brachypétala. Small tree: lfts. 8–10: fls. crimson, stalked, the petals very small. S. Afr.

latifòlia. Tree to 30 ft.: lfts. 4–8, obtuse to emarginate, to 1 in. long: fls. rose or pink, nearly sessile. S. Afr.

speciòsa. Tree to 10 ft.: lfts. 8–32, mucronulate, rarely to ½ in. long: fls. crimson, stalked. S. Afr.

SCHRÁNKIA (*Morongia*). *Leguminosæ.* Per. woody herbs or shrubs mostly with prostrate prickly sts., of Amer. and Afr.: lvs. 2-pinnate, sensitive: fls. pink or purple, small, in heads or spikes: pods linear, spiny. Sometimes planted far S.

angustàta: *S. microphylla.*

angustisilìqua. Sts. weak: lfts. linear-elliptic, to 1¼ in. long: fls. pink to rose-purple: pods to nearly 3 in. long and $\frac{1}{12}$ in. thick. S. Fla.

microphýlla (*S. angustata. Leptoglottis microphylla*). Differs from *S. uncinata* in lfts. not prominently veined beneath as in that species, and longer pods. Va. to Fla. and Tex.

Roemeriàna. Sts. to 4 ft. long: lfts. ⅙ in. long: fls. pink: pods 1½ in. long. S. Tex.

uncinàta. SENSITIVE BRIER. Decumbent per. with sts. to 4 ft. long, bearing hooked prickles: lfts. ⅓ in. long: fls. pink, in dense globose heads to 1 in. across: pods 2 in. long. Va. to Fla. and Tex.

SCHWÁLBEA. *Scrophulariaceæ.* A small genus of E. N. American per. herbs, characterized by 2 bractlets subtending each fl., calyx 5-lobed, caps. dehiscing septicidally and narrow winged seeds. One species, **S. americàna,** is offered. To 2 ft.: lvs. alternate, ovate to oblong, to 1½ in. long, acute, 3-nerved, upper ones becoming bract-like: fls. pale yellow tinged purple at tip, to 1½ in. long, corolla irregular. Wet sandy soil, E. Mass. to Va.

SCHWANTÈSIA. *Aizoaceæ.* Stemless succulents: lvs. in rosettes, keeled, blue-green with whitish spots: fls. solitary, short-stalked, golden-yellow; stigmas 5. Of the S. African Mesembryanthemum group.

Hérrei. Plant to 6 in. across: lvs. to 1¼ in. long and ½ in. wide: fls. to 2 in. across, petals numerous, in 3 series.

SCIACASSIA: *Cassia siamea.*

SCIADÓPITYS. *Taxodiaceæ.* One slow-growing Japanese evergreen tree, of ornamental value, **S. verticillàta.** UMBRELLA-PINE. Lvs. of two kinds, small and scale-like, and the conspicuous ones in whorls of 15–35, linear, to 6 in. long, glossy above, with 2 white bands below, furrowed: cones to 5 in. long, with woody scales. Hardy in S. New England. For cult. see *Conifers.*

SCÍLLA. SQUILL. *Liliaceæ.* Bulbous mostly small herbs with narrow basal lvs. and blue, purple or white fls. in racemes terminating the scape, the perianth-segms. distinct or nearly so; planted for the early spring bloom of most species.

Squills are of easy culture out-of-doors if left undisturbed for a number of years, with an occasional top-dressing. They may also be grown in pots in a cool greenhouse. Propagated by offsets planted early in autumn. The usual kinds are hardy and early spring flowering.

amœ̀na. STAR-HYACINTH. To 6 in.: lvs. to ¾ in. across: fls. blue to whitish, wheel-shaped, to ¾ in. across, in 4–6-fld. racemes. Germany, N. Italy.

autumnàlis. To 6 in.: lvs. partially terete: fls. rose, wheel-shaped, ½ in. across, in open racemes. Eu., N. Afr.—Blooms in autumn.

bifòlia (*S. laxa*). To 6 in.: lvs. to ½ in. across: fls. blue with white and reddish vars., wheel- or star-shaped, ½ in. across, mostly nodding, in 3–8-fld. racemes. Eu., S. W. Asia. Var. **álba,** fls. white. More commonly planted in var. **taùrica** (*S. præcox*) which is a larger plant with 12 or more blue flowers.

campanulàta: *S. hispanica.*

chinénsis. CHINESE S. To 1 ft.: lvs. linear: fls. rose tipped with green, ⅛ in. long, in dense spike-like racemes. China.

Clùsii: *S. peruviana.*

hispánica (*S. campanulata*). SPANISH BLUEBELL. To 20 in.: lvs. to 1 in. across: fls. blue to rose-purple, campanulate, 1 in. across, often nodding, in 12- or more-fld. racemes. Spain, Portugal. Vars. **álba** and **álbo-màjor** have white fls. Garden forms are vars. **cærùlea, excélsior** and **ròsea.**

hyacinthoìdes. HYACINTH S. To 3 ft.: lvs. to 1¼ in. across: fls. violet-blue, campanulate, ¾ in. across, in many-fld. racemes. Medit. region.

itálica. ITALIAN S. To 1½ ft.: lvs. ½ in. across: fls. pale blue, fragrant, ¼ in. long, wheel-shaped, in 6–30-fld. racemes. S. Eu. Var. **álba,** fls. white.

láxa: *S. bifolia.*

natalénsis. To 3 ft., bulb large, tunic brown, membranous: lvs. about 9, ovate, to 6 in. long, acuminate: fls. usually deep blue, many in long lax racemes, segms. elliptic, obtuse, filaments white. S. Afr.

nonscrípta (*S. nutans*). ENGLISH BLUEBELL. To 1 ft.: lvs. ½ in. across: fls. blue, cylindrical or tubular, ½ in. across, in 6–12-fld. racemes. Eu. Var. **álba** has white fls., **cærùlea** blue, **delicàta** pale pink, **ròsea** rose or pink, **rùbra** reddish.

nùtans: *S. nonscripta.*

peruviàna (*S. Clusii*). To 1 ft.: lvs. to 1 in. across: fls. purple to reddish or white (var. **álba**), wheel-shaped, ½ in. long, in 50- or more-fld. short racemes. Medit. region, the specific name being a misnomer. Var. **cærùlea,** fls. bluish.

prǽcox: *S. bifolia* var. *taurica.*

praténsis. Similar to *S. italica* but with very small fls. in 12–30-fld. racemes and linear lvs. Eu.

sibírica. To 6 in.: lvs. to ¾ in. across: fls. deep blue, ½ in. across, wheel-shaped, in about 3-fld. racemes, often nodding. Russia, S. W. Asia. Garden vars. are **álba, atrocærùlea, azùrea.** Var. **taùrica** (*multiflora*) is listed as an earlier form with light blue fls. having dark blue lines.

vérna. To 6 in.: lvs. about ⅛ in. across: fls. blue, ½ in. across, fragrant, in corymb-like racemes. W. Eu.

SCINDÁPSUS. IVY-ARUM. *Araceæ.* Malayan herbs climbing by rootlets, with simple usually variegated lvs., broad sheathing petioles, and bisexual fls. on densely-fld. spadices slightly shorter than the boat-shaped spathes; cult in the greenhouse, the same as *Philodendron.*

argyræ̀us: *S. pictus* var.

aùreus (*Pothos aureus*). Tall climber: lvs. ovate or ovate-oblong, to 1½ ft. long and 14 in. wide, entire or margins lobed, blotched with pale yellow. Solomon Isls. Var. **supérbus** is an improved form. In var. **Wîlcoxii** the variegations do not blend into the green portion of the lf. but terminate abruptly, the petioles and portions of sts. often ivory-white in color.

píctus. Climbing to 40 ft.: lvs. obliquely ovate-oblong, to 6 in. long and 3 in. wide, spotted dark green above: spathes about 3 in. long, white. E. Indies. Var. **argyræ̀us** (*Pothos argyræus*) has deeply cordate lvs. spotted with silvery-white above.

Wîlcoxii: *S. aureus* var.

SCÍRPUS. BULRUSH. *Cyperaceæ.* Grass-like herbs with bisexual fls. in little spikelets or heads that are solitary or in spikes or umbels; about 150 widely distributed species. Grown in shallow water or damp places and *S. cernuus* in the greenhouse. Propagated by seeds, division and suckers.

acùtus (*S. occidentalis*). To 9 ft., the lvs. mostly reduced to basal sheaths: spikelets in clusters of 2–7 or solitary. N. Amer.

atróvirens. To 4 ft., with leafy sts.: lvs. to ½ in. wide: spikelets in dense heads. N. S. to Ga. and La.

cérnuus (*Isolepis gracilis*). Tufted, with thread-like sts. to 1 ft. which become drooping, almost leafless: spikelets solitary. Eu., but widely nat.

cyperìnus (*S. Eriophorum*). To 6 ft.: lvs. ¼ in. across, often longer than sts., rough-margined: spikelets in head-like clusters in compound umbels. Newf. to Fla. and La.

Erióphorum: *S. cyperinus.*

Holoschœnus. To 4 ft., with 1 or 2 stiff narrow basal lvs.: spikelets in dense heads. Eu., Asia.

Hýstrix (*S. natalensis*). Ann. to 6 in., tufted: lvs. to 6 in. long and $\frac{1}{12}$ in. wide, mostly from near base of st.: spikelets about ¼ in. long, in single dense head. S. Afr.

lacústris. To 9 ft., often much less, lvs. reduced to basal sheaths: spikelets in head-like clusters. Eu., Asia.—Differs from its American representative, *S. validus* and also from *S. Tabernæmontani* in the 3-cleft style.

microcárpus. To 5 ft. or the lvs. sometimes longer: spikelets in head-like clusters. N. Amer.

nataléensis: *S. Hystrix.*

occidentàlis: *S. acutus.*

Tabernæmontàni. To 2 ft. and more, the lvs. reduced to 1 or 2 sheaths: spikelets in terminal cymes, the styles 2. Eu. Var. **zebrìnus** has sts. banded with white.

tuberòsus: *Eleocharis dulcis.*

zebrìnus: *S. Tabernæmontani* var.

SCLERÁNTHUS. Knawel. *Illecebraceæ.* Small tufted ann. or per. herbs of the Old World, having opposite subulate lvs. and small green funnelform or urceolate fls. with 1–10 stamens inserted on perianth throat, petals filiform between the stamens or absent, styles 2: fr. a membranous utricle inclosed in persistent perianth. Propagated by seed or division, adapted to rockery.

biflòrus. Cushion-forming, to 4 in. diam. or more and often with creeping sts. to 6 in. long: lvs. crowded, imbricated, to $\frac{1}{12}$ in. long, minutely serrulate, leathery: fls. minute, usually in pairs on short solitary peduncle which elongates in fr., stamen 1. Australia and New Zeal.

SCLEROCÁCTUS. *Cactaceæ.* Two spiny cacti of S. W. U. S. much like Echinocactus and Ferocactus, but the fr. is nearly naked and the thin scattered scales bear small tufts of wool in their axils: usually simple but sometimes clustered, some of the central spines hooked: fls. somewhat bell-shaped, borne on young areoles above the spine-cluster. Cult. as for Echinocactus. See *Cacti.*

polyancístrus (*Echinocactus polyancistrus*). Solitary, globose to oblong, to 16 in. tall; ribs 13–17, to ⅝ in. high, wavy and rounded; radial spines 15–18, to 1 in. long, white; centrals 3–5, to 5 in. long, unequal, often hooked: fls. rose-magenta or yellow, to 3½ in. long. Calif., Nev., W. Ariz., S. Utah.

Whípplei (*Echinocactus Whipplei*). Body or branches globose and about 3 in. diam., or oblong and to 6 in. long; ribs 13–15; radial spines 7–11; centrals usually 4: fls. purplish or lavender, to 1½ in. long. Colo., Utah, N. Ariz., on high mesas.

SCLEROPÒA. *Gramineæ.* Low tufted ann. grasses of the Medit. region, with narrow lvs. and flattened spikelets in panicles; one species sometimes planted for ornament. See *Grasses.*

rígida (*Festuca rigida*). To 1½ ft.: lvs. to 4 in. long and $\frac{1}{12}$ in. wide: panicles to 3½ in. long, with short spreading or ascending branches. S. Eu.; nat. in S. U. S. and Bermuda.

SCOKE: *Phytolacca americana.*

SCOLOPENDRIUM VULGARE: *Phyllitis Scolopendrium.*

SCÓLYMUS. *Compositæ.* Stout erect or wide-branching thistle-like ann. and per. herbs with pinnately spiny-toothed or lobed alternate lvs. and yellow ligulate fls. in sessile heads; pappus a ring or few bristles; native of the Medit. region.

The Spanish oyster-plant is grown for its edible tap-root. It requires practically the same culture as parsnips and salsify. It is milder in flavor than the root of the true oyster-plant.

hispánicus. Golden Thistle. Spanish Oyster-Plant. Bien., much branched, to 2½ ft.: lvs. pinnately cut: heads few-fld., about 1 in. long. S. Eu.

SCORPIOID: said of a coiled cluster in which the flowers are two-ranked and borne alternately at the right and the left; common in Boraginaceæ.

SCORPIÙRUS. *Leguminosæ.* Decumbent or very diffuse herbs with simple lvs., nodding mostly yellow papilionaceous fls. solitary or few in the axils, and variously coiled pods which are grown as curiosities and surprises under the name "worms." Propagated by seeds sown where plants are to stand.

muricàta. Fls. 3–4 on stalks longer than lvs.: pods linear, loosely coiled near end, bristly. Medit. region.

subvillòsa. Fls. 1–4 on stalks longer than lvs., standard sometimes reddish: pods linear, tightly coiled, bristly. Medit. region.

sulcàta. Fls. 1–2 on stalks longer than lvs.: pods linear, flatly coiled, rough. Medit. region.

vermiculàta. Fls. solitary on stalks shorter than lvs.: pods thick, rough with stalked tubercles. Medit. region.

SCORZONÈRA. *Compositæ.* Herbaceous perennials, rarely annuals: lvs. more or less grass-like, sometimes lobed or dissected: fls. ligulate, in long-peduncled heads; pappus plumose: natives of the Old World.

One species is cultivated as a root-vegetable, the same as parsnips and salsify. It is treated as an annual or biennial. The leaves are also eaten in salads.

hispánica. Black Salsify. Per. to 3 ft., usually pubescent, the long fleshy tap-root with a black skin: lvs. oblong to linear, undulate: heads to 2 in. long, yellow. Eu.

purpùrea (*S. rosea*). Per. to 2 ft., glabrous: lvs. narrowly linear, to 10 in. long, entire: heads to 1½ in. across, ray-fls. violet-purple. Eu.

ròsea: *S. purpurea.*

SCREW-PINE: *Pandanus.*

SCROPHULÀRIA. Figwort. *Scrophulariaceæ.* Erect commonly per. herbs in the northern hemisphere, strong-smelling, with mostly opposite broad serrate to dentate lvs., and small unshowy greenish, purple or yellow fls. in terminal cymes, the corolla tubular and irregularly 5-lobed, sterile stamen manifest; rarely planted in the flower-border or for medicinal purposes.

aquática. To 4 ft., glabrous, sts. 4-winged: lvs. ovate-oblong, obtuse, cordate at base: fls. dull purple, in panicles to 2 ft. long. Wet places, Eu., W. Asia.

califórnica. Per. to 6 ft.: lvs. ovate-cordate, to 5 in. long, serrate to doubly-serrate: fls. dull reddish, about ⅓ in. long, infl. often sticky-hairy. Ore. to N. W. and Calif.

chrysántha. Bien. or per. to 2 ft.: lvs. cordate-orbiculate, doubly-serrate, lower ones long-petioled, upper ones sessile: fls. greenish-yellow, stamens long-exserted, calyx laciniate. Caucasus.

lanceolàta (*S. leporella. S. occidentalis*). To 8 ft., sts. mostly puberulent and lacking grooved sides, blooming in early summer: lvs. lanceolate to ovate, rather short-stalked, truncate at base, very sharp-serrate: fls. green or purple, shining outside. Vt. to Ore., Va. and Okla.

laterifiòra. To several ft., glaucous and glabrous: lvs. lanceolate-cordate, to 5 in. long, toothed: fls. about $\frac{1}{12}$ in. long. Caucasus.

leporélla: *S. lanceolata.*

marilándica. To 10 ft., st. glabrous and with grooved or sunken sides, blooming midsummer or later: lvs. ovate to ovate-lanceolate, cordate or rounded at base, to 5 in. or more long, slender-petioled: fls. dull greenish-purple outside, ⅓ in. long. Me. to Ga. and Tenn.

musashiénsis. Sts. erect: lvs. ovate-oblong, acute, irregularly dentate, white-pilose when young: fls. to ½ in. long, corolla-lobes short and rounded, glabrous, infl. a 3-fld. axillary cyme, calyx-teeth lanceolate-acute. Japan.

nodòsa. Similar to *S. marilandica* but only to 3 ft. high, with smaller lvs. which are often cordate and double-toothed. Eu., N. Asia.

occidentàlis: *S. lanceolata.*

peregrìna. Ann. to 2 ft.: lvs. cordate-ovate, toothed: fls. dark reddish-purple. Medit. region.

vernàlis. To 2 ft., usually bien.: lvs. cordate-ovate, hairy, double-toothed: fls. greenish-yellow, stamens barely or not exserted, calyx not laciniate. Eu.

SCROPHULARIÀCEÆ. Figwort Family. About 180 genera of herbs, shrubs and trees, trop. and temp. regions in eastern and western hemispheres, having usually irregular bisexual fls. with 4–5-toothed or -parted calyx, gamopetalous 4–5-lobed corolla which is often personate, commonly 4 but sometimes 2 or 5 stamens, superior 2-celled ovary and fr. a caps. or berry. Plants of many genera are grown for ornament and some for medicinal purposes, as Allophyton, Alonsoa, Anarrhinum, Angelonia, Antirrhinum, Aureolaria, Bowkeria, Calceolaria, Campylanthus, Castilleja, Celsia, Chænostoma, Chelone, Chionophila, Collinsia, Cymbalaria, Diascia, Digitalis, Erinus, Euphrasia, Galvesia, Gerardia, Gratiola, Hebe, Hebenstretia, Hydrotrida, Isoplexis, Jovellana, Kickxia, Lagotis, Leucophyllum, Linaria, Manulea, Maurandia, Mazus, Mimulus, Mohavea, Nemesia, Orthocarpus, Ourisia, Paulownia, Pedicularis, Penstemon, Phygelius, Phyllopodium, Rehmannia, Rhinanthus, Rhodochiton, Russelia, Schwalbea, Scrophularia, Sibthorpia, Synthyris, Tonella, Torenia, Verbascum, Veronica, Veronicastrum, Wulfenia, Zaluzianskya.

SCURVY-GRASS: *Cochlearia.*

SCUTELLÀRIA. SKULLCAP. *Labiatæ.* Herbaceous annuals and perennials, rarely subshrubs, with blue, violet, scarlet or yellow 2-lipped fls. in pairs in the axils or in terminal spikes or racemes; widely distributed.

Scutellarias are sometimes grown in borders and rock-gardens and *S. Ventenatii* under glass. The herbaceous types are propagated by seeds and division; the shrubby kinds in spring by cuttings of half-ripened wood.

álbida. Pubescent: lvs. broad-ovate, 1½ in. long, toothed, petioled: fls. opposite, whitish or dull, ½ in. long, in racemes 1 ft. or more long. S. E. Eu., Cent. Asia.

alpìna. Spreading per. to 10 in.: lvs. ovate, to 1 in. long, slightly toothed, short-petioled or nearly sessile: fls. purple and white or somewhat yellowish, 1 in. long, in dense terminal racemes. Eu. Var. **lupulìna** (*S. lupulina bicolor*) fls. yellow. Var. **nàna,** low, to 5 in. Other color forms are vars. **álba, cærùlea, ròsea.**

altíssima. Per. to 3 ft.: lvs. cordate-ovate, 3 in. long, coarsely toothed, petioled: fls. opposite, creamy-yellow, ½ in. long, in long one-sided racemes. S. E. Eu., Caucasus.

angustifòlia. Per. to 6 in.: lvs. oblong-lanceolate or linear, to 1 in. long, entire, petioled: fls. violet-blue, to 1 in. long, solitary in axils. B. C. to Calif. and Utah.

baicalénsis. Half-erect per. to 1 ft.: lvs. lanceolate, entire, nearly sessile: fls. blue, in racemes. E. Asia. Var. **cœléstina** has large spikes of bright blue fls. 1 in. long.

Bríttonii. Per. to 8 in., sticky-pubescent: lvs. ovate-oblong, to 1 in. long, entire, usually sessile: fls. blue, corolla pubescent, to 1¼ in. long, axillary and usually solitary. Neb., Colo. and Wyo.

coccínea. Shrub or subshrub: lvs. oblong, to 1 in. long, nearly entire, petioled, violet-purple beneath: fls. scarlet, to ¾ in. long, in terminal spikes 1½ in. long. S. Amer.

cœléstina: *S. baicalensis* var.

Colúmnæ. To 3 ft.: lvs. ovate, 2 in. long, wavy-toothed, petioled: fls. dark purple, to 1 in. long, in racemes 6 in. or more long. S. Eu.

galericulàta. Per. to 3 ft., stoloniferous: lvs. oblong-lanceolate, to 2½ in. long, shallowly serrate, acute: corolla blue, to 1 in. long, puberulent, solitary in axils. N. Amer., Eu., Asia.

incàna. Per. to 4 ft., finely white-downy except occasionally on upper sides of lvs.: lvs. ovate-oblong, to 4½ in. long, petioled, acute, crenate-serrate: fls. blue, to ¾ in. long, in loose racemes, corolla canescent. Ont. to Fla. west to Mich., Kans. and Ala.

índica. Per. to 1 ft., sts. procumbent at base: lvs. round-cordate, petioled, toothed: fls. bluish, in dense racemes to 4 in. long. China, Japan. Var. **japónica** (*S. japonica*) is lower, with blue or lilac fls.

integrifòlia. Pubescent per. to 2½ ft.: lvs. linear to oblong, to 2 in. long, entire, petioled or upper sessile: fls. blue or whitish, in terminal racemes. Mass. to Fla. and Tex.

japónica: *S. indica* var.

lupulìna: *S. alpina* var.

Mociniàna. Tender shrubby plant to 1 ft.: lvs. ovate, 1 in. long, wavy: fls. red with yellow throat, 1½ in. long, in dense terminal spikes. Mex.

nervòsa. Per. to 2 ft., stoloniferous, little or not at all branched: lvs. ovate-orbicular to lanceolate, to 2 in. long, margins crenate-toothed: fls. blue, to ½ in. long, puberulent, solitary in axils. Ont. to N. C. west to Mo. and Tenn.

orientàlis. Procumbent per.: lvs. ovate, ¾ in. long, deeply toothed or nearly pinnatifid, long-petioled, white-tomentose beneath: fls. purplish or yellow, 1 in. long, in spike-like racemes to 3 in. long. S. E. Eu., Asia.

pilòsa. Per. to 3 ft., downy becoming glandular-pubescent above: lvs. ovate to oblong, to 3 in. long, margins crenate-toothed: fls. blue, to ¾ in. long, in terminal racemes or solitary in axils. S. N. Y. to Fla. west to Mich., Mo. and Tex.

resinòsa. Per. to 1 ft., gray-pubescent: lvs. ovate or oval, ½ in. long: fls. blue or purplish, ½ in. long. Colo. to Ariz.

serràta. SHOWY S. Per. to 2 ft., glabrous or nearly so: lvs. ovate to elliptic, to 4 in. long, toothed: fls. blue, to 1 in. long, in terminal racemes. N. Y. to S. C. west to Ky. and Tenn.

tuberòsa. Per. to 5 in., the rootstocks tuberous: lvs. ovate, ½ in. or less long, petioled, toothed, purplish beneath: fls. violet-purple, ¾ in. long. Calif., Ore.

Ventenátii. Per., erect: lvs. cordate-ovate, sinuate-dentate: fls. scarlet, about 1 in. long, in elongating terminal racemes. Colombia.

versícolor. Per. to 3 ft., usually erect, soft-hairy: lvs. ovate to orbicular-ovate, rugose, veins very conspicuous, rounded-toothed: fls. bright blue, whitish on lip and lower side, about 1 in. long. Pa. to Minn. and southward.

SCUTICÀRIA. *Orchidaceæ.* S. American epiphytes with very short branching sts. bearing a solitary subcylindrical whip-like lf. and short lateral 1–3-fld. scapes; sepals and petals similar; lip concave. For cult. see *Orchids.*

Hádwenii. Lvs. to 18 in. long: peduncle to 8 in. long: sepals and petals greenish-yellow spotted with brown; lip entire, whitish-yellow spotted with light brown, with marginal area whitish spotted with rose. May–June, Sept. Brazil.

Steèlei. Lvs. to 48 in. long: peduncles to 1½ in. long, 1–3-fld.: fls. pale yellow spotted with brown-purple; lip 3-lobed with an orange crest at base. June–July. British Guiana.

SCYTHIAN LAMB: *Cibotium Barometz.*

SEAFORTHIA: *Ptychosperma elegans;* but the palm commonly planted as *Seaforthia elegans* is *Archontophænix Cunninghamiana.*

SEA-KALE (*Crambe maritima*). Heavy hardy succulent perennial herb of the coasts of western Europe, grown for the young shoots which when blanched are used as a pot-herb, like asparagus. The great thick glaucous-blue leaves are conspicuous and showy and may contribute a good element in ornamental borders. See *Crambe.*

The young spring shoots (leaf-stalks) of sea-kale are blanched by growing into loose fine earth with which the crown has been covered to the depth of a foot or more; or a light-tight box or other receptacle may be inverted over the plant. If the growth is not cut for the kitchen until late in the season, it is well to allow a part of the plant to go naturally into leaf in order to maintain the vigor of the root; and in any case after the cutting is over, the plant should be stimulated into good growth for the remainder of the season as with asparagus and rhubarb. Sea-kale should give good yields for eight to ten years.

Sea-kale comes readily from seeds, sown in their globular seed-like pods. It is well to carry the seedlings in a bed the first year, and then to transplant to permanent quarters. The field distance is ordinarily about 3 × 3 feet. A good harvest from seedlings should be had the third year from seed. The plant is also propagated by means of root-cuttings, and a good crop may then be taken the second year. Cuttings 4 or 5 inches long are made of vigorous roots, and these cuttings are usually planted directly in the field.

SEA URCHIN: *Hakea laurina.*

SEBESTEN: *Cordia Sebestena.*

SECÀLE. *Gramineæ.* Ann. or per. grasses of Eu. and Asia, differing from Triticum in technical floral characters; one species a valuable cereal grain and forage plant. The name is pronounced in three syllables. See *Grasses.*

cereàle. RYE. Tufted ann. to 5 ft., bluish-green: lvs. to ½ in. across: spikes dense, curved, to 6 in. long, long-awned: fr. light brown, ⅓ in. long. Cultigen.

SÈCHIUM. *Cucurbitaceæ.* Tendril-bearing monœcious herbaceous vine with per. root, grown for its edible frs. and tubers, native in trop. Amer.: fls. small and whitish, the pistillate 1 or 2 in the axils, staminate racemose: fr. large and thick, with one big seed.

edùle (*Chayota edulis*). CHAYOTE. CHRISTOPHINE. Tall-climbing or running: lvs. broad-ovate to triangular-ovate, to 10 in. across, angled or shallowly lobed: fr. of various shapes and sizes in the cult. vars., mostly somewhat pear-shaped and 3–4 in. long, furrowed, green or white, at the apex closed or puckered over the seed which is 1–2 in. long. See *Chayote.*

SECURÍDACA. *Polygalaceæ.* Trop. American shrubs, trees or vines with alternate entire lvs., mostly pink or purplish irregular fls. in racemes or panicles, the lower petal with a fringed crest, and fr. a 1-seeded winged samara.

diversifòlia (*S. erecta. Elsota diversifolia*). Trailing or climbing shrub: lvs. ovate to oblong, to 5 in. long, thick: racemes to 5½ in. long: fr. to 2¼ in. long. W. Indies, Cent. Amer. to Ecuador.

erécta: *S. diversifolia.*

tenuifòlia. Lvs. oblong, pale and pubescent beneath: fls. to ½ in. long, long-stalked, in long loosely-fld. racemes. Trinidad.

SECURÍGERA. *Leguminosæ.* One ann. herb from the Medit. region. **S. Securídaca** (*S. Coronilla. Coronilla Securidaca*). To 1 ft.: lvs. pinnate: fls. yellow, papilionaceous, nodding, in axillary umbels: pods flattened, to 3½ in. long, curved, the edges thickened.—Propagated by seeds sown in spring where the plants are to stand.

SECURÍNEGA. *Euphorbiaceæ.* Temp. and subtrop. monœcious shrubs having lvs. alternate, deciduous, entire: fls. unisexual, small, greenish-white, apetalous: fr. a dehiscent caps. One hardy species, **S. suffruticòsa** (*S. ramiflora*), is grown in temp. regions. To 6 ft., sts. spreading: lvs. elliptic to lanceolate-ovate, to 2½ in. long, often acute, mostly bright green, base wedge-shaped: staminate fls. in clusters of 5–10, pistillate fls. solitary: caps. subovoid, to ¼ in. diam., on peduncles to ⅝ in. long. N. E. Asia.

SEDGE: *Carex.* **Family:** *Cyperaceæ.*

SÈDUM. STONECROP. LIVE-FOR-EVER. *Crassulaceæ.* Succulent mostly per. more or less evergreen low herbs of the north temp. zone, with white, yellow or rose, rarely red or blue fls. in terminal cymes, bearing twice as many stamens as petals. The greater number in cult. are small herbs without prominent rhizome or upright stock and they have a decumbent or trailing habit and often root at the joints. Certain of the species have erect more or less stiff sts., however, and these are usually broad-lvd.: the common run-wild live-for-ever (*S. Telephium*) is an example.

Some of the species are grown under glass for the interesting habit and more or less showy bloom. The low hardy kinds are popular in rock-gardens and edgings. The stonecrops are of easy cultivation, even in thin poor soils. Propagated by seeds or offsets or pieces planted as cuttings.

acerphýllum: listed name; plants received under this designation have been *S. sediforme.*

àcre (*S. neglectum*). Creeping evergreen forming mats, to 5 in.: lvs. alternate, imbricated, oblong-triangular, about 3/16 in. long: fls. bright yellow, ½ in. across, in late spring and summer. Old World. Var. **álbum** with white fls. is listed, but it is probably not of this species. In var. **aùreum** the lvs. are bright yellow in spring. Var. **élegans** has the young shoots tipped silvery. Var. **màjus** is of large stature. Var. **mìnus** is a small form. Var. **mínimum** is also listed.

acutifòlium: *S. subulatum*; plants in the trade under this name are likely to be *S. sediforme.*

Ádolphii. Bushy evergreen per.: lvs. alternate, broadly lanceolate, 1½ in. long, very fleshy: fls. white, ¾ in. across. Mar.–Apr. Mex.

Aizoón (*S. Maximowiczii. S. Laggeri*). Per. to 1½ ft. with large thick knotty rootstocks and long tuberous roots: lvs. alternate, linear- to ovate-lanceolate, to 3 in. long, sharply toothed: fls. yellow to orange, ½ in. across, in summer. Siberia to Japan. Var. **floribúndum** is very tall and narrow-lvd.

Álbertii (*Sempervivum Albertii*). Evergreen, creeping, to 2 in. high: lvs. linear-oblong, to ½ in. long: fls. white, ½ in. across, in early summer. E. Turkestan.—Possibly not distinct from *S. gracile.*

albomarginàtum ròseum: listed name.

alboròseum (*S. japonicum*). Per. to 2 ft., with tuberous roots: lvs. mostly opposite, ovate to obovate, to 3 in. long, toothed: fls. greenish-white, ½ in. across, in early autumn. Japan, China. Var. **variegàtum** has lvs. blotched in center with yellow.

álbum (*S. balticum. S. turgidum*). Creeping evergreen forming mats, to 8 in. high, variable: lvs. alternate, linear-oblong, to ½ in. long: fls. white, ⅜ in. across, in summer. Eu., Asia, N. Afr. Var. **athòum** has smaller lvs. and fls. and the infl. fewer-fld. Var. **brevifòlium** has very short lvs. Var. **chloróticum** is yellowish-green with fls. greenish-white. Var. **micránthum** has fls. half size of type. Var. **muràle** has purple foliage and pinkish fls. Var. **purpùreum** is listed, with purplish foliage. Other varieties listed are **aùreum, bathoniénsis, cárneum, tenuifòlium,** and **vìrens.**

allantoìdes. Evergreen, to 1 ft.: lvs. alternate, club-shaped, cylindrical, very blunt and glaucous, curved upwards: fls. greenish-white, ½ in. across. June–July. Mex.

alpéstre. Small per. with creeping st.: sterile shoots short with the oblong-obovate lvs. crowded at the tips; flowering shoots to 3 in., loosely leafy, bearing several greenish-yellow fls. Cent. and S. Eu., Asia Minor.

alpinàtum: listed name.

altíssimum: *S. sediforme.*

amaramacánthum: listed name; plants received as this have been *S. amecamecanum.*

amecamecànum. Evergreen subshrub to 8 in.: lvs. crowded, oblanceolate, ¾ in. long: fls. pale yellow, ½ in. across, in rather dense cymes to 1 in. across. Mex.

amplexicaùle: *S. tenuifolium.*

Anacámpseros. Nearly evergreen, procumbent, to 6 in. high: lvs. alternate, obovate to orbicular, to 1 in. long: fls. dull purple, ¼ in. across, in summer. S. Eu.

ánglicum. Creeping evergreen, making mats, to 2 in. high: lvs. alternate, elliptic, cylindrical, to 3/16 in. long: fls. white, ½ in. across, in summer. W. Eu. Var. **mìnus** is smaller than the type, with pinker fls. Vars. **álbum** and **glaùcum** are also listed.

ánnuum. Much branched ann. to 3 in.: lvs. alternate, oblong-linear, ¼ in. long: fls. yellow, small. June–July. Eu., Asia Minor, Greenland.

anómalum. Low per., decumbent or ascending, light green and slightly pinkish: lvs. spatulate in rosettes, oblong to oblanceolate on fl.-sts. and to ⅓ in. long: fls. bright yellow, nearly sessile. S. W. Calif.—Probably not specifically distinct from *S. spathulifolium.*

anopétalum. Creeping evergreen per., flowering shoots to 9 in.: lvs. crowded, linear, to ¾ in. long: fls. whitish, rarely yellow, in cymes to 1 in. across. June–July. Eu., Asia Minor. Var. **élegans** is listed.

arbòreum: see *Crassula argentea*; plants received under this name have been *S. sediforme.*

asiáticum: *S. crassipes.*

atlánticum (*Monanthes atlantica*). Glabrous, with the ovate or suborbicular lvs. densely crowded at the tips of the sterile shoots: flowering shoots to 1 in. high, with 3 to 5 yellow fls. Morocco.

athòum: *S. album* var.

atràtum. Ann. or bien. to 2½ in.: lvs. club-shaped, cylindrical: fls. white with green or purple veins, in summer. Cent. Eu.

aùreum: see *S. mexicanum.*

azùreum: has been applied to both *S. cæruleum* and *S. Ewersii.*

bálticum: *S. album.*

Beyrichiànum: *S. Nevii* var.

boloniénse: *S. sexangulare.*

Bórderi: *S. Telephium* var.

Braùnii: name applied to *S. spurium* or *S. kamtschaticum.*

brevifòlium. Creeping mealy evergreen to 2 in. high: lvs. crowded in 4 rows, ovoid, ⅛ in. long: fls. white, ¼ in across, in summer. Medit. region. Var. **álbum** with bronzy lvs. is listed, but probably does not belong here. Var. **Póttsii** does not differ from the type.—Plants listed as *S. Pittonii* are to be referred here.

Brownii: name applied to *S. spurium* and *S. kamtschaticum*, also to one form of *S. Aizoon.*

Bufordiànum Píttonii: listed name.

bupleuroìdes. Per. to 1 ft., diœcious, with much thickened rootstock: lvs. alternate, rather distant, triangular-ovate, cordate, ½–1 in. long: fls. dark red-purple, ¼ in. across. Himalayas.

cærùleum (*S. azureum*). Ann. to 4 in.: lvs. alternate, ovoid to oblong, to ¾ in. long: fls. blue, white at base, ¼ in. across, in summer. Medit. region.

callichròum. Glabrous ann. to 1½ in. high: lvs. oblong to ovate, semi-terete, ⅛ in. long: fls. pink. Persia.

cárneum: *S. lineare* var. *variegatum.*

carpáticum: *S. Telephium* var. *Borderi.*

cautícolum. Glaucous per. with procumbent sts. to 6 in. long: lvs. opposite, orbicular-spatulate, to 1 in. long: fls. rosy-purple, in a flattish subumbellate cyme. Japan.

Cepæ̀a. Hairy ann. or per. to 1¼ ft.: lvs. variously arranged, linear-obovate, red-spotted, to ½ in. long: fls. white, ⅜ in. across, on long pedicels. Cent. and S. Eu.

Charowànum: catalogued as a dwarf for carpeting.

chrysánthum (*Cotyledon chrysantha. Rosularia pallida. Umbilicus chrysanthus*). St. short: lvs. oblong-spatulate: fls. yellowish striped with red on backs of petals. Asia Minor.

coccíneum: *S. quadrifidum;* also sometimes applied to a phase of *S. spurium.*

coloniénse: a small blue-green plant of the *hispanicum* group.

confùsum. Much branched evergreen per. to 1 ft.: lvs. alternate, obovate-spatulate, to 1½ in. long: fls. yellow, to ¾ in. across, in late spring. Probably Mex.—It may be known in cult. as *S. spathulifolium.*

córsicum: *S. dasyphyllum* var. *glanduliferum.*

crássipes (*S. asiaticum*). Per. to 1 ft.: lvs. alternate, linear to lanceolate, to ¾ in. long: fls. yellowish-white to greenish, ½ in. across, in summer. Himalayas, China.

Crísta-gálli: listed name.

cristàtum: *S. rupestre.*

cruéntum: trade name.

cùpreum. Foliage narrow: fls. yellow. Name unidentifiable botanically.

cupressoìdes. Decumbent evergreen per.: lvs. closely imbricated, cypress-like, ovate, ⅙ in. long, very fleshy: fls. bright yellow, ½ in. across, solitary or few. July–Aug. Mex.

dasyphýllum. Evergreen, to 2 in.: lvs. opposite, ovoid, ⅛ in. long: fls. white tinged pink, yellowish at base, ¼ in. across, in early summer. Eu., N. Afr. Var. **glandulíferum** (*S. corsicum*) is densely glandular-pubescent. Var. **macrophýllum** has lvs. to ⅓ in. long. Var. **glaùcum** is listed.

dendroídeum. Evergreen per. to 2 ft.: lvs. crowded at tips of branches, spatulate-orbicular, to 1¾ in. long, rounded on one side: fls. bright yellow, ½ in. across. Mex. Var. **cristàtum** is listed.—*Crassula argentea* is also sometimes known under this name.

diffùsum. Per. with spreading sts. to 6 in. long: lvs. alternate, oblong, to ¼ in. long: fls. white, to ½ in. across. Mex.

divérgens. Creeping evergreen, to 6 in.: lvs. opposite, obovate, ¼ in. long: fls. bright yellow, ¾ in. across, in early summer. Ore. to B. C.

diversifòlium. Glabrous tufted per. with elongate decumbent floriferous sts. to 8 in. long: lvs. of sterile shoots densely imbricate, obovate, $\frac{3}{16}$ in. long; lvs. of flowering shoots crowded, caducous, obovate to oblong, to ½ in. long: fls. ⅜ in. diam., yellow. Mex.

divérsum: listed name.

Doúglasii. Evergreen per., green often tinged red, st. to 12 in. high, simple: lvs. linear to linear-lanceolate, nearly terete, to ¾ in. long: fls. bright yellow, sessile, ½ in. across. Mont. to B. C. and Calif.

Èastwoodiæ (*Gormania Eastwoodiæ*). Per. with stout horizontal rootstock: basal rosette lvs. spatulate, to ¾ in. long, pale green: fl.-sts. to 6 in. high; fls. red, in dense cyme. Calif.

élegans: *S. rupestre.*

Ellacombiànum. Smooth per. to 6 in. high, related to *S. Aizoon* but lacks the much thickened rootstock and tuberous roots of that species, has many arching sts. and spatulate crenate-serrate lvs.: lvs. yellow, ⅝ in. across, in a close flat leafy umbel-like cluster. Japan.—Sometimes grown under the name *S. Selskianum.*

euphorbioìdes: of doubtful status; has been applied to *S. Aizoon.*

Èwersii (*S. azureum*). Per. to 1 ft.: lvs. opposite, broadly ovate, ¾ in. long: fls. purplish-pink, ½ in. across, in late summer. Himalayas to Mongolia. Var. **homophýllum** is much smaller and more glaucous. Var. **turkestánicum** does not differ from the type.

exifídeum: said to be an early-flowering form of *S. acre.*

Fabària: *S. Telephium* var.

facoirdiàzum: listed name.

farinòsum. Per., woody at base, to 3 in. high: lvs. terete, oblong to obovoid, to ¼ in. long: fls. white. Madeira.

fimbriàtum (*Cotyledon fimbriata*). Rosette lvs. linear to oblanceolate, tipped with broad fimbriate cartilage and long narrow spines: fls. pinkish, long-pedicellate, in a raceme or dense spike. China. Var. **Chanètii** (*Orostachys Chanetii*) has larger fls. and rosette lvs. broader with narrow cartilage, entire or sparingly toothed, tipped with long spines.

florairiànum: listed name; plants grown under this name have been *S. Middendorffianum.*

floríferum. Semi-evergreen per. with ascending or decumbent sts. to 6 in.: lvs. spatulate, to 1½ in. long, toothed in upper part: fls. yellow, ½ in. across, in cymes to 2 in. across. July–Aug. China.—Perhaps only a var. of *S. kamtschaticum.*

Forsteriànum: *S. rupestre* var.

frígidum: *S. integrifolium.*

fusifórme. Much branched tufted per. to 6 in.: lvs. fusiform, thick in middle and narrowed at ends, to ¾ in. long, glaucous: fls. greenish-yellow, in few-fld. terminal cymes. Madeira.

glaùcum: *S. hispanicum* var. *bithynicum.*

globòsum: listed name.

Górmanii: trade name of doubtful status.

grácile. Evergreen per. to 2 in., sts. procumbent below: lvs. linear-oblong, to ⅓ in. long, dotted with red: fls. white often dotted with red, ⅓ in. across. June–July. Caucasus.

grandiflòrum: listed name.

Gréggii. Per. with tufted sterile sts. and slender fl.-sts. to 6 in.: lvs. oblong or obovate, imbricate, ⅛ in. long: fls. yellow, 1–3 in an infl. Mex.

guatemalénse. Procumbent per. rooting at joints: lvs. cylindrical, ⅓ in. long: fls. reddish-yellow, ⅓ in. long. Guatemala.

gypsícolum. Creeping evergreen per. forming mats, to 6 in. high: lvs. imbricated, ovate-rhomboid, ¼ in. long, thick, tinged red: fls. white, ¼ in. across, in corymbs 1½ in. across. Spain, Portugal.—Sometimes considered a var. of *S. album.*

Hállii: *S. obtusatum.*

Hàyesii. Sts. prostrate, reddish-purple: lvs. spatulate, ½ in. long, glaucous: fls. rosy-lavender, ¼ in. across, anthers black-purple.—This seems to be a small form of *S. Ewersii*, known only from gardens.

hirsùtum. Evergreen tufted per. to 3 in., sticky-pubescent: lvs. oblanceolate, to ¾ in. long, very fleshy: fls. white or pinkish, ½ in. across. S. Eu.

hispánicum. Ann. or bien. to 6 in.: lvs. linear to oblong-lanceolate, to 1 in. long: fls. pinkish-white, ½ in. across, in early summer. Switzerland to Persia. Var. **bithýnicum** (var. *minus*, *S. glaucum*, *S. lydium* var. *glaucum*) is a per. to 2 in. high, with glaucous-blue foliage densely crowded on the barren shoots.

Hóbsonii (*S. Praegerianum*). Per. with thick rootstock and long petiolate oblanceolate basal lvs.: fl.-sts. prostrate, to 6 in. long, with lvs. oblanceolate or oblong: fls. rose-red. Tibet.

hýbridum (*S. sibiricum*). Creeping evergreen forming mats, to 6 in. high: lvs. alternate, oblong-lanceolate, 1 in. long, toothed: fls. yellow, ½ in. across, in spring and again in late summer. Siberia, Mongolia.

ibéricum: *S. stoloniferum.*

integrifòlium (*Rhodiola integrifolia. S. frigidum. S. rhodioloides*). Per. to 1 ft., diœcious, with fleshy rootstock: lvs. obovate or somewhat oblong, about ½ in. long: fls. usually dark purple. Colo., Calif. to Alaska.—Probably a subspecies of *S. Rosea*.

intermèdium: name of doubtful application.

Jaccardiànum. Pubescent, with sterile sts. densely leafy at tips, to 2½ in., and fl.-sts. to 4 in.: lvs. spatulate, to ⅝ in. long: fls. 7–10-merous, yellow. Morocco.

japónicum: *S. alboroseum. S. japonicum macrophyllum* is the same or else *S. maximum*; true *S. japonicum* is probably not in the American trade.

Jépsonii: probably *S. laxum*.

kamtscháticum. Per. to 9 in.: lvs. alternate or opposite, obovate, to 2 in. long, toothed: fls. orange-yellow, ¾ in. across, in summer. N. E. Asia. Var. **variegàtum** has lvs. with marginal white band. Var. **flavíssimum** is listed.

lacónicum. Similar to *S. acre*, but differing in its oblanceolate spotted lvs., divergent carpels connate at base, and taller fl.-sts., to 3½ in. Asia Minor, Greece.

Lággeri: *S. Aizoon*; also applied to *S. maximum*.

láxum (*Gormania laxa*). Green per. with fl.-sts. to 1 ft.: lvs. spatulate, to ¾ in. long: fls. red or pink. Ore.—Species of doubtful status.

Leìbergii. Tufted per. to 10 in.: sterile sts. loosely rosulate with the lateral lvs. oblanceolate, to ⅝ in. long, and the central ones spatulate, to ¼ in. long: fls. yellow, in open cymes. Wash., Ore., Ida., Wyo.

Liebmanniànum. Glabrous almost deciduous per., sts. to 6 in., procumbent, thickened by the persistent silvery bases of the old lvs., each with a black tip: lvs. oblong, blunt, 3/16 in. long, densely imbricate: fls. ⅜ in. across, white. Mex.

lineàre. Evergreen, to 6 in. high: lvs. linear to linear-lanceolate, cylindrical, to 1 in. long: fls. yellow, star-like, ½ in. across, in summer. Japan, China. Var. **robústum** is stouter, more branched and gray-green. Var. **variegàtum** (*S. carneum variegatum*) has lvs. margined with white.

lycopodioìdes: see *Crassula lycopodioides*.

lýdium. Evergreen, to 3 in.: lvs. crowded, linear, cylindrical, ¼ in. long: fls. white, ¼ in. across, in early summer. Asia Minor.—The form advertised as var. *glaucum* is properly *S. hispanicum* var. *bithynicum*. Var. **purpuráscens** and var. **ròseum** are also listed.

macrophýllum: a garden name applied to *S. alboroseum* and *S. maximum*.

magellénse. Evergreen per. to 4 in.: lvs. alternate or opposite, obovate, ¼ in. long: fls. white, ¼ in. across, in late spring. Italy, Greece, Asia Minor. Var. **olýmpicum** (*S. olympicum*) is lower in growth and has the lvs. subspathulate-oblong to almost orbicular and the infl. shortly racemose or corymbose.

Maximowíczii: *S. Aizoon*.

máximum. Ann. to 3 ft.: lvs. commonly opposite, broadly ovate, to 3 in. long, toothed: fls. greenish-white, ⅜ in. across, in late summer. Eu., S. W. Asia. Var. **atropurpùreum** has deep purple lvs. and st. Var. **hæmatòdes** is a smaller form of var. *atropurpureum*. Var. **variegàtum** is variegated with yellow.

Meddémpium: listed name.

mesemberàtum: listed name.

mexicànum. Evergreen decumbent or trailing bright green per., floriferous and useful in pots, hanging-baskets and porch-boxes: lvs. nearly terete, to ½ in. long: fls. golden-yellow, sessile, to ½ in. across. Nativity in doubt.—Sometimes known as *S. aureum*.

micránthum: *S. album* var.

Middendorffiànum. Tufted per. to 1 ft.: lvs. alternate, nearly linear, 1½ in. long, toothed: fls. yellow, ⅝ in. across, in summer. Siberia, Manchuria. Var. **diffùsum** has sts. somewhat decumbent, often rooting at base and lvs. to 2 in. long.

monregalénse. Per. to 5 in., sts. decumbent below: lvs. in whorls of 4, oblanceolate, ¼ in. long, fleshy: fls. white, ⅓ in. across. July–Aug. S. Eu.

montànum: name of uncertain application.

moranénse. Evergreen much branched low per., sts. 3–4 in. high, red and wiry, bare and procumbent below: lvs. triangular, sessile, ⅛ in. long and half as broad: fls. white, red tinged on back, sessile, nearly ½ in. across. S. Mex.—Sometimes erroneously known in cult. as *S. Greggii* and *S. Liebmannianum*.

múlticeps. Per. to 4 in., subshrubby and much branched: lvs. alternate, crowded, linear-oblong, ¼ in. long, very fleshy: fls. yellow, to ½ in. across. July. Algeria.

muràle: *S. album* var.

negléctum: *S. acre*.

nevadénse. Small ann. to 4 in. high, with linear subterete lvs. to ¼ in. long: fls. 5-merous, with reddish-white petals connate at base and with 5 stamens. Spain and N. Afr.

Nèvii. Per. to 4 in., tufted: lvs. alternate, spatulate, to ½ in. long: fls. white with purple anthers, ½ in. across. June. Mts., Va. to Ala. and Ill. Var. **Beyrichiànum** is more diffuse and greener with narrower lvs.

nicaeénse: *S. sediforme*.

nippónicum: listed name.

nùtans (*Cremnophila nutans*). Per. with woody sts. to 3 in. long and fl.-sts. usually pendent: lvs. in dense rosettes, to 3 in. long, 1½ in. wide and ½ in. thick: fls. bright yellow, ¼ in. long, in many-fld. panicles. Mex.

Nuttalliànum. Tufted ann. to 3 in.: lvs. alternate, linear-oblong, to ⅜ in. long: fls. yellow, about ¼ in. across, in spring. Mo. to Tex.

oaxacànum. Creeping evergreen: lvs. alternate, obovate, ¼ in. long: fls. yellow, in 1–4-fld. cymes. Mex.

obtusàtum (*Gormania obtusatum* and *Hallii. Echeveria Hallii* and *Brittonii. S. Hallii*). Green or somewhat glaucous, to 6 in. high: lvs. spatulate, to ¾ in. long: fls. yellow, with acute or acuminate segms. little longer than filaments, in a rather narrow cluster. Calif., in the Sierras.

obtusifòlium. Tufted per. to 3 in.: lvs. obovate, 1 in. long, very obtuse, veined with red: fls. white, in corymbose cymes. Caucasus.

olýmpicum: *S. magellense* var.

oppositifòlium: *S. spurium*.

opsinifòlium: listed as 3 in. high with foliage turning red in autumn; plants received as this have been *S. sexangulare*.

orbiculàris: listed as of the *hispanicum* group, making a dense blue-green mound.

oregànum (*Gormania oregana*). Green, to 6 in. high: lvs. spatulate-cuneate, less than ¾ in. long: fls. bright yellow fading pink, the narrow long segms. much surpassing the stamens, in a compound cluster to 3 in. across. Ore. to Alaska.

oxypétalum. Erect glabrous subshrub to 3 ft., with st. becoming thick and stout at base: lvs. obovate, flat, sometimes retuse, to 1½ in. long: fls. ½ in. across, dull red, honey-scented. Mex.—Deciduous or semi-evergreen.

pachyphýllum. Evergreen per. to 4 in., very fleshy, sts. sometimes rooting: lvs. alternate, crowded, cylindrical, to 1½ in. long, very blunt, curved upward, tipped with red: fls. bright yellow, ½ in. across, in cymes to 2 in. across. Mex.

pállidum. Per. to 5 in.: lvs. linear, 1 in. long: fls. white or rose. Asia Minor, India.—This name has been erroneously applied to several other species, particularly to *S. hispanicum*.

Pálmeri. Glaucous evergreen per., sts. decumbent and more or less rooting, to 9 in. high: lvs. spatulate, entire, about 1 in. long, alternate or in rosette: fls. ⅜ in. across, petals orange and sepals green, on drooping or wide-spreading branches. Mex.

perfóssum: see *Crassula Schmidtii*.

pilòsum. Bien. to 4 in.: lvs. densely imbricated, hairy, linear-spatulate to oblong-obovate, to ¾ in. long: fls. rose, to ⅜ in. across, in late spring. Asia Minor.

Píttonii: *S. brevifolium*.

populifòlium. Subshrub to 1½ ft.: lvs. alternate, ovate, ¾ in. long, toothed: fls. pale pink or white, to ⅜ in. across, in late summer. Siberia.

potosìnum. Evergreen per. with weak sts. to 6 in. high, glaucous: lvs. crowded, linear and nearly cylindrical, to ½ in. long: fls. white, ½ in. across, in cymes. Mex.

præáltum. Evergreen shrub to 2 ft. or more: lvs. alternate, lanceolate-spatulate, to 2½ in. long, very fleshy, shining: fls. bright yellow, ¾ in. across, in panicles to 4 in. long. May–June. Mex. Var. **cristàtum** is listed.

Praegeriànum: *S. Hobsonii*.

pruinàtum. Evergreen, very glaucous, to 6 in. high: lvs. alternate, linear, ¾ in. long: fls. straw-colored, to ¾ in. across, in summer. Portugal.—The plants usually cult. under this name belong to *S. rupestre*.

pruinoìdes: listed name.

pruinòsum. White-pruinose per. with short sterile shoots and fl.-sts. to 8 in.: lvs. spatulate-oblong to obovate, ½–1 in. long: fls. bright yellow. Calif.—Doubtfully distinct from *S. spathulifolium*.

pulchéllum. Ann. or per. to 1 ft.: lvs. crowded, linear, cylindrical, ⅝ in. long: fls. rosy-purple, ½ in. across, in summer. E. U. S.—Two phases occur: one, an ann., flowers in early spring; the other, per., flowers in summer and thrives in damper habitats.

Púrdyi. "Has densely crowded lf. rosettes which throw out red threads at the end of which are tiny plants": lvs. oblong-spatulate, to about 1 in. long, in flat rosettes: fl.-sts. to 4 in. high, with a rather densely flowered compact cyme: fls. white. Calif.

purpuráscens: a trade name, perhaps a form of *S. Telephium;* the plant grown in S. Calif. under this name is *Sempervivum* or *Æonium arboreum.*

quadrífidum (*S. coccineum*). Glabrous per. with stout elongate rootstock densely clothed with black wiry old sts.: fl.-sts. 2–6 in. high with lvs. oblong to lanceolate, entire, acute, ½ in. long: fls. yellow or purple. Asia.

radiàtum. Per. to 7 in.: lvs. oblong to oblong-ovate, to ½ in. long: fls. bright yellow, petals wide-spreading, ⅓ in. long. Mts., Calif.

refléxum. Creeping evergreen, forming a mat, to 1 ft. high: lvs. crowded, linear, cylindrical, ½ in. long: fls. bright yellow, ⅝ in. across, in summer. Eu. Var. **cristàtum** is a crested or fasciate form. Var. **mìnus,** a small form, is listed. Var. **réptans** and var. **semperflòrens** are also listed.

replesiànum: listed name.

réptans: listed name.

retùsum. Evergreen subshrub to 1 ft. high: lvs. alternate, spatulate, notched at tip, to 1 in. long: fls. white, ½ in. across, in terminal cymes to 2 in. across, late summer. Mex.

rhodánthum (*Clementsia rhodantha*). Erect glabrous per. with stout rootstock, sts. several, to 12 in., not branched, very leafy: lvs. linear-lanceolate, acute, flat, 1 in. long: fls. rose-color, about 1 in. long, in a dense raceme to 3 in. long. Mont. to Ariz.

Rhodìola: *S. Rosea.*

rhodioloìdes: *S. integrifolium.*

roanénse (*Rhodiola roanensis*). Tufted per. to 16 in.: lvs. elliptic or cuneate, to 1½ in. long: fls. purplish, ⅓ in. across. N. C., Tenn.—Probably only a phase of *Sedum Rosea.*

Ròsea (*S. Rhodiola. Rhodiola rosea*). Roseroot. Per. to 1 ft., diœcious, with rose-fragrant root: lvs. scattered, imbricated, obovate, to 2 in. long: fls. yellow or greenish-yellow, ¼ in. across, in spring and early summer. Circumpolar regions.—This has been generally listed as *S. roseum.* Plants in the trade as *Gormania Rhodiola* may belong here.

ròseum: see *S. Rosea.*

rùbens. Ann. or bien. to 4 in., sticky-pubescent: lvs. oblong-linear, ¾ in. long, very fleshy, turning red: fls. white or reddish, ½ in. across. July. Eu., N. Afr., Canary Isls.

rubricaûle. Sts. to 1 ft. high, puberulent, densely dotted with red or purplish papillæ: basal rosettes dense; cauline lvs. ovate, thick, bright green: fls. white. Mex.—Probably a var. of *S. ebracteatum.*

rupéstre (*S. elegans. S. virens. S. cristatum*). Creeping evergreen forming mats, to 1 ft. high, glaucous: lvs. crowded, linear, to ⅝ in. long: fls. golden-yellow, ½ in. across, in summer. Eu. Var. **Forsteriànum** (*S. Forsterianum*) is a green form. Var. **mìnus** is smaller and glaucous. Var. **màjus** and var. **spiràle** are also listed.

rupícolum. Per. with thick fleshy ellipsoid lvs. and yellow fls. Perhaps related to *S. stenopetalum.* Wash.

sarmentòsum. Prostrate evergreen: lvs. in 3's, broadly lanceolate, 1 in. long: fls. bright yellow, ⅝ in. across, in summer. N. China, Japan.

Sartoriànum: the plant grown under this name is usually *S. Stribrnyi.*

Schlèhanii: listed name.

Schóttii: listed name.

Scopòlii: listed name.

sedifórme (*S. altissimum. S. nicaeense*). Per. to 2 ft.: lvs. alternate, lanceolate, to 1½ in. long: fls. greenish-white, ½ in. across, in summer. Medit. region.

Selskiànum. One of the Aizoon group: hairy per. with ann. erect sts. to 1½ ft. high: lvs. alternate, flat and scarcely fleshy, lance-oblong and the upper ones linear-oblong, toothed on upper half: fls. bright yellow, ¾ in. across, in large leafy umbel-like cluster. Manchuria.—Plants grown under this name may be *S. Aizoon* or *S. Ellacombianum.*

Semenòvii (*Cotyledon Semenovii*). Per. to 2 ft.: lvs. crowded, linear, to 2 in. long: fls. greenish-white, in dense racemes to 3 in. long, in early summer. Turkestan.

sempervivoìdes (*Umbilicus platyphyllus*). Bien. to 1 ft.: lvs. alternate, ovate, 1 in. long: fls. red, ½ in. across, in summer. Asia Minor.—*Umbilicus persicus* and *U. Pestalozzæ* are perhaps to be referred here.

Sempervìvum: see *S. sempervivoides.*

sexangulàre (*S. boloniense*). Creeping evergreen, forming mats, to 3 in. high: lvs. usually in 6 spiral rows, linear, cylindrical, ¼ in. long: fls. yellow, ⅜ in. across, in summer. Eu.

sibíricum: *S. hybridum.*

Sièboldii. Decumbent per.: lvs. in 3's, nearly round, to 1 in. long, glaucous-blue or red: fls. pink, ½ in. across, in late autumn. Japan. Var. **fòliis mèdio-variegàtis** has center of lf. yellow.

spathulifòlium. Little evergreen glaucous per. tinged red when exposed: fl.-sts. to 5 in., leafy: lvs. of sterile shoots spatulate, flat and fleshy, 1 in. long, of flowering shoots oblong and sessile, fleshy: fls. bright yellow, to ⅓ in. across, in a leafy cyme. B. C. to Calif. Var. **purpùreum** has lvs. deep purple, except when young. Vars. **glaûcum** and **rùbrum** are also listed.—This name may be applied in cult. to *S. confusum.*

speciòsum: trade name.

spectábile. Glaucous per. to 1½ ft.: lvs. opposite or in 3's, obovate, 3 in. long: fls. pink, ½ in. across, in autumn. Japan, Cent. China. Var. **álbum** has white fls., **atropurpùreum** and **rùbrum** crimson fls. and **variegàtum** variegated foliage. Vars. **brilliantíssimum, Brîllii,** and **ròseum** are listed.—*Crassula argentea* is also grown under this name.

spinòsum (*Cotyledon spinosa. Orostachys spinosus. Umbilicus spinosus*). Densely matted per.: lvs. in rosettes, spatulate, thick, with white spiny tip: fls. yellow, in spicate panicles. E. Asia.

spùrium (*S. oppositifolium*). Creeping per. forming mats, nearly evergreen, to 6 in. high: lvs. opposite, obovate, 1 in. long: fls. pink varying to white, ½ in. across, in summer. Caucasus. Var. **spléndens** is a deep crimson form, var. **álbum** a white form. Vars. **coccíneum, cùphrium,** and **ròseum** are also listed.

Stáhlii. Evergreen to 8 in.: lvs. opposite, ovoid, ½ in. long: fls. yellow, ½ in. across, in summer and autumn. Mex.

stellàtum. Ann. to 6 in.: lvs. alternate, spatulate, to 1 in. long: fls. purplish, ⅜ in. across, in early summer. S. Eu.

stenopétalum. Evergreen per. to 6 in., tufted: lvs. alternate or crowded, linear-lanceolate, to ¾ in. long: fls. bright yellow, ½ in. across. June. Alta. to Calif. Var. **subalpìnum** is not different, but a synonym.

stoloníferum (*S. ibericum*). Creeping, nearly or quite evergreen, to 6 in. high: lvs. opposite, spatulate, 1 in. long: fls. rose, ½ in. across, in early summer. S. W. Asia. Var. **coccíneum** is offered, with pink fls. and foliage deep bronze in winter.

Stríbrnyi. Evergreen tufted per. to 6 in., sts. rooting below: lvs. crowded, linear, ½ in. long, slightly glaucous: fls. bright yellow, ½ in. across. July. Bulgaria, Greece.

subulàtum (*S. acutifolium*). Per. to 8 in. high, with sterile sts. ascending to 2 in.: lvs. terete, linear, very acute, subimbricate, to ½ in. long: fls. white, with petals fused at base. Asia Minor to Persia.

Tatarinòwii. Per. with short thick rootstock, to 8 in. high: lvs. fleshy, oblanceolate to oblong, coarsely dentate to deeply lobate, to 1 in. long: fls. white to pink. China.

telephioìdes. Per. to 10 in., glaucous and purplish: lvs. scattered, oblong, to 2 in. long, often toothed: fls. pale pink, ¼ in. across, in autumn; petals 3–4 times as long as sepals. N. Y. and Pa. to N. C. and Ga.

Telèphium. Per. to 2 ft.: lvs. obovate-oblong, 3 in. long, toothed: fls. greenish-white (in typical var.) to red-purple, in late summer. W. Eu. to Japan. Var. **Bórderi** (sometimes known as *S. carpaticum*) has deeply and irregularly toothed lvs. Var. **Fabària** is smaller, with narrower lvs. and lilac-purple fls. Var. **purpùreum** (*S. triphyllum*) has purple fls. in a dense terminal cyme.

tenéllum. Per., woody at base, with lvs. of sterile shoots imbricate, oblong to suborbicular, 1/16 in. long: fl.-sts. with lvs. imbricate, subterete, linear to oblong, to ¼ in. long: fls. white tinged with red, in a small dense infl. Persia, Armenia, Caucasus.

tenuifòlium (*S. amplexicaule*). Small procumbent per. with wiry much branched sts., the barren shoots 1–3 in. long and bearing linear terete glaucous lvs. with clasping base: fls. to ¾ in. across, golden-yellow, in a forked infl. S. Eu.—Allied to *S. pruinatum.*

ternàtum. Evergreen, to 6 in.: lvs. in 3's, obovate, to 1 in. long: fls. white, ½ in. across, in late spring. E. U. S. Var. **mìnus** is much smaller than type.

tetragònum: see *Crassula tetragona.*

tortuòsum. Per. with thick and tortuous branches: lvs. alternate, spatulate, 1 in. long: fls. white. Mex.

Tournefórtii: a listed name.

Trelèasei. Evergreen sprawling per., very fleshy and glaucous: lvs. alternate, crowded, oblong-obovate, to 1¼ in. long, curving upwards: fls. bright yellow, ½ in. across, in nearly globular cymes to 1½ in. across. Mex.

triphýllum: *S. Telephium* var. *purpureum.*

tríste: listed name.

túrgidum: *S. album.*

turkestánicum: *S. Ewersii* var.

umbellàtum: listed name.

undulàtum: listed name.

uniflòrum. Sts. weak and slender, 5–6 in. long: lvs. alternate, subterete, obtuse: fls. solitary at ends of branches, reddish. Luchu Isls.—This name has also been applied to a form of *S. Douglasii*.

vèris var. **álbum:** listed name.

villòsum. Bien. to 6 in., pubescent: lvs. alternate, linear-oblong, to ½ in. long, fleshy: fls. pale purple, ¼ in. across. June–July. N. N. Amer., Eu.

vìrens: *S. rupestre.* Var. **monstròsum** is listed.

Wallichiànum: properly a synonym of *S. crassipes* but applied to other species.

Wátsonii (*Gormania Watsonii*). Per. with stout horizontal rootstock: basal lvs. spatulate, obtuse or emarginate, to 1 in. long: fls. pale yellow, in an elongated cyme, with the petals united for about ⅓ their length. Ore.

Wínkleri (*Cotyledon Winkleri. Umbilicus Winkleri*). Per. to 2 in., glandular-hairy: lvs. in dense rosettes at tips of branches, cylindrical, to ½ in. long, glaucous: fls. white with purple anthers. Spain.

Woòdii. Per. to 4 in.: basal lvs. broad-spatulate, ½ in. long; lvs. of flowering shoots alternate, narrower: fls. yellow, ⅓ in long. Ore.

yosemiténse. Per., stoloniferous, very fleshy: sts. to 6 in. high with small obtuse spatulate to oblong lvs.; basal lvs. obovate to nearly orbicular: fls. light yellow, the petals about ¼ in. long and exceeding sepals. Yosemite.—Probably not specifically distinct from *S. spathulifolium.*

SEED: the ripened ovule; the essential part is the embryo, and this is contained within integuments.

SEEDAGE: see *Propagation.*

SEGMENT: one of the parts of a leaf, petal, calyx, that is divided but not truly compound; one of the parts or petals in the perianth of monocotyledons.

SEKIKA: *Saxifraga sarmentosa.*

SELAGINÉLLA. *Selaginellaceæ*, which is defined by the genus. Moss-like branching flowerless herbs with numerous scale-like lvs. often of two kinds, the fruiting bodies (spores) borne in terminal sessile spikes; widely distributed; grown for the ornamental foliage out-of-doors and in the greenhouse, in conditions suitable for ferns.

Selaginellas are of easy cultivation in shady moist situations. Propagated by spores or cuttings in spring. Cuttings of some of the greenhouse kinds should be scattered over the soil of the propagating bench, covered with glass and kept in a temperature of 70°, until they form roots at the joints.

africàna: *S. Vogelii.*

amœna: *S. caulescens.*

apòda (*apus*). Basket S. Ann. with creeping flaccid sts. to 4 in. long: lvs. minute, pale green. Me. to Tex.

Braùnii. Sts. erect, to 1½ ft. high, straw-colored, not branched below: lvs. scattered, very small. W. China.

Bròwnii: *S. Kraussiana* var.

cæsia: *S. uncinata, S. Willdenovii.*

cauléscens (*S. amœna*). Sts. erect, stiff, to 2 ft. high, unbranched below, greenish: lvs. bright green, crowded. Malaya, China, Japan. Var. **japónica** (*S. japonica*) is less branched and graceful above.

cuspidàta. Sts. much branched nearly to base, densely tufted: lvs. pale green edged with white. Cuba, Mex., Venezuela.

denticulàta. Per. with matted creeping sts. 6 in. or less long: lvs. crowded, toothed. Medit. region.—Most of the material cult. under this name is *S. Kraussiana.*

Doúglasii. Prostrate, sts. rooting and creeping to 1 ft.: lvs. in 4 ranks, yellowish-green. B. C. to Calif.

elegantíssima: a garden name.

Emmeliàna. Sts. erect, to 1 ft. high, branched nearly to base: lvs. bright green, crowded. Trop. Amer. Var. **aùrea** has yellowish lvs. and var. **variegàta** is variegated with white.

erýthropus. Sts. erect, to 1 ft. high, unbranched below, crimson: lvs. crowded, dark green. Trop. Amer.

flabellàta. Sts. erect, stiff, to 8 in. high, with short unbranched part below: lvs. obliquely ovate. Tropics and subtropics.

grándis. Sts. erect, to 2 ft. high, unbranched below: lvs. lanceolate, long for the genus, dark green. Borneo.

hæmatòdes. Sts. erect, to 2 ft. high, unbranched below, crimson. Venezuela to Peru.

japónica: *S. Kraussiana* or *S. caulescens* var.

Kraussiàna (*S. japonica*). Moss-like per. with creeping rooting sts.: lvs. crowded, bright green. Azores to S. Afr. Var. **Bròwnii** (*S. Brownii*) is a dwarf form and vars. **aùrea** and **variegàta** variegated.

lepidophýlla. Resurrection Plant. Sts. stiff, to 4 in. long, densely tufted, curling up into a ball when dry but will expand when put in water: fls. flat, crowded. Tex. to S. Amer.—See also *Anastatica.*

Mandaiàna: a trade name.

Mártensii. Per. with ascending sts. to 1 ft. long, branched to base and rooting in lower half: lvs. pale green. Mex. Var. **variegàta** is marked with white.

pilífera. Much like *S. lepidophylla* but differing in the awl-shaped lvs. Tex., Mex.

regàlis: a hort. name.

rupéstris. Rock S. Densely tufted per. with branching sts. to 5 in. long: lvs. tipped with a white awn. E. U. S.

sérpens. Per. with trailing much branched sts. to 9 in. long: lvs. bright green, crowded. W. Indies.

uncinàta (*S. cæsia*). Per. with creeping rooting sts. to 2 ft. long: lvs. blue-green, close together on the short branches. China.

viticulòsa. Sts. erect, 1 ft. or less high, branched near top: lvs. crowded. Cent. Amer.

Vògelii (*S. africana*). Sts. erect, stiff, to 2 ft. high, unbranched below, brown: lvs. green or bronzed. Afr.

Wállacei. Loosely tufted, sts. prostrate, to 6 in. long, rooting sparingly: lvs. stiffly imbricated on all sides, slightly glaucous. B. C. to Calif.

Wállichii. Sts. erect, to 4 ft. high, branched to base: lvs. crowded. India, E. Indies.

Willdenòvii (*S. cæsia arborea*). Sts. straw-colored, erect when young but soon climbing to 20 ft. or more: lvs. blue-green, crowded. Tropics of Old World.

SELENICÈREUS. *Cactaceæ.* Clambering, trailing or climbing cacti, more or less epiphytic and reaching the tops of trees, with aërial roots and joints ribbed or angled, most of the species bearing small spines: fls. large with long somewhat curved tube which is commonly covered in the axils of the scales with felt or hairs or bristles. S. U. S. to Argentina. See *Cacti.*

These plants are among those known as night-blooming cereus, raised under glass in cold countries and in the open in frostless places. They are readily grown, and old plants bloom freely.

Boéckmannii (*Cereus Boeckmannii*). Sts. to ¾ in. thick and strongly angled; ribs 3–8; spines 3–6: fls. pure white within and brownish outside, not scented, to 15 in. long. Cuba, Hispaniola, E. Mex.

brevispìnus. Climbing or clambering, not much branched, to 1¼ in. long; ribs 8–10, somewhat undulate; areoles tawny; spines to 1/16 in. long, radials about 12, centrals 3–4, usually curved or hooked: fls. white, the outer segms. yellowish, to 4 in. long. Cuba.

coniflòrus (*Cereus coniflorus*). Climbing; ribs 5–6 and wavy or knobby on edges; radial spines 4–6 and yellow; central 1 and ½ in. long: fls. white, yellow outside, to 10 in. long. Mex.

Donkelaàri (*Cereus Donkelaari*). To 25 ft. or more but very slender, about ⅜ in. thick; ribs 9 or 10 and sometimes indistinct; spines 10–15, central 1: fls. white, reddish outside, about 7 in. long. Yucatan.

grandiflòrus (*Cereus grandiflorus*). Sts. rather stout, about 1 in. diam; ribs 7 or 8 or fewer; spines needle-like and intermixed with white hairs: fls. white, salmon outside, about 7 in. long. Jamaica, Cuba. Var. **armàtus** is said to have longer spines. Var. **Téllii** has very slender sts. about ½ in. diam., ribs 4–5, fls. smaller than in type.

hamàtus (*Cereus hamatus. C. rostratus*). Branches about ½ in. thick, strongly 4-angled or seldom 3-angled, areoles often forming spur-like reflexed processes; spines few on old branches and black: fls. white, pale green outside, to 10 in. long. S. and E. Mex.

hondurénsis (*Cereus hondurensis*). Climbing, sts. ½ in. diam.; ribs 7–10; spines ¼ in. long and with many white hairs or bristles: fls. white, yellow or brownish outside, 8 in. long. Honduras, Guatemala.

Knuthiànus. Sts. to 1 in. diam.; ribs 7–10, low; spines brown, central 1 when present, radials 4, short and stiff: fls. white within and reddish-green outside, to 10 in. long, vanilla-scented. Cent. Amer.

Macdónaldiæ (*Cereus Macdonaldiæ*). Old sts. terete, about ½ in. thick, younger ones somewhat 5-angled, several and very short: fls. pure white, reddish or yellowish on outside, to 12 in. or more long. Probably Uruguay and Argentina.

Mállisonii: *Aporocactus Mallisonii.*

Máxonii: *S. Urbanianus.*

Múrrillii. Sts. climbing, to 18 ft. long and ⅓ in. diam.;

ribs 7–8; spines 5–6 and minute: fls. white, greenish-yellow outside, 6 in. long. Mex.

Nélsonii. Sts. climbing, much branched, to ⅝ in. diam.; ribs 6–7, low, notched; spines about 12, to ¼ in. long, white to yellow: fls. reddish-brown outside, to 8 in. long. Mex.

nycticállus: *S. pteranthus.*

pseùdo-spinulòsus: not distinct from *S. spinulosus.*

pteránthus (*Cereus pteranthus. C. nycticallus*). Sts. stout, to 1 or 2 in. thick, strongly 4–6-angled; spines 1–4, dark: fls. very fragrant, white, 10–12 in. long. Mex.

spinulòsus (*Cereus spinulosus*). Sts. 1–2 in. thick and bearing many roots, commonly angled; ribs 4–6 or more; spines very short, the radials 5 or 6 and with 2 reflexed bristles at base, central 1 or 2: fls. pinkish to white, about 5 in. long. S. E. Tex., Mex.

triangulàris: *Hylocereus undatus.*

Urbaniànus (*S. Maxonii*). Sts. to 1¼ in. diam., light green to purple; ribs 3–6 and usually 4–5, becoming inconspicuous with age; spines about 4–7, to nearly ½ in. long, brownish: fls. white inside, tan without, to 12 in. long. Cuba, Hispaniola.

vàgans (*Cereus vagans*). Sts. creeping and ½ in. diam.; ribs about 10; spines numerous and short: fls. white, brownish outside, 6 in. long. Mex.

viridicárpus: listed name.

Wércklei. Sts. slender, branched, to ⅝ in. diam.; ribs 6–12, obtuse, low; spines absent: fls. bright red, to 6 in. long. Costa Rica.

SELENIPÈDIUM. *Orchidaceæ.* Small genus of trop. American orchids with 2 fertile anthers borne on the side of the column, a large simple inflated sac-like lip with entire incurved margins and 3-celled ovary. Most of the plants cult. in greenhouses under this name are now referred to Phragmipedium, probably no true Selenipediums being generally known to hort.

SELF-HEAL: *Prunella vulgaris.*

SELÌNUM (*Sphenosciadium*). *Umbelliferæ.* Coarse per. herbs of the northern hemisphere, having pinnately decompound lvs., involucre of few lvs., involucels of numerous bracts, and large umbels of white fls.; differing from Angelica, in part, in frs. with prominently winged ribs. Propagated by seeds or division; adapted to moist heavy soil.

capitellàtum. To 5 ft., glabrous except infl.: lvs. large, with conspicuously dilated petioles, lfts. coarsely laciniately lobed or toothed: umbels to 5 in. across, fls. pubescent. E. Ore. to Nev. and Calif.

SÉMELE. *Liliaceæ.* One shrubby vine from the Canary Isls. suitable for greenhouse cult. or out-of-doors in the S. **S. andrógyna** (*Danaë androgyna*). Climbing Butchers Broom. Lvs. represented by scales, the apparent lvs. being leaf-like branches or cladodes to 4 in. long and 2 in. or more broad, ovate, leathery: fls. small, yellow, borne in clusters on the margins of the cladodes. Sometimes cult. as an Asparagus. The name Semele is pronounced in three syllables.

SEMIARUNDINÀRIA. *Gramineæ.* Erect bamboo-like shrubs with sts. mostly round but with the upper internodes flattened, lvs. with 4–7 pairs of veins, lf.-sheaths covered with stiff smooth bristles at least on the apical end; differs from Arundinaria in lf.-sheaths falling, not persistent.

fastuòsa (*Bambusa, Arundinaria* and *Phyllostachys fastuosa. A. Narihira*). To 40 ft., sts. hollow, marked with purplish-brown: lvs. to 7 in. long and 1 in. wide, shining above, glaucous beneath, slightly pubescent. Japan.

SEMMÁNTHE. *Aizoaceæ.* S. African somewhat woody branching plant once included in Mesembryanthemum (which see). **S. lácera** (*M. lacerum*) grows to 3 ft. high, with 2-angled branches: lvs. somewhat scimitar-shaped, sharply 3-angled, glaucous, toothed on keel, to 2 in. long: fls. rose, 2 in. across, the inner petals short. The name is pronounced in three syllables.

SEMPERVÌVUM. Houseleek. *Crassulaceæ.* Succulent clustered per. herbs of the Old World, usually without distinct trunk or caudex, with thick lvs. compacted into basal or terminal rosettes, the st.-lvs. smaller, alternate and often bract-like: fls. greenish, white, rose, yellow or purple, in terminal usually compact cymes; parts of the fl. 6 to many, the stamens two times as many as the petals. Numerous names are known in cult. but many of them represent variants or hybrids of the few species, particularly of *S. tectorum.* The species entered here are presumably hardy in the northern states. The species native in the Canary and Madeira Isls. are better kept distinct, in the genera Æonium, Aichryson and Greenovia, represented by plants grown in the United States.

One houseleek, *S. tectorum,* is an old-fashioned plant about houses and in borders, prized for its durable rosettes and the progeny of smaller ones. In European countries it often grows on roofs, whence the Latin name (*tectum,* roof); it is also somewhat escaped in this country. Other kinds are useful in rock-gardens, spreading slowly. Propagation is naturally by the small rosettes or offsets; they grow readily from seeds when available, but some of them seldom bloom.

acuminàtum: *S. glaucum.*

acùtum: listed name.

admonténse: name without botanical standing.

Álbertii: *Sedum Albertii.*

álbidum: a whitish form of *S. tectorum.*

Állionii (*S. austriacum. S. hirsutum*). To 6 in.: rosettes to 1 in. across, pale green, the lvs. lanceolate or ovate-lanceolate, ½ in. long, incurved: fls. greenish-white, ½ in. long. Alps.

alpéstre: *S. montanum.*

alpìnum: a var. of *S. tectorum,* but smaller, the green lvs. red at base. Alps, Pyrenees.

Anacámpseros: listed name.

androsacoìdes: listed name.

angustifòlium. Hybrid between *S. arachnoideum* and *S. tectorum.*

anómalum: a form of *S. tectorum.*

arachnoídeum (*S. sanguineum*). Cobweb H. To 4 in.: rosettes ¾ in. across, the lvs. connected by cobwebby strands, tipped with long hairs: fls. bright red, 1 in. across, in a dense few-fld. glandular panicle. Mts., S. Eu. Var. **glabréscens** (*S. Doellianum, S. heterotrichum*) is loosely cobwebby. Var. **Lággeri** (*S. Laggeri*) is a larger form, with rosettes twice as broad. Var. **tomentòsum** (*S. tomentosum, S. Webbianum*) has white-tomentose rosettes. Other vars. listed are **fimbriàtum, hastipétalum, màjus, mínimum, mìnus, rùbrum** and **transalpìnum.**—*S. piliferum* is a form of *S. arachnoideum* or a hybrid between it and *S. tectorum.*

arbòreum: *Æonium arboreum.*

arenàrium (*S. cornutum. S. Kochii*). To 9 in.: rosettes globular, the lvs. reddish-brown on back: fls. pale yellow tinted reddish outside, about ½ in. long, petals tricuspidate. Tyrol.—Plants grown under this name are likely to be a form or hybrid of *S. montanum.*

arvernénse (*S. Boutignyanum*). To 8 in.: rosettes 2½ in. across, the lvs. oblong-lanceolate, cuspidate, about 1 in. long, with red-brown blotch at top: fls. pale pink, about ⅓ in. long, in panicle 3 in. long. France.—This plant is a form of *S. tectorum.*

árvulum: listed name.

assímile: *S. Schlehanii;* but the plant grown under the name is likely to be *S. tectorum.*

atlánticum. To 1 ft.: rosettes to 3 in. across, the lvs. oblanceolate, cuspidate, to 1½ in. long, pale green: fls. pale red, 1 in. across, in panicle 3–4 in. across. Morocco.—Considered to be a subspecies of *S. tectorum.*

atropurpùreum: listed name of no botanical significance.

atrórubens: listed name.

atroviolàceum: listed name.

austrìacum: *S. Allionii.*

Bantiànum: listed name.

barbátulum: name applied to the hybrid between *S. arachnoideum* and *S. montanum;* this hybrid is also listed as *S. barbulatum* and *S. elegans.*

barbulàtum: another name applied to the hybrid between *S. arachnoideum* and *S. montanum.*

Baulicìnum: listed name.

blándum: *S. Schlehanii.* Var. **variegàtum** is listed.

Boissièri. A form of *S. tectorum:* to 9 in.: rosettes 2½ in. across, the oblanceolate cuspidate lvs. tipped with red-brown, about 1 in. long: fls. pale red, 1 in. across, in a close small panicle.

Bòrisii: *S. ciliosum.*

Bourgeànum: listed name.

Boutignyànum: *S. arvernense.*

Braùnii. To 9 in.: rosettes to 2 in. across, lvs. obovate, slightly cuspidate, glandular, to 1 in. long: fls. dull yellow, with greenish keels, to 1 in. across, in a close panicle to 4 in. across. Tyrol.—To be regarded as a pale-fld. form of *S. montanum.*

Brownii: presumably an erroneous spelling of the preceding.

cæspitòsum: *Æonium cæspitosum.*

calcàreum (*S. californicum*). To 1 ft.: rosettes 2 in. across, the very glaucous lvs. oblanceolate and cuspidate, tipped with red-brown: fls. pale red, ¾ in. across, in a panicle 3–4 in. long. France.—A subspecies of *S. tectorum.*

califórnicum: *S. calcareum.*

canariénse: *Æonium canariense.*

canéscens: without botanical standing.

cantábricum: listed name.

cantálicum: *S. tectorum.*

Chamædrys: listed name; probably not a Sempervivum.

Chavínii: probably a hybrid.

ciliàtum: *Æonium ciliatum.*

ciliòsum (*S. Borisii*). Rosettes to 2 in. across, very hairy, gray-green, the lvs. oblong-oblanceolate, 1 in. long, red on back when older: fls. greenish-yellow, 1 in. across, the infl. about 2 in. across. Bulgaria.

cineráscens: *S. erythræum.*

Clayrmayiànum: listed name.

Clusiànum: probably a synonym of *S. tectorum.*

Comóllii: probably hybrid of *S. tectorum* and *S. Wulfenii.*

compáctum: *S. tectorum.*

Coòperi: listed name.

cornùtum: *S. arenarium.*

crassicaùle: listed name.

cuneàtum: *Æonium cuneatum.*

débile: *S. montanum.*

decòrum: *Æonium decorum.*

dichótomum: *Aichryson dichotomum.*

Doelliànum: *S. arachnoideum* var. *glabrescens.*

dolomíticum. Tufted, to 4½ in.: rosettes dense, to 2 in. across, the lvs. obovate-lanceolate, ½ in. long, ciliate, tipped red-purple: fls. rose-red with darker stripe and white dots, 1 in. across, the infl. 1½ in. across. Alps.

doméstìcum: *Aichryson domesticum.*

Doràmæ: *Æonium undulatum.*

élegans: name applied to hybrid between *S. arachnoideum* and *S. montanum.* Var. **Lággeri** is listed.

erythræum (*S. cinerascens*). Tufted, to 8 in.: rosettes wide open, 2 in. across, the lvs. obovate, ¾ in. long, purplish densely covered with white hairs, densely ciliate: fls. red-purple with white lines, 1 in across, the infl. 2 in. across. Bulgaria.

Fárreri: listed name.

fasciàtum: listed name.

Fauconnéttii (*S. flavipilum, S. pseudo-arachnoideum*). To 8 in.: rosettes 1½ in. across, the oblanceolate lvs. tinged with red or purple, about ¾ in. long: fls. bright red, 1 in. across. Jura Mts.—Perhaps a hybrid of *S. arachnoideum* and *S. tectorum.*

fimbriàtum. To 10 in., glandular: rosettes 1½ in. across, the oblanceolate lvs. tipped with a tuft of hairs, outer becoming red: fls. bright red, 1 in. across, in open panicle. Pyrenees, Tyrol.—Regarded as a hybrid between *S. arachnoideum* and *S. Wulfenii.*

Fínchii: listed name.

flagellifórme. To 4 in.: rosettes 1½ in. across, the lvs. pale green, oblanceolate and pubescent, to ¾ in. long: fls. bright red, 1 in. across, glandular, nearly or quite sessile in a dense head. Siberia.—The plant grown under this name may be a form of *S. glaucum.*

flavípilum: *S. Fauconnettii.*

floribúndum: listed name.

Fúnckii. To 9 in.: rosettes 2 in. across, the lvs. oblanceolate and cuspidate: fls. bright red-purple, 1 in. across, glandular, in a panicle 2–3 in. across. S. Eu.—A hybrid; but the plant passing under this name is probably *S. calcareum.*

Fùnori: listed name.

Gaùdinii: *S. grandiflorum.*

giganteùm: listed name.

glaùcum (*S. acuminatum. S. Schottii*). To 1 ft., sts. hairy above: rosettes to 3 in. across, the oblanceolate lvs. glaucous with brownish spot at tip: fls. red, 1 in. across, in panicles 2–3 in. long. Cent. Eu.—Probably a var. of *S. tectorum.*

globíferum. To 1 ft.: rosettes to 3 in. across: fls. pale yellow, to 1 in. across. Russia.—A dubious name; the plant so called is apparently a form or hybrid of *S. montanum.*

glutinòsum: *Æonium glutinosum.*

gnaphàlium: sometimes applied to *S. arachnoideum.*

Godchiæ: *Æonium Goochiæ.*

grandiflòrum (*S. Gaudinii*). To 8 in.: rosettes 1½ in. across, the obovate lvs. pale green and pubescent, to 1 in. long: fls. pale yellow, to 1½ in. across. European Alps.

Greènii. A form of *S. tectorum* but the plant in cult. may be *S. glaucum:* to 6 in.: rosettes 1½ in. across, the oblanceolate glaucous lvs. tipped with red-brown, to 1 in. long: fls. pale red, ½ in. across, in small panicle. French Alps.

Guillemótii: *S. tectorum.*

Haùsmannii. To 6 in.: rosettes with lvs. ciliate on margin and tipped with brown and a tuft of hairs: fls. rose-red. Tyrol.—Probably hybrid of *S. arachnoideum* and *S. montanum.*

Hawórthii: *Æonium Haworthii.*

heterótrichum: *S. arachnoideum* var. *glabrescens.*

Heùffelii (*S. patens*). To 8 in.: rosettes 2 in. across, the lvs. obovate and cuspidate, with white-ciliate margins and upper part tinted red-brown: fls. pale straw-color, nearly ½ in. long, in dense panicle to 3 in. across. Transylvania, Greece.

Híllebrandtii: a form of *S. hirtum* with broader glabrous st.-lvs. and grayish-green rosette-lvs.

hirsùtum: *S. Allionii.*

hírtum. To 9 in.: rosettes 1¼ in. across, the obovate lvs. glandular-pubescent: fls. pale yellow, to ¾ in. long, in panicle to 4 in. across. S. Eu. Var. **rarifòlium** is listed.

hispídulum: probably synonymous with *S. montanum.*

híspidum: trade name; apparently a form or hybrid of *S. montanum.*

Hístori: listed name.

holochrỳsum: *Æonium holochrysum.*

Hoòkeri: listed name.

houghifòlium: listed name.

Howardii: listed name.

Hùteri. Hybrid with *S. Wulfenii* as one parent.

hýbridum: *Æonium cæspitosum.*

juraténse: *S. tectorum.*

kánswanii: listed name.

Kindíngeri. To 10 in.: rosettes open, to 2½ in. across, the lvs. cuneate-oblong, 1 in. long, densely pubescent: fls. ivory-waxy, reddish at base, 1¼ in. across, the infl. to 4 in. across. Macedonia.

Kòchii: *S. arenarium.*

Lággeri: *S. arachnoideum* var.

LaHárpei: trade name without botanical standing.

Lamóttei: form of *S. tectorum* or hybrid from it.

lenéllum: listed name.

lesurìnum: *S. tectorum.*

leucánthum. To 8 in.: rosettes to 3 in. across, with lvs. numerous, crowded, erect in upper part, hairy, and purple-tipped: fls. to 1 in. across, 11–13-parted, with petals pale yellow or greenish-yellow. Bulgaria.

Líndleyi: *Æonium Lindleyi.*

longifòlium: name of doubtful botanical status.

longobárdum: name with no botanical standing.

Lòwei: *Monanthes brachycaulon.*

magníficum: listed name.

Málbyi: listed name.

Manriqueòrum: *Æonium Manriqueorum.*

Metteniànum. To 6 in.: rosettes to 2 in. across, the lvs. marbled and tipped with red-brown: fls. rose. Cent. Eu.—Considered a form of *S. tectorum.*

minùtum: *S. tectorum.*

modéstum. Hybrid between *S. montanum* and *S. tectorum.*

Moggrídgei. To 9 in.: rosettes 2 in. across, the long-cuneate or oblanceolate lvs. ¾ in. long and tipped with tufts of hairs: fls. red, ¾ in. across, calyx glandular. S. Eu.—An offshoot of *S. arachnoideum.*

Mòleyi: listed name.

monstròsum: listed name.

montànum (*S. alpestre. S. debile*). To 6 in.: rosettes compact, to 1¾ in. across, lvs. oblanceolate, ciliate, to 1 in. long: fls. bright mauve-red or purplish, in a hairy panicle to 2 in. across. Alps, Pyrenees. Var. **stirìacum** has larger rosettes and fls., the lvs. tipped red-brown. Vars. **flagellifórme** and **pygmæum** are listed.

Morelliànum. Hybrid of uncertain status.

Neilreìchii: form of *S. hirtum* with glabrous st.-lvs. and very narrow rosette-lvs.

Nèvii: listed name; possibly *Sedum Nevii.*

nìgrum: listed name.

nóbile: *Æonium nobile.*

obtùsum: hort. name of no botanical standing.

Óllonii: trade name.

ornàtum: *S. Schlehanii* var. *brunneifolium.*

pállidum: *S. tectorum.*

parviflòrum. Probably a hybrid between *S. montanum* and *S. tectorum.*

párvulum. Hybrid between *S. montanum* and *S. tectorum.*

pàtens: *S. Heuffelii.*

penicillàtum. Hybrid between *S. arachnoideum* and *S. tectorum.*

percárneum: *Æonium percarneum.*

Piedoyànum: listed name.

pilíferum: see *S. arachnoideum.*

Pilosélla. Hybrid between *S. arachnoideum* and *S. tectorum.*

Píttonii. To 6 in.: rosettes 1½ in. across, the oblanceolate pubescent lvs. blotched and tipped with light red: fls. yellowish-white, in a dense hairy head. Styria.

Pòmelii. Hybrid between *S. arachnoideum* and *S. tectorum.*

Pótsii: listed name.

Pòwellii: listed name.

pseùdo-arachnoídeum: *S. Fauconnettii.*

pulchéllum: *Æonium spathulatum* var. *cruentum.*

pùmilum. To 4 in.: rosettes to 1 in. across, the lvs. pubescent: fls. bright mauve-purple, 1 in. across. Caucasus.

purpùreum: listed name. Var. **acutifòlium** is also listed.

pyrenàicum. To 10 in.: rosettes 2 in. across, the lvs. glaucous tipped with reddish: fls. pale rose. Eu.—A form of *S. tectorum.*

Rángeri: listed name.

Regìnæ-Amàliæ: *S. Schlehanii.*

Requiènii: *S. tectorum.*

rhǽticum. Hybrid between *S. montanum* and *S. tectorum.*

rhodánicum: *S. tectorum.*

robústum: *S. tectorum* var.

ròseum. Hybrid between *S. arachnoideum* and *S. Wulfenii,* with lvs. light green and glabrous, but with a tuft of woolly hairs at the tip: petals yellow with red lines or reddish with a yellow margin.

Royànum: a form of *S. tectorum.*

rùbens: listed name.

rubicúndum: *S. Schlehanii.*

rùbrum: name without botanical status.

rupéstre: *S. tectorum* or a form of it; plants grown under this name, however, are likely to be a form or hybrid of *S. montanum.*

rupícolum (*S. Theobaldii. S. montanum* × *S. Wulfenii*). Rosettes to 2 in. across, lvs. reddish at base: fls. pale greenish-yellow striped with red. Tyrol.

ruthénicum (*S. Zelebori*). To 12 in.: rosettes 1½ in. across, the lvs. obovate and pubescent, short-ciliate: fls. pale yellow, the petals about ⅓ in. long, filaments purple. E. Eu.

sabaùdum: *S. tectorum.*

sanguíneum: *S. arachnoideum.*

Scherziànum: of no botanical standing.

Schlèhanii (*S. assimile. S. blandum. S. Reginæ-Amaliæ. S. rubicundum*). To 6 in.: rosettes 4 in. across, the lvs. obovate, pale, nearly glabrous, to 1 in. long: fls. pale rose, ¾ in. across, calyx densely pubescent. Transylvania. Var. **brunneifòlium** (*S. ornatum*) has lvs. brown, red in winter.

Schnittspáhnii. Hybrid between *S. arachnoideum* and *S. tectorum.*

Schóttii. Hybrid between *S. montanum* and *S. tectorum:* another *Schottii* is synonymous with *S. glaucum.*

sedifòlium: *Æonium sedifolium.*

Seguièri: name referable to *Sedum dasyphyllum.*

selaùcum: listed name.

setòsum: listed name.

sobolíferum. To 9 in.: rosettes 1½ in. across, lvs. obovate, to 1 in. long, the outer ones brown-tinged: fls. pale yellow, in dense panicle to 4 in. across. Austria.—Plants so named may be a form of *S. montanum.*

spathulàtum: *Æonium spathulatum.*

speciòsum: *S. tectorum.*

spinòsum: listed name.

spinulifòlium: trade name of uncertain application.

Stándsfieldii: listed name.

stenopétalum: uncertain name; perhaps a hybrid.

stirìacum: *S. montanum* var.

striàtum: listed name.

subcicladànum: listed name.

Sỳleri: listed name.

tabulæfórme: *Æonium tabulæforme.*

tectòrum (*S. cantalicum. S. compactum. S. Guillemotii. S. juratense. S. lesurinum. S. minutum. S. pallidum. S. Requienii. S. rhodanicum. S. sabaudum. S. speciosum*). COMMON OR ROOF HOUSELEEK. HEN-AND-CHICKENS. OLD-MAN-AND-WOMAN. To 12 in.: rosettes 3–4 in. across, with many cuneate-obovate cuspidate lvs. to 3 in. long: fls. pink-red, to 1 in. across, on secund curving hairy branches, the petals mostly 12. Eu., Asia, variable; somewhat run wild in U. S. Var. **robústum** has the rosettes to 6 in. across and the lvs. purple-tipped. Vars. **màjus, modéstum, rùbrum, violàceum, violáscens,** and **víride** are listed.

tenéllum: listed name.

ternàtum: listed name.

Theobáldii: *S. rupicolum.*

Thomàyeri. Hybrid between *S. arachnoideum* and *S. tectorum,* with dense rosettes and hairy lvs.

Thómpsonii. Hybrid between *S. arachnoideum* and *S. tectorum.*

Tissièri. Hybrid of uncertain parentage.

tomentòsum: *S. arachnoideum* var.

tortuòsum: *Aichryson domesticum.* Var. **variegàtum** is listed.

Tournefórtii: listed name of no scientific standing; possibly *Æonium spathulatum.*

trìste. A form of *S. tectorum:* to 1 ft.: rosettes to 3 in. across, lvs. oblanceolate and cuspidate, the upper part of lvs. red-brown: fls. bright red, 1 in. across, in panicle to 6 in. long.

Túscanii: listed name.

Umbîlicus var. **cheiránthum:** name without botanical status; possibly may be applied to *Umbilicus chrysanthus* which is *Sedum chrysanthum.*

umbréllum: name without botanical significance.

undulàtum: *Æonium undulatum.*

Vérlottii. Hybrid between *S. montanum* and *S. tectorum.*

villòsum: *Aichryson villosum.*

violàceum: trade name of no botanical standing.

violáscens: *S. tectorum.*

vulgáricum: listed name.

Webbiànum: *S. arachnoideum* var. *tomentosum.*

Wólfii: listed name.

Wúlfenii. To 9 in.: rosettes 2 in. across, lvs. obovate and cuspidate, slightly glaucous, ciliate, reddish at tip, to 1 in. long: fls. pale yellow, in dense hairy panicle 2–3 in. across. Cent. Eu.

Zelébori: *S. ruthenicum.*

SENEBIERA: *Coronopus.*

SENÈCIO (incl. *Cineraria*). GROUNDSEL. *Compositæ.* Vast number of widely dispersed herbs, shrubs and small trees, sometimes fleshy, with alternate or basal lvs. and solitary or clustered heads of variously colored ray- and disk-fls.; involucral bracts in 1 series, usually reinforced at the base with shorter bracts having a calyx-like appearance but the margins not overlapping as in Ligularia; pappus of soft whitish bristles.

A few herbaceous kinds are grown for flowers, foliage or climbing habit. They are of easy culture. Practically all the species may be propagated by seed, the perennials by division; stem- and root-cuttings may be employed. *S. mikanioides* is easily increased by cuttings of the running shoots.

abrotanifòlius of lists is *S. adonidifolius.*

acanthifòlius: *S. Cineraria.*

aconitifòlius. Hardy per., tall: lvs. palmately parted, lobes somewhat toothed: heads small, pinkish-red, in loose corymbs, of disk-fls. only. Amur, N. China.

adonidifòlius (*S. abrotanifolius*). Per. to 1½ ft.: lvs. finely pinnately cut: heads small, brilliant orange, in a compound corymb. S. Eu.

alàtus. Per. to 2 ft.: lvs. ovate or ovate-lanceolate, to 1 ft. long, the petiole with broad toothed wings: heads ½ in. long, in branched panicles. Himalayas.

antennariifòlius. Per. to 1½ ft., white-woolly: lvs. mostly basal, oval to spatulate, to 2½ in. long, densely white-woolly beneath and green above, upper lvs. linear: heads corymbose, to 1 in. across, ray-fls. golden-yellow. Va. and W. Va.

arenàrius. Ann., erect, to 1½ ft., sticky-pubescent: lvs. variable, oblong to obovate, entire, toothed or 1–2-pinnatifid: heads several in lax corymbs, ray-fls. purple, disk-fls. yellow, pedicels long. S. Afr.

articulàtus: *Kleinia articulata.*

aurantìacus (*Cineraria aurantiaca*). Per. to 1½ ft.: lvs. oval, basal, with only a few linear st.-lvs.: heads orange-red. Alps.

aùreus. Golden G. Golden Ragwort. Per. to 2 ft.: basal lvs. cordate-ovate, to 6 in. long, toothed, sometimes tinged purple beneath; st.-lvs. pinnately cut: heads yellow, ¾ in. across, in corymbs. Newf. to Fla. and Tex.

Balsámitæ: *S. pauperculus.*

Bídwillii. Shrub to 5 ft., white-tomentose: lvs. oblong, to 2 in. long, leathery and thick: heads ¼ in. across, in corymbs, of disk-fls. only. New Zeal.

Buchánanii: *S. elæagnifolius* var.

cànus. Tufted white-tomentose per. to 1 ft.: lvs. oblong-obovate, to 5 in. long and 1 in. wide, entire or toothed: heads ½ in. long, in cymes, rays yellow. B. C. to Neb.

centropáppus. Shrub to 10 ft., glabrous, much branched: lvs. broadly linear, to 3 in. long, crowded at ends of branches, sessile, entire: heads to ⅓ in. across, in small panicles at ends of branchlets forming a large corymbose panicle, ray-fls. 4–6 and scarcely longer than involucre, pappus-bristles toothed and plumose. Australia.

Cinerària (*Cineraria maritima. S. acanthifolius*). Dusty Miller. Per. to 2½ ft., stiff, white-woolly: lvs. pinnately cut into oblong blunt segms.: heads yellow or cream, to ½ in. long, in cymes. Medit. region.—Blooms all seasons in favorable climates; hardy N. in protected places; favorite for the white herbage. Var. **aùreo-marginàtus,** lvs. bordered with orange-yellow. For var. *candidissimus* see *S. leucostachys.*

cineráscens (*Kleinia cinerascens* and *tomentosa* of hort.). Per to 2 ft., woody at base, erect, white-woolly: lvs. pinnatifid, to 5 in. long, usually 2–4 lobes on each side, margins revolute, often glabrate above: corymbs 3–8-headed, to ½ in. across. S. Afr.

clivòrum: *Ligularia clivorum.*

compáctus. Shrub to 3 ft., much branched: lvs. obovate, to 1½ in. long, slightly toothed, white-tomentose beneath: heads yellow, 1 in. across, in leafy racemes. New Zeal.

confùsus. Glabrous vine or scandent shrub: lvs. thickish, narrowly ovate-acuminate, to 2 in. or more long, remotely dentate: heads with orange or orange-red rays, ½ in. or more across, in terminal clusters. Mex.; cult. in the Rio Grande region.

crassíssimus (*Kleinia crassissima* of hort.). Much branched shrub to 2½ ft.: lvs. broad-obovate, to 2½ in. long and 1 in. wide, entire or with few teeth, very thick and fleshy: heads small, peduncled, ligules oblong. Madagascar.

cruéntus (*Cineraria cruenta*). Florists Cineraria. Short-stemmed woolly per.: lvs. large, cordate-ovate, undulate and toothed: fls. purple-red. Canary Isls.—The supposed parent of the florists cineraria, perhaps hybridized with other species, its fls. more or less double, in white, shades of blue, pink and red-purple. *Cineraria stellata* is of more open growth, 2 ft., the fl.-heads single and smaller. See *Cineraria.*

Dòria. Per. to 4 ft., glabrous: lvs. oval-oblong, to 15 in. long, toothed, glaucous: heads yellow. Eu.

Dorónicum. Leopards-Bane. Per. to 2½ ft., pubescent: lvs. thickish, ovate to lanceolate, to 7 in. long, toothed to entire: heads orange or yellow, to 2½ in. across, few. S. Eu.

Doúglasii. Subshrub to 6 ft., white-tomentose when young: lvs. linear or pinnate into linear lobes: heads yellow, ½ in. long, in corymbs. Calif. to Tex. and Nev.

elæagnifòlius. Shrub to 10 ft., yellowish-tomentose: lvs. obovate to oblong-lanceolate, to 5 in. long, leathery: heads ⅓ in. across, in panicles, of disk-fls. only. New Zeal. Var. **Buchánanii** (*S. Buchananii*) grows 4 ft. high and lvs. to 2 in. long.

élegans (*S. purpureus. Jacobæa elegans*). Purple Ragwort. Ann. to 2 ft., sticky-hairy: lvs. mostly oblong, to 3 in. long, pinnately lobed or toothed: heads in loose corymbs, rays purple or reddish, disk yellow. S. Afr.—There are double vars. and with white, rose and crimson fls. Flower-garden and conservatory plant.

Élmeri. Tufted per. to 8 in.: lvs. spatulate-oblanceolate, to 2¼ in. long, toothed: heads ½ in. long, in cymes. Wash.

ensifòlius: trade name.

Féndleri. Per. to 1 ft., loosely woolly becoming glabrate: lvs. oblanceolate, to 2 in. long, pinnatifid, lobes rounded: heads corymbose, about ⅜ in. across, ray-fls. yellow. New Mex. to Colo. and Utah.

fibrillòsus. Per. to 2 ft.: lvs. to 3 in. long, toothed: heads yellow, ⅓ in. across, in racemes, of disk-fls. only. China.

ficoìdes: *Kleinia ficoides.*

Fléttii. Per. to 8 in.: lvs. mostly basal, oblong, to 5 in. long, pinnate into cut-toothed segms.: heads ¼ in. long, in corymbs, rays dark yellow. Wash.

Fùchsii. Per. to 5 ft.: lvs. oval to lanceolate, 6 in. long, toothed: heads yellow, fragrant, ½ in. long, in corymbs. Eu.

glastifòlius. To 3 ft. or more, erect: lvs. oblong-lanceolate, to 3 in. long, glabrous, unequally toothed, lower ones strongly decurrent: heads in corymbose panicles, to ½ in. across, ray-fls. purple. S. Afr.

grandiflòrus. Per. to 5 ft.: lvs. pinnate into linear segms.: heads with purple rays and yellow disk, in corymbs. S. Afr.

grandifòlius. Shrub to 15 ft.: lvs. ovate, to 1½ ft. long, wavy-toothed, tomentose beneath: heads yellow, in cymes. Mex.

Grèyii. Shrub to 8 ft.: lvs. oblong or oblong-ovate, to 3½ in. long, leathery, white-tomentose beneath: heads yellow, 1 in. across, in corymbs to 5 in. across. New Zeal.

Hárfordii. Per. to 1½ ft.: lvs. to 6 in. long, pinnate into lobed and toothed segms.: heads ½ in. across, in cymes, rays bright yellow. Wash.

Héctori. Shrub to 12 ft.: lvs. oblong-lanceolate, to 1 ft. long, crowded toward end of branchlets, toothed to pinnatifid, white-tomentose beneath: heads white, to 2 in. across, in large corymbs. New Zeal.

Heritièri. Per. somewhat shrubby, about 1 ft.: lvs. suborbicular, to 1¾ in. broad, 5–7-lobed, white-woolly beneath: heads mostly solitary, purple. Teneriffe.

Húntii. Shrub or tree to 20 ft., sticky-pubescent: lvs. elliptic-lanceolate, to 4 in. long, entire: heads yellow, to ¾ in. across, in large panicles. Chatham Isls. (New Zeal.).

incànus. Per. to 6 in.: lvs. pinnately cut, white-woolly: heads yellow, about ½ in. across, in corymbs. Alps.

Jacobæ̀a. Tansy Ragwort. Bien. or per. to 4 ft.: lvs. to 8 in. long, 2–3-pinnately cut: heads yellow, ½ in. across, in many-fld. corymbs. Eu.; nat. in E. N. Amer.

japónicus: *Ligularia japonica.*

Kaémpferi: *Ligularia Kaempferi.*

Kírkii. Shrub to 15 ft. high and 20 ft. across, occasionally epiphytic: lvs. linear-lanceolate to obovate, to 4½ in. long, obtuse, entire or distantly serrate: heads to 2 in. wide, in dense much branched corymbs to 3 ft. across, ray-fls. pure white, recurved, disk-fls. yellow. New Zeal.; not hardy N.

lanatifòlius. Per. to 10 in., branched and quite leafy: lvs. linear, pectinate-pinnatifid, the segms. wavy-toothed: heads crowded, to ½ in. across, ray-fls. absent. Colo. to Neb.

Lédebouri: *Ligularia macrophylla.*

leucóstachys. Shrubby at base but herbaceous as usually grown from cuttings, white-tomentose: lvs. pinnatifid into linear lobes: heads in compound corymbs. Argentina.—Known in cult. as *S. Cineraria* var. *candidissimus;* distinguished from *S. Cineraria* by less stiff habit and the numerous very narrow lf.-lobes; good plant for porch boxes.

lobàtus. Ann. or bien., to 3 ft., often somewhat woolly: lvs. pinnately parted, with broad toothed segms.: heads yellow, with narrow rays. S. E. U. S.—The plant grown as *Cineraria lobata* has slender very diffuse habit, and roundish notched lvs. S. Afr.

lóngipes. Per. or subshrub, erect: lvs. fasciculate, narrowly linear to filiform, acute, apically serrate, margins revolute: heads discoid, on long peduncles, usually 3–7 in each cyme, involucral bracts 1-seriate, glandular. Patagonia.

Lỳallii. Per. to 1½ ft., pubescent: lvs. linear, to 10 in. long, entire: heads yellow, to 2½ in. across, in large corymbs. New Zeal.

macrophỳllus (*Jacobæa macrophylla*). Per. to 4 ft.:

lower lvs. obovate-oblong, to 1½ ft. long: heads yellow, in compound cymes. Eu.

marítimus. A S. African species not known to be in cult.; material so listed may be *S. Cineraria* or *Artemisia Stelleriana.*

mikanioìdes. German Ivy. Tall-twining: lvs. ovate with deep basal sinus, sharply 5–7-angled: heads small, yellow, in close clusters, of disk-fls. only. S. Afr.—Often known erroneously as *S. scandens;* an old window-garden and conservatory plant.

Monròi. Shrub to 6 ft., white-tomentose: lvs. oblong, to 1½ in. long, leathery, wavy-margined: heads yellow, to ⅔ in. across, in corymbs. New Zeal.

multibracteàtus. Ann. to 1½ ft.: lvs. lanceolate, to 2½ in. long, with few coarse teeth: heads in long-stalked corymbs, rays purple, disk yellow. S. Afr.

nebrodénsis. Ann. or bien. to 1½ ft.: lvs. pinnately cut: heads yellow, to 1 in. across, in corymbs. Eu.

obovàtus. Per. to 2 ft.: basal lvs. obovate or oblong, to 4 in. long, wavy-toothed; st.-lvs. often pinnatifid: heads yellow, ½ in. across, in corymbs. Me. to Fla. and Tex.

ovàlis: *Gynura auriculata.*

palmatífidus: hort. name, probably for *Ligularia japonica.*

pauciflòrus: an uncertain name.

paupérculus (*S. Balsamitæ*). Balsam G. Per. to 1½ ft.: basal lvs. oblong, to 5 in. long, wavy-toothed; st.-lvs. pinnately cut: heads yellow, to ¾ in. across, in corymbs. Newf. to B. C. and Neb.

Petasìtis. Velvet G. California-Geranium. Bold per. to 8 ft.: lvs. ovate or suborbicular, 9–13-lobed, to 8 in. across, grayish-tomentose beneath: heads yellow, in terminal many-headed panicles. S. Mex.

petrocállis. Per. to 4 in.: basal lvs. nearly orbicular, to ¾ in. long: heads golden-yellow, ½ in. long, solitary or in 2's. Mts., Colo., Utah, Ida.

pseudaùreus. Per. to 2½ ft., glabrous: basal lvs. broadly ovate, to 2 in. long, obtusely serrate, long-petioled; st.-lvs. oblanceolate-elliptic, to 3½ in. long, pinnatifid: heads corymbose, to ⅝ in. across, ray-fls. bright yellow. New Mex. to Calif. north to B. C. and S. D.

púlcher. Per. to 4 ft., white-cobwebby: lvs. oblong-lanceolate, to 10 in. long, thick, shallow lobed or toothed: heads to 3 in. across, rays red-purple, disk yellow. Uruguay, Argentina.

purpùreus: *S. elegans.*

Purshiàna. Per. to 8 in., densely tomentose: basal lvs. broadly spatulate, to 2 in. long, obtuse, entire: heads bright yellow, about ¾ in. across, 2–10 in small cymes. Sask. to B. C. south to Tex. and Utah.

remotifòlius. Shrub to 6 ft.: lvs. to 5 in. long and 3 in. wide, tomentose beneath: heads ⅓ in. across, in panicles to 6 in. long, of disk-fls only. New Zeal.

réptans (*Kleinia reptans* of hort.). Plant with prostrate rooting stolons to 3 in. long: lvs. linear-oblong, to 1½ in. long, cut-toothed: heads solitary, yellow. S. Afr.

Ríddellii. Per. to 3½ ft., sts. glabrous, very leafy: lvs. pinnate, segms. linear-filiform, entire, glabrous: ray-fls. about 12, light yellow, heads to 1½ in. across. Neb. to Wyo., Tex. and New Mex.

Rodriguèzii. Ann. to 7 in.: lvs. oblong-lanceolate, to 2 in. long, obtuse, dentate, metallic-green above, purplish beneath: heads short-rayed, to ½ in. across, rose-pink, in 2–3-headed lax cymes. Spain.

rotundifòlius. Shrub or tree to 30 ft.: lvs. orbicular or broad-oblong, to 5 in. across, thick and leathery, yellowish-tomentose beneath: heads ⅓ in. across, in panicles, of disk-fls. only. New Zeal.

saxifragoìdes. Per. to 1½ ft.: lvs. all basal, oblong-orbicular, to 7 in. long, soft white-silky above when young, long-petioled: heads corymbose, to 1½ in. across, ray-fls. yellow. New Zeal.

scándens. Climbing G. Woody, climbing to several ft.: lvs. ovate or oval-lanceolate, sometimes with a few divisions at base of blade, toothed, grayish-green, pubescent: heads yellow, in panicles. China.—See *S. mikanioides.*

scorzoneroìdes. Per. to 14 in., pubescent: lvs. linear- or ovate-lanceolate, to 8 in. long, entire: heads white, yellow or pinkish, to 2 in. across, in large corymbs. New Zeal.

sibíricus: *Ligularia sibirica.*

spartioìdes. Per. to 2 ft., quite leafy: lvs. linear, glabrous, entire: heads corymbose, to 1¼ in. across, yellow. Tex. to Ariz. north to Neb. and Wyo.

speciòsus. Per. to 2 ft.: lvs. obovate or lanceolate, to 7 in. long, toothed or lobed, glandular-hairy: heads bright purple, 1½ in. across, in spreading corymbs. S. Afr.

stenocéphalus: *Ligularia stenocephala.*

subscándens. Climbing herb: lvs. to 4 in. long, pinnate into oblong or ovate toothed lobes: heads ochre-yellow, ⅓ in. long, in much branched cymes. Trop. Afr.

succuléntus: *Kleinia repens.*

sylváticus. Ann. to 1½ ft.: lvs. pinnately cut into linear toothed lobes, white-hairy: heads yellow, in corymbs. Eu.

tangùticus. Per. to 7 ft.: lvs. broadly ovate or triangular, to 7 in. long, pinnately divided into toothed segms., pale: heads yellow, very numerous in terminal pyramidal panicles. W. China.

thapsoìdes. Per. or bien.: lvs. oblong, wavy-toothed, white-tomentose beneath: heads ⅓ in. across, in racemes, of disk-fls. only. Greece.

triangulàris. Per. to 3 ft., leafy: lvs. triangular, to 6 in. long, toothed: heads ⅓ in. long, yellow, in corymbs. Wash.

tropæolifòlius (*Kleinia tropæolifolia*). Per. to 1 ft.: basal lvs. orbicular, peltate, to 3 in. across, long-petioled, violet beneath: heads in globose corymbs, rays yellow. Nyassaland.

tyroliénsis: a listed name.

Veitchiànus: *Ligularia Veitchiana.*

viscòsus. Ann. to 1½ ft., sticky-hairy: lvs. pinnate into lanceolate segms.: heads yellow. Eu., W. Asia.

Visiànus. To 2 ft., white-tomentose: lvs. oblong-lanceolate, jagged-toothed, cobwebby above, densely tomentose beneath: heads yellow, in panicles. Montenegro.

Wébsteri. Per. to 10 in., often woolly: basal lvs. ovate or oblong, to 5 in. long, toothed: heads solitary, ½ in. long. Wash.

Wilsoniànus: *Ligularia Wilsoniana.*

SENEGALIA: see *Acacia.*

SENNA: *Cassia.* **Bladder:** *Colutea.* **Scorpion:** *Coronilla Emerus.*

SENSITIVE-PLANT: *Mimosa pudica.* **Wild:** *Cassia nictitans.*

SEPAL: one of the separate leaves of a calyx.

SEQUÒIA. *Taxodiaceæ.* Titanic evergreen tree native in W. N. Amer., often becoming 300 ft. or more high and with immense boles, with linear or scale-like lvs. and drooping cones with woody scales. For cult. see *Conifers.*

gigantèa: *Sequoiadendron giganteum.*

sempérvirens. Redwood. Lvs. linear, to 1 in. long, mostly spreading in 2 ranks: cones to 1 in. long. S. Ore., N. and Cent. Calif. in the Coast ranges; to be planted, outside its native regions, only far S. or in very mild climates. Var. **adpréssa** has young lvs. and tips of branchlets creamy, var. **glaùca** bluish lvs., and var. **péndula** drooping branches.

Washingtoniàna: *Sequoiadendron giganteum.*

SEQUOIADÉNDRON. *Taxodiaceæ.* Monotypic genus of the western slopes of the Sierra Nevada range in Calif., formerly treated as belonging to the genus Sequoia, differing in lvs. uniform, ovate to lanceolate, appressed or slightly spreading, winter-buds not scaly, cones of 25–40 scales, and the seeds requiring two seasons for the maturity of the embryos. There are many other technical differences of the floral structures.

gigantèum (*Sequoia gigantea* and *Washingtoniana*). Giant Sequoia. Tree to 100 ft. or more, having trunk many ft. in diam. and bark to 20 in. thick, narrowly pyramidal when young: cone ellipsoid, to 3½ in. long, very hard and woody, remaining on the tree many seasons. Trees have persisted in Cent. N. Y. to 30 ft. or more in height in protected places, but are reliable only in the central and southern states. Var. **aùreum** has yellow lvs., var. **glaùcum** bluish, and var. **péndulum** strong deflexed branches forming a narrow column.

SERAPIAS: the name of a European genus of orchids, formerly used for some members of *Epipactis,* which see.

SERENÒA. Saw- or Scrub-Palmetto. *Palmaceæ.* Hermaphrodite small fan-palm, S. C. to Fla. and Tex., unarmed except for the numerous fine saw-teeth on the slender petiole: spadix axillary, much branched, usually surpassing the petioles; fls. narrow-oblong in bud, fragrant; stamens 6: fr. an ovoid or globose 1-seeded black drupe, ½–¾ in. long. See *Palm.*

arboréscens: *Paurotis Wrightii.*

rèpens (*Sabal* and *S. serrulata*). Mostly with prostrate or creeping branching sts. and making great masses or colonies, sometimes the trunk erect and several ft. tall: lf.-blades 2–2½ ft. across, either green or glaucous, cleft below the middle into 20 or more rather stiff segms. bifid at apex. In its apparently acaulescent form it covers great areas.

serrulàta: *S. repens.*

SERICOCÁRPUS. *Compositæ.* Aster-like per. herbs of N. Amer. with alternate lvs. and panicled heads of white ray-fls. and yellowish or purplish disk-fls.; pappus of bristles. Sometimes transferred to the wild-garden or border.

asteroìdes. To 2 ft.: lvs. obovate or oblong, toothed or entire, to 4 in. long: heads ½ in. long. Me. to Fla. and Ala.

SERICOGRAPHIS: *Jacobinia pauciflora.*

SERICOTHECA: *Holodiscus.*

SERÍSSA. *Rubiaceæ.* Shrub to 2 ft., native in S. E. Asia and grown under glass and in the open far S. Propagated by cuttings over heat. **S. fœtida** (*S. japonica*). Lvs. opposite, small and clustered on flowering branchlets, ovate, to ½ in. long, fetid when bruised: fls. white, to ½ in. long, funnelform with 4–6-lobed limb, solitary or clustered. Var. **variegàta** has lvs. margined with yellow.

SERJÀNIA (or *Seriania*). *Sapindaceæ.* Woody twining or tendriliferous vines bearing alternate mostly pinnate compound lvs., yellowish irregular polygamous fls. in axillary racemes or panicles, and winged frs.; sometimes grown in S. Calif. and similar climates; native in trop. and semi-trop. Amer.

fuscifòlia. Lvs. biternate into ovate toothed lfts. rufous-pubescent beneath: fr. ovate or elliptic, about ½ in. long. Brazil.

glabràta. Lvs. biternate into ovate coarsely toothed glabrous lfts.: fr. cordate-ovate, 1¾ in. long. S. Amer.

SERRADELLA: *Ornithopus sativus.*

SERRAFALCUS HUGHII: *Bromus intermedius.*

SERRASTYLIS: *Macradenia modesta.*

SERRATE: saw-toothed.

SERRÁTULA. *Compositæ.* Per. herbs allied to Centaurea: lvs. alternate, toothed or cut: heads purple, solitary or in corymbs, of disk-fls.; pappus of hairs; native in the Old World. Sometimes planted in the border.

nudicaùlis. To 3½ ft.: lvs. oblong or oval, entire or toothed below: heads solitary. Eu.

tinctòria. To 3 ft.: lvs. variable, deeply pinnatifid or sometimes entire: heads about ½ in. long, in loose corymbs. Cent. Eu.

SERVICE-BERRY: *Amelanchier.* **-Tree:** *Sorbus domestica* and *torminalis.*

SESAME: *Sesamum orientale.*

SÉSAMUM. *Pedaliaceæ.* African and Asian herbs with often rough foliage, 5-lobed 2-lipped tubular fls. solitary in the axils, and capsular frs.; one species grown for the seeds which yield bene oil. In the N. grown as an ann. from seeds; sometimes raised under glass for interest.

alàtum. To 3 ft. erect, branched: lower lvs. long-petioled, blades palmately divided into 3–5 segms. or lfts., latter linear-lanceolate, to 3 in. long, acute, entire, mealy-glandular below, upper lvs. entire, linear to lanceolate, petioles short: fls. pink to carmine with dark spots in throat, to 1 in. long: caps. 1½–2 in. long, finely pubescent, seeds winged. Trop. Afr.

capénse. To 6 ft.: lvs. all palmately 3–5-foliolate, lfts. obovate-oblong to linear, to 2½ in. long, obtuse, entire, nearly glandular on both sides: fls. violet outside, darker within, to 1½ in. long: caps. to 1¾ in. long, seeds winged. Trop. and S. Afr.

índicum: *S. orientale.*

orientàle (*S. indicum*). SESAME. To 2 ft., sparingly and finely pubescent: lvs. oblong or lanceolate, to 5 in. long, sometimes 3-lobed: fls. pink or white, 1 in. long, with shorter upper lobes: caps. 1 in. or more long, with 4 grooves, seeds not winged. Tropics.

SESBÀNIA (*Sesban*). *Leguminosæ.* Herbs or shrubs with pinnate lvs., papilionaceous fls. in axillary racemes, and long compressed pods; grown for ornament in warm climates and one for cover-cropping.

aculeàta: *S. bispinosa.*

bispinòsa (*S. aculeata*). To 10 ft., prickly: lfts. to ½ in. long: fls. pale yellow spotted with reddish-brown, in racemes to 6 in. long: pods 8 in. long. Tropics.

Émerus (*S. macrocarpa*). Subshrub to 16 ft., sts. somewhat angled: lfts. 24–50, apex obtuse, to 1½ in. long: fls. yellow, to ¾ in. long, standard spotted dark purple and ¾ in. wide or more: pods to 8 in. long. Fla., Cent. Amer. and W. Indies.

exaltàta. Ann. to 12 ft., sts. mostly terete: lfts. 30–70, apex mucronate, to 1 in. long: fls. yellow, ⅝ in. long or less, standard ⅝ in. wide or less: pods to 9 in. long. Mo. to La. and probably S. Calif. to Mex.—Sometimes employed as green-manure crop. Some of the material grown as *S. macrocarpa* may belong here.

grandiflòra: *Agati grandiflora.*

macrocárpa: *S. Emerus.*

punícea: *Daubentonia punicea.*

Tripètii: *Daubentonia Tripetii.*

SESSILE: not stalked; sitting.

SETÀRIA (*Chætochloa*). *Gramineæ.* Ann. and per. grasses distributed in warm regions, one a valuable grain and fodder plant and a few others ornamental: spikelets subtended by persistent bristles longer than the spikelet, borne in terminal spike-like panicles. See *Grasses.*

itálica (*S. macrochæta. Panicum germanicum*). FOXTAIL MILLET. Ann. to 5 ft.: lvs. to 1 ft. or more long and 1 in. wide, rough: spikes to 1 ft. long and 2 in. across, curved or nodding, the bristles green, brown or purplish: fr. yellow, brown, red or black. Cultigen but widely spread. Var. **nigrofrúcta,** HUNGARIAN-GRASS, has brown bristles, dense spikes to 3 in. long, and nearly black frs. Var. **rubrofrúcta,** SIBERIAN and TURKESTAN M., has purple bristles and reddish or orange fr. Var. **stramineofrúcta,** GERMAN and GOLDEN WONDER M., has very large spikes and yellow fr.

macrochæta: *S. italica.*

nìgra: listed name.

palmifòlia (*Panicum palmifolium*). PALM-GRASS. Per. to 6 ft.: lvs. to 2 ft. long and 3 in. wide in middle, plicate: panicles to 2 ft. long, open and interrupted. E. Indies.—Often grown in greenhouses and in the open far S. There is a form with striped lvs.

plicàta (*Panicum plicatum. P. excurrens*). Often confused with *S. palmifolia* but the lvs. are smaller, to 8 in. long and ½ in. wide, and the panicles narrower.

Poiretiàna. Tufted per. several ft. tall: lvs. to 1½ ft. long and 1 in. wide, strongly plicate: panicles to 2 ft. long, narrow, branches ascending. Mex. to Brazil.

sulcàta (*Panicum sulcatum*). Similar to *S. Poiretiana* but taller with larger lvs. and more open panicles, the branches drooping. W. Indies to Ecuador.

SEVEN STARS: *Ariocarpus retusus.*

SEVERÍNIA. *Rutaceæ.* **S. buxifòlia** (*Atalantia buxifolia, Triphasia monophylla*), the only species, native in S. China and Formosa, is an ornamental spiny shrub or small tree, suitable also for hedges far S.: lvs. simple, ovate-oblong and rounded or emarginate at apex, petiole very short: fls. small, white, solitary or few in axils; stamens 10, not united: fr. a globular berry, shining black, about ⅓ in. diam.

SHADBUSH: *Amelanchier.*

SHADDOCK: *Citrus maxima*; see *Citrus Fruits* (page 183).

SHALLOT: see *Onion.*

SHALLU: *Sorghum vulgare* var. *Roxburghii.*

SHAWIA: *Olearia.*

SHEATH: any long or more or less tubular structure surrounding an organ or part; as the sheath of a grass leaf, being its lower part.

SHEEP-BERRY: *Viburnum Lentago.*

SHEEPS-BIT: *Jasione perennis.*

SHELL-FLOWER: *Alpinia speciosa, Molucella lævis.*

SHEPHÉRDIA (*Lepargyrea*). *Elæagnaceæ.* Shrubs or small trees of N. Amer. with brown or silvery scales, having opposite simple lvs., small yellowish diœcious fls., and drupe-like frs.; grown for ornament and *S. argentea* for the frs. which are made into jelly. Adapted to dry rocky soils. Propagated by seeds sown in fall or stratified.

argéntea. BUFFALO-BERRY. To 18 ft., thorny: lvs. oblong, silvery on both sides: fr. red or yellow in var. **xanthocárpa.** Man. to Minn. and Kans.—Sometimes grown for its edible frs. and as a hedge plant in the Northwest, valuable for its great hardiness.

canadénsis. To 8 ft., thornless: lvs. ovate or oval, silvery beneath: fr. red or yellow. Newf. to Alaska and south. Var. **rùbra,** fr. red, Var. **xanthocárpa,** fr. yellow.

SHERWOODIA: *Shortia galacifolia.*

SHIBATÆA. *Gramineæ.* Bamboo-like shrubs having much flattened zigzag nearly solid sts.; differs from Phyllostachys in its ovate-oblong to ovate-lanceolate petioled lvs. and shorter irregular sts.

kumasáca (*Phyllostachys kumasaca, ruscifolia* and *viminalis. Bambusa kumasaca* and *viminalis*). To 6 ft., sts. much flattened: lvs. to 5 in. long and 1 in. wide, shining above, slightly glaucous beneath. Japan.

SHIELDWORT: *Peltaria.*

SHINLEAF: *Pyrola.* **One-flowered:** *Moneses uniflora.*

SHOO-FLY PLANT: *Nicandra Physalodes.*

SHOOTING-STAR: *Dodecatheon.*

SHÓRTIA. *Diapensiaceæ.* Evergreen stemless herbs with creeping rootstocks, basal lvs., bell-shaped nodding fls. solitary on slender scapes, and capsular frs.; somewhat like Galax.

Shortias are grown in rock-gardens and similar places. They should be planted in shady situations and require leaf-mold and humus. Propagated by division and runners.

califórnica: *Baeria aristata.*

galacifòlia (*Sherwoodia galacifolia*). OCONEE-BELLS. To 8 in.: lvs. orbicular, to 3 in. long, slightly wavy-margined: fls. white, 1 in. across. Mts. of N. C. Var. **ròsea** has rose fls.

ilicifòlia: *S. soldanelloides* var.

soldanelloìdes (*Schizocodon soldanelloides*). FRINGED GALAX. FRINGE-BELL. Alpine, to few in. high: lvs. round, coarsely toothed: fls. deep rose, white or blush toward edge, the corolla-lobes fringed, 1 in. across, 4–6 on a scape. Japan. Var. **ilicifòlia** (*S. ilicifolia*) has larger and fewer teeth on the lf.-margins.

uniflòra. NIPPON-BELLS. Differs from *S. galacifolia* in the more heart-shaped and deeply wavy-margined lvs. Japan. Var. **grandiflòra** has larger fls.

SHRIMP-PLANT: *Beloperone guttata.*

SHRUB: a woody plant that remains low and produces shoots or stems from the base and not a single trunk; contrast to tree, among woody plants; bush.

SIBBÁLDIA. *Rosaceæ.* Low tufted perennials allied to Potentilla, with alternate lvs. of 3 lfts. and small yellow fls. in cymes; adapted for alpine-gardens and hardy.

procúmbens. To 4 in.: lfts. wedge-shaped, to ¾ in. long, 3–5-toothed at apex: fls. ⅙ in. across. Arctic and alpine regions, N. Amer., Eu., Asia. Var. **grandiflòra** is listed.

SIBBALDIOPSIS: *Potentilla tridentata.*

SIBIRÆA. *Rosaceæ.* Deciduous shrubs once included in Spiræa, having alternate entire lvs., small unisexual fls. in terminal panicles, and fr. of 2-seeded follicles united at base; native in Asia and S. E. Eu. Propagated by seeds or layers.

lævigàta (*Spiræa lævigata*). To 5 ft.: lvs. oblong, to 4 in. long, bluish-green: fls. greenish-white, in panicles to 5 in. long. Siberia; hardy N.

SIBTHÓRPIA. *Scrophulariaceæ.* Creeping per. herbs with orbicular-reniform lvs. and yellow, yellowish-rose or red fls. with short tube and 4–8 corolla-lobes; grown as a ground-cover in the greenhouse or out-of-doors in mild climates.

africàna: *S. europæa* var.

europæa. Very slender trailer: lvs. to ½ in. across, 7–9-lobed: fls. small, the 2 upper lobes of corolla yellowish, the 3 lower pink. Moist shady places, England, France, Spain, Portugal. Var. **africàna** (*S. africana*) differs in being more hairy, in the slightly larger all yellow or purplish fls. Trop. Afr. Var. **variegàta** has bright golden-green lvs.

SICÀNA. *Cucurbitaceæ.* Tendril-bearing monœcious American vines, probably more than a single species, per. but grown as an ann. in this country for its ornamental fragrant fr. which is also edible: fls. solitary, yellowish, corolla 1 in. or less long.

odorífera. CURUBA. CASSABANANA. To 40 ft. and more: lvs. nearly orbicular and several-angled or -lobed, to 1 ft. across: fr. long-oblong and nearly cylindrical, to 2 ft. long, orange-crimson and scented. S. Amer.—Somewhat grown in the Gulf regions. *Benincasa hispida* is sometimes confused with Cassabanana.

SÍCYOS. *Cucurbitaceæ.* Ann. tendril-bearing monœcious vines of Amer. and Australasia, one of which is sometimes grown as a screen: fls. small, white or greenish, mostly in fascicles: fr. small, indehiscent, usually spiny.

angulàtus. BUR- or STAR-CUCUMBER. To 20 ft. or more, with hairy petioles and peduncles: lvs. cordate-orbicular, sharply angled or lobed: fr. about ½ in. long, spiny, 1-seeded, in clusters. E. Canada and U. S.—Likely to become a weed.

SÌDA. *Malvaceæ.* Herbs or shrubs of wide distribution and mostly of warm climates: allied to Abutilon and Malvastrum, differing from the former in seeds solitary in each carpel and from the latter in the bracteate involucel wanting. One species may be cult.

cordifòlia. Woody per. to 4 ft.: lvs. ovate to suborbicular, to 4 in. long, crenate-dentate, velvety, cordate: fls. tawny-yellow, to ⅔ in. across. Trop. Amer.

hermaphrodìta. VIRGINIA-MALLOW. Per. to 12 ft.: lvs. palmately 3–7-lobed, to 6 in. across, lobes acuminate, toothed: fls. white, to nearly 1 in. across, in umbellate corymbs on slender pedicels: fr. composed of 10 one-seeded carpels. Woods and river banks, Pa. to Ohio, south to Va. and Tenn.—The plant offered as *S. Abutilon* probably belongs here although the name is botanically a synonym of *Abutilon Theophrastii.*

SIDÁLCEA. *Malvaceæ.* Per. and ann. herbs (ours per.) with alternate palmately lobed or divided lvs., purple, pink or white fls. in terminal spikes or racemes, and 5 or more carpels separating at maturity; native in W. N. Amer. Of easy cult. in the per. border. Propagated by seeds or division. Garden hybrids are reported.

califórnica: *S. malvæflora* var.

campéstris. To 4 ft.: basal lvs. orbicular, 9-lobed, st.-lvs. with linear segms.: fls. rose or lilac, to ¾ in. long. B. C. to N. Calif.

cándida. Per. to 3 ft., nearly or quite glabrous: radical lvs. broad and crenate or bluntly lobed, upper lvs. 5–7-parted: fls. white, to ¾ in. long, in racemes. Rocky Mts.

grandiflòra: hort. name.

Héndersonii. To 3 ft.: lvs. orbicular, 5–7-lobed into toothed segms.: fls. deep rose, 1 in. long. B. C. to Ore.

hýbrida: hort. name.

Lísteri: *S. malvæflora* var.

malvæflòra. CHECKERBLOOM. Per. to 2 ft. with erect or somewhat decumbent branches: lower lvs. crenate or lobed, upper ones cleft into very narrow parts: fls. rose, to 1¼ in. long, in many-fld. racemes. Calif. Var. **atropurpùrea** has purple fls., **califórnica** is much more hairy, and **Lísteri** has satiny pink fls.

Murrayàna: *S. spicata.*

nèo-mexicàna. To 8 ft.: basal lvs. orbicular, to 4 in. across, 5–9-lobed, st.-lvs. divided into, linear or oblong segms.: fls. lilac varying to rose or white, to ¾ in. long. New Mex. to Wyo.

nervàta. Believed to be only an eastern form of *S. oregana* and by some authorities treated as a synonym: plants from the extreme eastern limits differ from *S. oregana* in being glabrous or nearly so, the lobed lower lvs. and much larger fls. to 1½ in. across. Wyo., Utah.—Plants cult. as *S. malvæflora* may belong here, also the form known as Rosy Gem.

oregàna. Per. to 5 ft., pubescent: lower lvs. toothed or slightly lobed, upper cleft into lanceolate or linear parts: fls. rose-pink, ½ in. long, in dense spikes. Ore. to Calif.

parviflòra. Per. to 4 ft., glabrous to somewhat pubescent: lvs. palmately toothed or divided: fls. rose, ½ in. long, in long slender racemes. S. Calif.—Probably not now in cult.

ròsea: hort. name, perhaps for garden form of *S. malvæflora.*

spicàta (*S. Murrayana*). Per. to 4 ft., pubescent or hirsute: lvs. crenately lobed to parted: fls. purplish, ½ in. long, in dense spikes. Calif.

SIDERÁNTHUS. *Compositæ.* Ann. or per. herbs of the Ericameria kind, with alternate lvs. and yellow heads of ray- and disk-fls.; pappus of bristles.

ánnuus. Ann. to about 1½ ft., glandular-pubescent: lvs. oblanceolate, dentate, to 2½ in. long: heads corymbose, to 1½ in. across, ray-fls. light yellow. Neb. to Tex.

phyllocéphalus. Ann. to 2 ft., sts. pubescent, usually diffusely branched: lvs. pinnatifid or entire, segms. or teeth bristle-tipped: fls. brownish-orange or dull yellow, in heads to 2 in. across. Sandy beaches, Tex. and N. Mex.—*Xanthisma texanum* has been grown under this name.

rubiginòsus (*Haplopappus rubiginosus*). Ann. to 3 ft., sts. sticky-pubescent: lvs. simple, oblong to lanceolate, remotely dentate: fls. yellow, to nearly 1 in. across. Tex.—Some of the material in cult. may be *S. annua.*

spinulòsus. Per. to 1½ ft.: lvs. about 1 in. long, pinnatifid into linear or oblong toothed or cut segms.: heads clustered, ½ in. across. Sask. to N. Mex.

SIDERÌTIS. *Labiatæ.* Herbs or shrubs with entire or toothed lvs. and small yellowish 2-lipped fls. in clusters or spikes; native in Medit. region and Asia; sometimes grown in per. border.

eubœa. White-tomentose: lvs. oblong: fls. in cylindrical spikes. Greece.

hyssopifòlia. To 8 in., subshrubby: lvs. oblong, incised-dentate, usually hairy: fls. with 5-toothed calyx, usually in verticillate whorls, rarely forming a spike. S. Eu.

libanótica. Subshrub, sts. glabrous, to 1½ ft.: lvs. obovate to lanceolate, serrate, glabrous to hairy: fls. yellow, in whorls of 4–8, calyx mucronate. S. Eu.

SIDEROCARPUS: *Ebenopsis.*

SIDERÓXYLON. *Sapotaceæ.* Trees or shrubs of the tropics, extending into S. Fla., with alternate leathery lvs., small 5-lobed fls. in clusters and fr. a berry; one species cult. in S. Calif.

costàtum: *S. novo-zelandicum.*

nòvo-zelándicum (*S. costatum*). Tree to 45 ft.: lvs. obovate, to 4 in. long, shining: fr. 1 in. long. New Zeal.

SIEVERSIA: *Geum.*

SIGMATÓSTALIX. *Orchidaceæ.* Low herbs native in Cent. and S. Amer., with small 1–2-lvd. pseudobulbs and small fls. in racemes or panicles, the sepals and petals similar, the lip with long claw. See *Orchids* for cult.

radìcans. Lvs. to about 7 in. long and ⅛ in. wide: infl. few- to several-fld., racemose; sepals and petals greenish-white; lip white with yellow callus. Nov.–Mar., Aug. Brazil.

SILÈNE. Catchfly. Campion. *Caryophyllaceæ.* Erect, tufted, decumbent or more or less climbing ann. and per. herbs with red, pink or white fls. in cymes or solitary blooming in the summer, a few well into autumn; of wide distribution over the world. The name Silene is pronounced in three syllables.

A few species are cultivated in rock-gardens and borders. The culture is very simple. If the seeds of the annual kinds are sown in the fall, much earlier bloom is secured the following spring. The perennials are increased by seeds, division or cuttings.

acaùlis. Cushion Pink. Moss Campion. Moss-like tufted per. to 2 in. high: lvs. linear, to ½ in. long: fls. reddish-purple, ½ in. across, solitary, May–Aug.; petals entire or slightly notched. Eu., N. Amer. Var. **álba** has white fls. Var. **carmínea** is listed. Var. **exscàpa,** fls. pale pink. Var. **nórdica** has darker fls. than the type. Var. **pedunculàta** is listed as having long-stalked fls. Var. **saxátilis** is listed.

álba (*S. nivea*). Per. to 3 ft.: lvs. lanceolate, to 5 in. long: fls. white, yellowish beneath, ¾ in. across, few or solitary, June–July; petals 2-lobed; calyx inflated. Pa. to Neb.

albánica: name of unknown botanical standing.

alpéstris (*Heliosperma alpestre*). Alpine Catchfly. Per. to 6 in., more or less sticky: lvs. linear-lanceolate: fls. glistening white, about ½ in. across, in panicles, June–Aug.; petals 4-lobed. Mts. of Eu. Var. **flòre-plèno** has double fls. Var. **grandiflòra** has larger fls. Var. **ròsea** is listed as having rose-pink fls.

alpìna: confused name.

antirrhìna. Ann. to 2½ ft.: lvs. oblanceolate, to 2 in. long: fls. pink, ⅙ in. across, in loose panicles. N. Amer. —A weedy plant.

Armèria. Sweet William Catchfly. Ann., erect, to 2 ft., glaucous: lvs. ovate-lanceolate, to 3 in. long: fls. pink or rose, to ⅔ in. across, in terminal compound cymes, July–Sept.; petals slightly lobed at tip. S. Eu.; escaped in U. S. Var. **álba** has white fls. Var. **spléndida** is an improved form.

Astèrias. Per. to 4 ft., rather sticky: lvs. lanceolate to oblong, 4–5 in. long: fls. purple, in many-fld. head-like cymes 1 in. across; calyx reddish; petals entire. Macedonia, Rumania. Var. **grandiflòra,** to 3 ft., fls. crimson-scarlet, in globose heads, July–Aug. Balkan Mts.

auriculàta. Per. to 6 in., sticky-pubescent above, not much branched: lvs. oblong-lanceolate, short, acute, densely ciliate: fls. rose-red, usually only 1–3; petals bifid. Greece.

Bèhen. Ann. to 1½ ft.: lvs. obovate, acute: fls. pink, very small, in cymes, the petals narrowly and deeply lobed. Asia Minor.

Benoístii. Ann. to 1 ft., pilose to puberulous but not glandular: lvs. ovate to lanceolate, petioled to sessile, pubescent, margins somewhat crisped: fls. yellowish-green outside, purplish within; petals with 2 oblong-linear lobes; pedicels erect, to ½ in. long, pilose to densely puberulous: pods ovate, to ⅙ in. long. Algeria.

Bérgeri: *S. regia.*

Bónnettii: *S. pendula* var.

brachypétala: *S. nocturna.*

califórnica (*Melandrium californicum*). Per. to 1 ft.: lvs. ovate or oblanceolate, to 3½ in. long: fls. crimson, to 1¼ in. across; petals deeply 4-lobed. Calif., Ore.

Campánula. Per. to 8 in.: lvs. linear-lanceolate: fls. white tinged red beneath, ½ in. long, solitary or in 2's; petals 2-parted. Mts. of S. Eu.

caramánica. Per. to 1½ ft.: lvs. linear-lanceolate: fls. large, solitary, July; petals 2-parted. Asia Minor.

caroliniàna (*S. pensylvanica. Melandrium pensylvanicum*). Wild Pink. Per. to 10 in., sticky-hairy: lvs. spatulate or lanceolate, to 4 in. long: fls. rose or white, 1 in across, in terminal cymes, Apr.-June; petals notched. E. N. Amer.

chloræfòlia. Per. to 2 ft., woody at base: lvs. elliptic, about 1 in. long, the upper cordate: fls. white turning reddish, large, in loose panicled cymes, May–June; petals 2-lobed. W. Asia.

chlorántha. Erect per.: lvs. oblong-lanceolate: fls. greenish-yellow, nodding, in panicles; petals 2-parted. Asia Minor.

compácta (*S. orientalis*). Bien. to 2 ft., glaucous: lvs. ovate to oblong-lanceolate, to 2 in. long: fls. pink, in dense sessile heads to 3 in. across, the upper lvs. forming an involucre, July; petals entire. E. Eu., Asia Minor.

cónica. Ann. to 2 ft., canescent-hairy but not sticky: lvs. linear-lanceolate, acute, to 1½ in. long, sessile: fls. rose to purple, to ⅓ in. across, few in open cymes. Eu; escaped from cult. in N. E. U. S.

conoídea. Ann. to 1 ft.: lvs. lanceolate: fls. pink, small, in cymes; petals entire or slightly notched. S. Eu. to W. Asia.

Correvoniàna: hort. name for plant said to be of tufted habit and having small rose-pink fls.

crética. Ann. to 3 ft., villous-pubescent at base to sticky-glandular above: lvs. obovate-oblong to linear-subulate: fls. purplish-red, in erect few-fld. panicles; petals deeply lobed; calyx glabrous. W. Asia, nat. in Eu. and N. Afr.

Cucubálus (*S. venosa. S. inflata*). Bladder Campion.

Per. to 3 ft.: lvs. ovate to lanceolate: fls. white, in loose panicles; petals 2-lobed; calyx inflated. Eu., Asia.

dianthifòlia. Per. to 6 in., densely tufted: lvs. narrow-linear, to 1 in. long: fls. solitary or in 2's; petals 2-parted above middle. Asia Minor.

dichótoma. Branching pubescent ann. or bien. to 2 ft.: lvs. lanceolate, to 3 in. long: fls. white, to ½ in. across, sessile, in many-fld. paired racemes, summer; petals 2-parted to middle or more. Eu.; nat. in N. Amer.

dinárica. Per. to 2 in., tufted: lvs. linear, to ½ in. long: fls. solitary, rose, the petals 2-cut. Carpathian Mts.

Drúmmondii of the trade lists may be *S. Scouleri.*

élegans. To 8 in.: lvs. linear-lanceolate, to 2 in. long: fls. usually in 2's; petals 2-lobed. Portugal.

Elízabethiæ (*Melandrium Elizabethiæ*). Per. to 6 in., tufted, sticky-pubescent: lvs. narrow-lanceolate, to 3 in. long: fls. rose or rose-purple, 1½ in. across, in panicles; petals 2-lobed. Italy.

Fabària. Erect, to 3 ft.: lvs. fleshy, obovate to elliptic-lanceolate: fls. in branching cymes, June; petals 2-parted to base. Asia Minor.

flavéscens. Tufted per. to 8 in., yellow-pubescent: lvs. lanceolate: fls. bright yellow, large, solitary or in 2's; petals 2-parted. S. E. Eu.

Fórtunei. Per. to 3 ft., woody at base: lvs. linear-lanceolate: fls. rose or white, ½ in. or more across, the calyx-tube to 1 in. long, solitary or in short racemes, Sept.; petals 2-parted with cut lobes. China.

frígida: hort. name, probably for *Lychnis apetala.*

Frivaldskyàna (*S. tincta*). Per. to 2½ ft. or more, glaucous: lvs. narrowly spatulate to linear-lanceolate, to 5 in. long, acute, clasping at base: fls. cream-colored to white, in short-pedicelled pairs on erect spikes. Greece.

fruticòsa. Per. to 1½ ft., woody at base: lvs. obovate to linear-lanceolate, shining above: fls. red or rose, in dense panicles; petals 2-lobed. S. Eu., Asia Minor.

fruticulòsa. Low per.: lvs. lanceolate: fls. whitish, solitary; petals 2-parted. Medit. region.

gállica (*S. sylvestris*). Ann. to 15 in., erect or ascending, glandular-hairy: lvs. oblong-spatulate to linear-subulate: fls. white to rose, in axillary spikes, petals entire or emarginate. Old World.

gigantèa. Tall per.: lower lvs. tufted, obovate, tomentose: fls. white, in many-fld. panicles; petals 2-parted. S. E. Eu.

glaùca. Ann. or bien. to 6 in.: lvs. lanceolate to linear: fls. small, usually in 2's; petals 2-lobed. Medit. region.

græ̀ca: *S. pendula.*

grándis. Per. to 2 ft., very leafy: lvs. roundish-ovate, clasping, to 3 in. long: fls. pink, ½ in. across, in clusters; petals unequally 4-lobed. Calif.

Hayekiàna. Per. to 15 in., much branched, glabrous: lvs. linear, acute, to 1½ in. long: fls. white to pale pink, to ¾ in. across; petals deeply 2-lobed. Balkan regions to Crete.

Hoòkeri (*Melandrium Hookeri*). Per. to 5 in.: lvs. obovate, to 2 in. long: fls. white or pink, to 2 in. across, solitary, deeply 4-parted and fringed. Calif., Ore. Var. **ròsea** is the pink-fld. form.

inflàta: *S. Cucubalus.*

Íngramii (*Melandrium Ingramii*). Per. to 1 ft., white-hairy: lvs. oblanceolate, to 3½ in. long: fls. solitary or in 2's, violet to purple, to 1¾ in. across; petals usually 4-lobed. Ore.

itálica (*S. ocymoides. S. viscosissima*). Branching, hairy: lvs. oblong to linear: fls. white, in panicles, Apr.–July; petals 2-lobed. S. Eu., N. Afr.

japónica. To 1½ ft., sts. short-hairy below, glabrous above: lvs. linear-lanceolate, to 1 in. long, long-acuminate, leathery, margins revolute: fls. deep purple, few in terminal racemes. Japan.

laciniàta (*Melandrium laciniatum*). Mexican Campion. Indian Pink. Per. to 5 ft., with erect or decumbent much branched sts.: lvs. linear-lanceolate, to 6 in. long: fls. bright red, to ¾ in. across, terminal and solitary; petals deeply 4-lobed. Mex., S. Calif. Var. **Púrpusii** is dwarf with cardinal-red fls.

læ̀ta. Ann. to 1 ft.: lvs. lanceolate: fls. rose, rather small, in few-fld. cymes; petals notched. Medit. region.

latifòlia (*S. vulgaris*). Per. to 2 ft., glaucous: lvs. spatulate to lanceolate: fls. white or pinkish, drooping, in cymes or panicles. Eu.; nat. in N. Amer.

leptóclada. Probably ann., erect, usually unbranched, gray-hairy, sticky above: lvs. oblong-spatulate to narrowly linear: fls. white, usually only 1–2; petals briefly 2-lipped. Asia Minor.

Lerchenfeldiàna. Low tufted per., glaucous: lvs. lanceolate or oblong: fls. rose, in terminal cymes; petals slightly notched. S. E. Eu.

longiflòra. Per. to nearly 4 ft.: lvs. narrowly spatulate to lanceolate, glabrous: fls. white to rose-red, to 1½ in. across; petals deeply 2-lobed; calyx long and narrowly cylindric. S. E. Eu.

marítima. Per. to 1 ft. or more, glaucous: lvs. lanceolate or ovate-lanceolate: fls. 1–4 on a st., white, about ¾ in. across; petals 2-lobed; calyx much inflated. Eu. Var. **plèna** has larger very double fls. about 1¼ in. across. Var. **ròsea,** to 6 in., fls. rose.

mellífera. Per. to 2½ ft., puberulous below, sticky-pubescent above: lvs. ovate to spatulate-lanceolate or uppermost ones linear-lanceolate, acute, pubescent: fls. pale greenish-white, small, in lax panicles; petals deeply 2-lobed. Spain and Algiers.

monachòrum: *S. quadridentata.*

montàna. Per. to 16 in., puberulent below, sticky-pubescent above: lvs. oblanceolate to linear-lanceolate, to 2¼ in. long: fls. greenish-white to rose, to ¾ in. across, in spicate panicles; petals 4-lobed. Calif.

Moorcroftiàna. Per. to 1½ ft., densely tufted: lvs. spatulate to linear-lanceolate: fls. dull red or white, in 1–3-fld. clusters; petals 2-parted. Himalayas.

multicaùlis (*S. Waldsteiniana*). Per. to 1 ft., branched: lvs. linear-lanceolate, to 1 in. long: fls. whitish and green beneath or pink and brownish beneath, in cymes; petals 2-parted. Medit. region.

muscípula. Ann. to 2 ft.: lvs. lanceolate: fls. rose, in loose cymes; petals notched. Medit. region.

nicæénsis. Bien. to 1 ft., sticky-pubescent: lvs. linear-oblong to subulate: fls. greenish-white to pale rose, in slender erect panicles; petals 2-lobed; calyx glandular. Medit. region.

nívea: *S. alba.*

noctiflòra. Ann. to 2 ft.: lvs. oblong-lanceolate: fls. pink or nearly white, opening at night, in few-fld. panicles; petals 2-parted. Eu.

noctúrna (*S. brachypetala*). Ann. to 2 ft., glandular-pubescent: lvs. oblong-spatulate to lanceolate, to 4 in. long: fls. rose-pink to white, axillary and nearly sessile; petals 2-lobed; calyx with short lanceolate teeth. Medit. region.

nùtans (*S. transsilvanica*). Per. to 3 ft.: lvs. oblong-obovate: fls. white or greenish, nodding, in loose panicles; petals deeply 2-lobed. Eu.

ocymoìdes: *S. italica.*

orientàlis: *S. compacta.*

Otìtes (*S. wolgenensis*). Per. to 1 ft.: lvs. spatulate to linear: fls. diœcious, yellowish-green, small, in panicles, May–July; petals entire. Eu., Asia.

ovàta. Per. to 4 ft.: lvs. ovate to elliptic-lanceolate, to 6 in. long: fls. white, ½ in. across; petals lobed. N. C. to Ga. and Ala.

paradóxa. Much branched, woody at base: lvs. oblong to linear, white-ciliate: fls. in panicles; petals deeply 2-lobed. S. Eu.

péndula (*S. græca. S. rosea*). Ann. to 10 in., soft-hairy, sts. decumbent at base, branched above: lvs. ovate-lanceolate: fls. flesh-colored, about ½ in. across, in loose axillary racemes, becoming pendulous; petals 2-parted, Medit. region. Var. **álba,** fls. white. Var. **Bónnettii,** sts. brown-red, fls. purplish, shiny. Var. **compácta,** of compact habit. Var. **ròsea,** fls. rose-pink.

pensylvánica: *S. caroliniana.*

petræ̀a: *S. Saxifraga.*

porténsis. Ann. to 1 ft., somewhat hairy at base: lvs. all linear, acute, canaliculate, mostly glabrous: fls. rose-pink to white, long-peduncled; petals 2-lobed; calyx glabrous. S. W. Eu.

Pseùdo-Atòcion. St. branched at base, nearly or quite erect, 4–15 in., glandular-pubescent: lower lvs. spatulate, narrowed into ciliate base; upper ovate-lanceolate, acute, ciliate: fls. ½–1 in. across; calyx long-tubular; petals rose, obovate and entire. Balearic Isls. and Algeria.

Pseùdo-Otìtes: a form of *S. Otites.*

pudibúnda (*Heliosperma pudibunda*): a form of *S. quadridentata.*

pulchélla: hort. name.

Pumílio. Tufted per. to 3 in.: lvs. linear: fls. rose, 1½ in. across, solitary, June; petals entire. Austrian Alps.

pusílla. Tufted low per.: lvs. spatulate: fls. white, solitary or in 2's; petals 4-toothed. S. Eu.

pygmæ̀a. Low villous per., sts. branched at base, ascending: basal lvs. spatulate, upper ovate: fls. few, erect, in panicles; petals 2-lobed. Caucasus.

quadridentàta (*S. monachorum*). Per. to 4 in., with slender rather sticky sts.: lvs. spatulate to linear: fls. white, solitary or in 3's; petals 4-lobed. S. Eu.

quadrífida: the correct spelling for the name of this plant is *S. quadridentata.*

règia (*S. Bergeri*). Royal Catchfly. Per. to 4½ ft., somewhat sticky and rough-hairy: lvs. thick, ovate-lanceolate, to 3 in. long: fls. numerous, deep scarlet, 1 in. across, in narrow panicles, July; petals notched or cut. Ohio to Ala. and Mo.

Regìs-Férdinandii. Many-stemmed per.: lvs. linear, rough on margins: fls. white, 1 in. or more long, solitary. Macedonia.

Reìchenbachii. Tufted per. to 4 in., woody at base: lvs. oblanceolate to linear, ciliate: fls. white, in raceme-like nodding panicles; petals 2-parted. Dalmatia.

reticulàta. St. erect, branched at base, to 1½ ft., glabrous but sticky: lower lvs. spatulate-lanceolate, attenuate into petiole, upper linear: fls. ½–¾ in. across; pedicels shorter than calyx which is tubular-clavate; petals rose, deeply emarginate. Algeria.

Ròemeri. Per. to 1 ft., tufted, pubescent: lvs. oblong-spatulate to linear: fls. white, in cymes or heads; petals 2-lobed. Greece.

ròsea: *S. pendula.*

rubélla. Erect, branching: lvs. ovate-oblong to linear: fls. rose, small; petals notched. Medit. region.

rubérrima: hort. name.

rupéstris. Per. to 8 in.: lvs. lanceolate: fls. pale pink, in cymes; petals 2-lobed. Eu.

Rùprechtii: *S. saxatilis.*

Saponària: *Saponaria officinalis.*

saxátilis (*S. Ruprechtii*). Tufted per.: lvs. oblong to linear: fls. greenish, nodding, fragrant, 1–3 together; petals 2-parted. Armenia.

Saxífraga (*S. petræa*). Tufted per. to 10 in., woody at base: lvs. linear or linear-lanceolate: fls. whitish, in 2–3-fld. cymes or solitary; petals 2-parted. Eu., Asia Minor.

Scháfta. Moss Campion. Soft-hairy per. to 6 in., simple or slightly branched: lvs. oblanceolate, small, in rosettes: fls. rose or purple, 1 or 2 on a st., axillary or terminal; petals notched. Caucasus.

Schmúckeri. Tufted per. to 4 in.: lvs. oblong, gray-pubescent: fls. purple, 1–3 together. Rocks, Albania.

Scoùleri. Sticky-hairy per. to 2½ ft.: lvs. lanceolate: fls. white or purplish, in whorled spikes, July–Aug.; petals 2-parted. Ore. to Vancouver Isl.

Shórtii: listed name.

sibírica. Probably per.: lvs. oblong-linear, briefly ciliate: fls. white to rose, in erect panicles; petals emarginate; calyx glabrous. E. Russia to Siberia.

squamígera. Ann. to 1½ ft.: lvs. oblong to linear: fls. white, in panicles; petals 2-lobed. Asia Minor.

stellàta. Starry Campion. Per. to 3 ft., erect, branched, rough-pubescent: lvs. mostly in whorls of 4, ovate-lanceolate, to 4 in. long: fls. white, to ¾ in. across, nodding in an open panicle, June–Aug.; petals fringed. Woods, Mass. to Ga. and Tex.

Súksdorfii. Tufted per. to 4 in.: lvs. linear to spatulate, ½ in. long: fls. white, 1–3 together; petals notched. Mts., Wash.

sylvéstris: *S. gallica.*

tatárica. Per., sts. densely leafy: lvs. linear-oblong: fls. white, in loose raceme-like panicles; petals 2-parted. E. Eu., W. Asia.

tíncta: *S. Frivaldskyana.*

transsilvánica: *S. nutans.*

vallèsia. Per. to 4 in., tufted, sticky-pubescent: lvs. spatulate or lanceolate: fls. rose-violet, greenish beneath, the petals 2-parted. Alps.

venòsa: *S. Cucubalus.*

verecúnda. Per. to 1 ft., sts. erect or decumbent, pubescent below, glandular-hairy above: lvs. linear-lanceolate, acuminate: fls. rose-pink, to ½ in. across, in 1–3-fld. clusters; petals narrowly 2-lobed. Calif.

virgínica. Fire Pink. Per. to 2 ft., sticky-hairy: lvs. oblanceolate, to 5 in. long: fls. 1 in. or more across, crimson or scarlet, in loose cymes, more or less nodding, May–Sept.; petals cut or notched. N. Y. to Ga. and Ark.

viridiflòra. Per. to 2 ft., sticky-pubescent: lvs. ovate-oblong: fls. greenish-white, nodding, in long loose panicles; petals 2-parted. S. Eu.

viscosíssima: *S. italica.*

vulgàris: *S. latifolia.*

Waldsteinìàna: *S. multicaulis.*

Whérryi. Allied to *S. caroliniana* but differing in calyx the same length as claws of petals and densely covered with whitish hairs, and styles about length of ovary. Ohio to Ala.

wolgenénsis: *S. Otites.*

Zawádskii. Per. to 8 in.: lvs. lanceolate: fls. white, in few-fld. racemes; petals 2-parted. Austria.

SILICLE: the short broad fruit of certain *Cruciferæ.*

SILIQUE: the long fruit of certain *Cruciferæ.*

SILK-COTTON-TREE: *Ceiba pentandra.* **-Plant, Chinese:** *Boehmeria nivea.* **-tassel Bush:** *Garrya.* **-Tree:** *Albizzia Julibrissin.* **-Vine:** *Periploca.*

SILKWEED: *Asclepias.*

SILKY: a covering of soft appressed fine hairs; sericeous.

SÍLPHIUM. Rosinweed. *Compositæ.* Coarse tall hardy herbaceous perennials with sunflower-like heads of yellow ray- and disk-fls.; pappus none or of awns; native in N. Amer. Differs from Helianthus in bearing sterile disk-fls. and in other technical characters.

Silphiums thrive in any good soil and in full sunlight. They are useful for rear borders. Propagated by seed or division.

integrifòlium. To 5 ft.: lvs. ovate or ovate-lanceolate, to 5 in. long, entire or slightly toothed, sessile: heads to 2 in. across. Aug.–Sept. Ohio to Tex.

laciniàtum. Compass-Plant. To 12 ft., rough: lvs. 1 ft. or more long, 1–2-pinnate, the upper clasping: heads to 5 in. across. July–Sept. Ohio to Tex.

perfoliàtum. Cup-Plant. Indian Cup. To 8 ft., st. square: lvs. ovate, to 1 ft. long, upper connate-perfoliate: heads to 3 in. across. July–Sept. Ont. to Ga. and La.

terebinthinàceum. Prairie Dock. To 10 ft.: lvs. mostly basal, ovate-cordate, to 1 ft. long, toothed to pinnatifid, long-stalked: heads to 3 in. across. July–Sept. Ont. to Ga. and La.

trifoliàtum. To 7 ft.: lvs. lanceolate, to 7 in. long, entire or toothed: heads to 2 in. across. July–Oct. Pa. to Va. and Ala.

SILVER-BELL: *Halesia.* **-Tree:** *Leucadendron argenteum.* **-Vine:** *Actinidia polygama.* **-Weed:** *Potentilla Anserina.*

SILVERBERRY: *Elæagnus commutata.*

SILVERROD: *Solidago bicolor.*

SILVERY: with a whitish metallic more or less shining luster.

SÍLYBUM. *Compositæ.* Thistle-like herbs of the Old World: lvs. with spiny-toothed lobes and conspicuously white-spotted above: heads large, purplish, solitary and terminal, of disk-fls.; pappus of bristles. Of simple cult.; increased by seed, blooming first year.

ebúrneum. Ann. or bien. differing from *S. Marianum* in the outer bracts of involucre erect and with very short spiny point. N. Afr.—This plant has been listed as *Carduus arabicus.*

Mariànum (*Carduus Marianus*). St. Marys, Blessed, Holy, or Milk Thistle. Ann. or bien. to 4 ft.: lvs. to 2½ ft. long, undulate, glossy: heads to 2½ in. across, rose-purple, bracts of involucre with long spreading-reflexed spiny point. Medit. region; nat. in Calif.

SIMARUBÀCEÆ. Quassia Family. Trees and shrubs of about 30 genera mostly in trop. regions, known to cult. chiefly in the genus Ailanthus; Quassia and Picrasma also planted. The family is characterized by mostly alternate pinnate lvs., small unisexual or bisexual fls. with 3–5 sepals and petals, as many or twice as many stamens, superior 2–5-celled or -parted ovary, and usually drupe-like fr. The family yields bitter qualities, insecticides, medicinal products, and dyes.

SIMMÓNDSIA. *Euphorbiaceæ.* Diœcious much branched boxwood-like stiff evergreen shrub to 7 ft. native in S. Calif., Ariz. and Mex. and sometimes planted in its region. S. **califórnica.** Jajoba. Goat-Nut. Lvs. opposite, oblong to ovate, 1½ in. long, entire: fls. small, apetalous: caps. to 1 in. long.

SIMPSONIA MICROCARPA: *Thrinax microcarpa.*

SINAPIS: *Brassica.*

SINARUNDINÀRIA. *Gramineæ.* Erect clump-forming bamboo-like shrubs with round sts. whose sheaths have deciduous appendages and each node producing several branches; differs from Semiarundinaria in the narrower lvs. having only 2–4 pairs of veins and the lf.-sheath bristles flexuous.

Mùrieliæ (*Arundinaria Murieliæ*). To 12 ft., sts. yellow: lvs. to 5 in. long and ½ in. wide, long bristly-acuminate, rough above. China.

nítida (*Arundinaria nitida*). To 20 ft., st.-sheaths purplish: lvs. to 3 in. long and ½ in. wide, glaucous beneath. China.—The hardiest of the arundinarias.

SINGHARA-NUT: *Trapa bispinosa.*

SINNÍNGIA. *Gesneriaceæ.* Brazilian pubescent herbs with tuberous corm-like roots, opposite long-stalked lvs., large tubular 5-lobed fls. solitary or clustered, and capsular frs.; one species is the gloxinia of florists and greenhouse cult., with large richly colored fls.

Gloxinias require a warm humid atmosphere in the growing season, and protection from strong sun. After blooming the tubers should be stored in a temperature of about 45° until February when they may be started into growth again. Care should be exercised in watering not to wet the leaves. Propagated by seeds or by leaf-cuttings in a propagating bed; either method should produce flowering plants in about one year or perhaps less.

barbàta: listed name of unknown botanical standing.

speciòsa (*Gloxinia speciosa*). Gloxinia. Nearly stemless: lvs. oblong or oblong-ovate, 6 in. or more long, toothed: fls. violet or purplish, varying to red and white or spotted, 3 in. and more long, bell-shaped. Var. **macrophýlla** has large lvs. veined with white. Improved forms are advertised as *Gloxinia hybrida grandiflora* and *G. imperialis.*

SINOCRÁSSULA. *Crassulaceæ.* Usually referred to Sedum but possibly distinct, differing in having only 5 stamens, an urceolate corolla, and erect carpels; about 6 species in the Himalayan region.

maculàta: listed name.

SINOFRANCHETIA: see *Lardizabalaceæ.*

SINOMÈNIUM. *Menispermaceæ.* Woody vine from Japan and China. S. **acùtum.** Lvs. ovate, to 6 in. long, entire or palmately 3–7-lobed, dark green above, slightly glaucous beneath: fls. small, in panicles to 10 in. long: fr. a bluish-black drupe. In var. **cinèreum** the lvs. are densely gray-pubescent beneath.—Not fully hardy in the N. Propagated by seeds and cuttings.

SINUS: a fold or re-entering angle; the space or recess between two lobes of a leaf or other expanded organ.

SIPHONANTHUS: *Clerodendrum Siphonanthus.*

SIPHONOSMÁNTHUS. *Oleaceæ.* Evergreen shrubs differing from Osmanthus in the salverform corolla, tube nearly cylindrical, longer than lobes, and anthers dehiscing inwardly.

Delavàyi (*Osmanthus Delavayi*). To 6 ft.: lvs. ovate, to 1 in. long, toothed: fls. white, fragrant. Apr. China.

SIRIS-TREE: *Albizzia Lebbek.*

SISSOO: *Dalbergia Sissoo.*

SISYMBRIUM: a generic name of the Cruciferæ variously defined, sometimes applied to the water-cress (Nasturtium); species not in cult. See *Arabidopsis.*

SISYRÍNCHIUM. Blue-eyed-Grass. *Iridaceæ.* American small perennials with short rootstocks, grass-like tufted lvs. and small blue or yellow fls. in terminal umbels, the perianth-tube short or none. Of easy cult. in any garden soil, making attractive clumps. Propagated by seeds and division.

ánceps: *S. angustifolium.*

angustifòlium (*S. anceps*). To 2 ft.: fls. deep violet-blue, ½ in. long. N. Amer.

béllum. To 1½ ft.: fls. violet-purple, to ⅗ in. long. Calif.

Bermudiàna. To 20 in., sts. flattened and winged, usually branched: lvs. about ⅓ in. wide: fls. violet-blue, yellow at base, to ⅔ in. long, perianth-segms. emarginate and long-aristulate. Bermuda.—*Bermudiana* was an early substantive name for the plant, taken over by Linnæus.

biràmeum. To 1½ ft., loosely tufted, 2-branched: fls. dark blue with yellow eye, ½ in. long. Wash.

boreàle (*Hydastylus borealis*). To 10 in., sts. broadly winged: lvs. about ⅛ in. wide: fls. yellow, to ¾ in. across: caps. ellipsoidal. B. C. to Wash.

bráchypus (*Hydastylus brachypus*). Perhaps not distinct from *S. californicum*, but reported to differ in its fl.-pedicels shorter than the bracts and smaller seeds. Calif.

califórnicum (*Hydastylus californicus*). To 1 ft. or more, sts. broadly winged: fls. bright yellow, to ½ in. long. Ore. to Calif.

convolùtum. To 1 ft., leafy sts. broadly winged: fls. yellow with brown veins. Trop. Amer.

Doúglasii (*S. grandiflorum*). To 1 ft., sts. compressed but not winged: fls. reddish-purple or rarely white, to ¾ in. long: caps. depressed-globose. B. C. to Ida. and Calif.

gramíneum: *S. graminoides.*

graminoìdes (*S. gramineum*). To 1½ ft., pale green, sts. broadly 2-winged: fls. blue, to ¾ in. across. N. S. to Fla. and Tex.

grandiflòrum: *S. Douglasii.*

idahoénse. To 1½ ft., sts. winged, glaucous: fls. deep violet-blue with yellow eye, to ¾ in. long. B. C. to Ore. and Wyo.

inalàtum. To 1½ ft., sts. simple and wingless, having a mass of fibrous roots: fls. purple or purplish. Ida.

inflàtum (*Olsynium inflatum*). To 15 in.: lvs. 2, to 3 in. long: fls. bright purple with yellow or greenish center. Wash.—Said to differ from *S. Douglasii* in its smaller brighter fls. which are more numerous and the stamens reddish, never yellow.

iridifòlium (*S. laxum*). To 1 ft.: fls. yellowish-white, ½ in. long. Brazil to Chile.

láxum: *S. iridifolium.*

macrocéphalum. To 2 ft.: fls. yellow, ½ in. long, segms. laciniate. Brazil, Uruguay.

macrorhìzum is listed.

mucronàtum. To 1 ft., sts. flat, narrowly winged: fls. violet. Mass. to Va. and Mich.—Differs from *S. angustifolium* in being more slender and delicate in habit and in having smaller caps.

pachyrhìzum (*S. Sellowii*). To 2 ft., st. 2-edged: fls. yellow, ¼ in. long. Brazil.

palmifòlium. Culms and narrow lvs. flat and striate, to 16 in. or more: fls. striate, small, in brown-bracted paniculate spikes, bracts 1 in. or more long and long-pointed. S. Amer; planted in S. Calif.

Séllowii: *S. pachyrhizum.*

striàtum. To 3 ft.: fls. yellow, striped in center, to ¾ in. long. Chile, Argentina.

tanacetifòlium is listed.

vàrians. To 1 ft.: fls. light blue, to ½ in. long. Okla. to Tex.

SITOLOBIUM: *Dennstaedtia cicutaria.*

SÌUM. *Umbelliferæ.* Per. aromatic herbs with pinnately compound lvs., small white fls. in compound umbels, and ovate frs.; *S. Sisarum* is grown for the edible roots.

Skirret does best in rich soil. Seed may be sown in fall or spring in drills and the seedlings thinned to 8 inches in the row. Roots may be dug and stored in sand over winter or left in the ground.

cicutæfòlium: *S. suave.*

latifòlium. To 3 ft.: lfts. 11–17, oblong-lanceolate, to 1¼ in. long, margins evenly and closely serrulate. Eu.

Sisàrum. Skirret. To 3 ft., with clustered tuberous roots: lvs. with 3–7 lanceolate toothed lfts. E. Asia.

suàve (*S. cicutæfolium*). Water Parsnip. To 6 ft.: lfts. 7–17, to 5 in. long, margins acutely and distantly serrate. N. Amer.

SKÍMMIA. *Rutaceæ.* Evergreen shrubs native Himalayas to China and Japan, with alternate simple lvs., small white fls. in terminal panicles, and berry-like frs.; grown for ornament far S.

but not hardy in the N., and sometimes grown under glass for the fragrant bloom.

Plants may be grown in pots in a mixture of sand, peat and loam, or set out in partly shaded situations. With the diœcious species, both pistillate and staminate plants should be provided to insure good fruit. Propagated by seeds or cuttings over heat.

Fórtunei: *S. Reevesiana.*

fràgrans: *S. japonica.*

japónica (*S. fragrans. S. oblata*). **To 5 ft., polygamous** or diœcious: frs. bright red. Japan.

oblàta: *S. japonica.*

Reevesiàna (*S. Fortunei*). To 2 ft.: fls. usually bisexual: fr. dull red. China. Var. **variegàta** (*S. Fortunei* var. *argentea*) has lvs. bordered with white.

SKIRRET: *Sium Sisarum.*

SKULLCAP: *Scutellaria.*

SKUNK-CABBAGE: *Symplocarpus fœtidus.* Yellow: *Lysichitum.*

SKUNKWEED: *Gilia squarrosa, Polemonium confertum.*

SKY-FLOWER: *Duranta repens.*

SKYROCKET: *Gilia aggregata* and *pulchella.*

SLIPPER-FLOWER: *Pedilanthus tithymaloides.*

SLIPPERWORT: *Calceolaria.*

SLOE: *Prunus spinosa.*

SMARTWEED: see *Polygonum.*

SMELÓWSKIA. *Cruciferæ.* Tufted gray-tomentose per. herbs with pinnatifid lvs. and white or yellow fls. in racemes; adapted to rock-gardens; belongs in the Hutchinsia group.

americàna. To 8 in.: lvs. to 2 in. long, cut into spatulate or oblong segms.: pods to ½ in. long. Mts., Mont. to Colo. and Utah.

calýcina. To 6 in.: lf.-segms. of 2–5 pairs, linear to obovate, obtuse, lvs. sometimes entire: fls. whitish, to ⅓ in. across. Arctic regions.

ovàlis. To 4 in., densely white-villous: lf.-segms. 5–7, entire or 2–3-cleft, oblong: petals clawed: pods ovoid, to ⅓ in. long. Mts., Alta. to Wash. and Calif.

SMILACÌNA (*Vagnera*). False Solomons-Seal. *Liliaceæ.* Rhizomatous per. herbs having alternate usually sessile lvs., small white or greenish fls. in terminal racemes or panicles, the perianth-segms. distinct, and round red or greenish berries. Of easy cult. in moist partly shady places; useful for colonizing. Propagated by division.

amplexicaùlis. To 3 ft.: lvs. ovate, to 6 in. long: fls. in panicles to 6 in. long: berries red spotted with purple. B. C. to New Mex.

bifòlia: *Maianthemum bifolium.*

racemòsa. To 3 ft.: lvs. to 6 in. long and 3 in. wide: fls. numerous, in panicles to 4 in. long: berries red. N. Amer.

sessilifòlia. To 2 ft.: lvs. ovate-lanceolate, to 6 in. long: fls. few, in racemes to 2 in. long: berries dark purple. B. C. to Calif.

stellàta. To 20 in.: lvs. to 5 in. long and 1½ in. wide: fls. several, in racemes to 2 in. long. N. Amer., Eu.

trifòlia. To 15 in.: lvs. to 5 in. long and 2 in. wide: fls. few, in racemes to 2 in. long. N. Amer., Siberia.

SMÌLAX. Greenbrier. *Liliaceæ.* Vines climbing by tendrils borne in pairs at the base of the petioles, the lower lvs. reduced to scales, the upper entire or lobed, with small unisexual fls. in axillary umbels, the perianth-segms. distinct, and fr. a berry; several species yield sarsaparilla and others are gathered for winter greens from the wild; they are mostly woody and often thorny plants. They are sometimes transferred to wild-gardens, or colonized; sometimes the trop. species are seen in greenhouses. The smilax of florists is *Asparagus asparagoides.*

áspera. Lvs. evergreen, ovate to lanceolate, to 5 in. long, usually heart-shaped at base, commonly blotched with white: fr. red. S. Eu. to India.

Bòna-Nóx. Saw-Brier. Rootstock with large tubers: lvs. deciduous or partially evergreen, triangular-ovate or arrow-shaped, spiny on margins, to 4½ in. long, shining: fr. black. Va. to Fla. and Mex.

China. Semi-woody climbing vine, sparsely spiny or spineless: lvs. lanceolate, broadly elliptic or sometimes nearly orbicular, base cuneate, mostly 2–4 in. long: fr. green, to ⅜ in. diam. China, Japan to Cochin-China.

glaùca. Cat-Brier. Lvs. deciduous or partially evergreen, ovate, to 6 in. long, glaucous: fr. bluish-black. Dry soil, Mass. to Fla. and Tex.

herbàcea. Carrion-Flower. Lvs. deciduous, ovate to lanceolate, to 5 in. long, obtuse or heart-shaped at base: fr. bluish-black. N. B. to Okla.

híspida. Lvs. deciduous, ovate, to 5 in. long, usually heart-shaped at base, rough-edged: fr. black. Conn. to N. C. and Tex.

lanceolàta. Lvs. evergreen, lanceolate, to 3½ in. long, shining above: fr. dark red. Va. to Fla. and Tex.

laurifòlia. False China-Brier. Lvs. evergreen, oblong, to 5 in. long, glaucous beneath, wedge-shaped at base: fr. black. N. J. to Fla. and Tex.

myrtifòlia: *Asparagus asparagoides* var.

officinàlis. Lvs. ovate-oblong, heart-shaped, to 6 in. long, leathery, glabrous and shining. S. Amer.

rotundifòlia. Horse-Brier. Lvs. deciduous, ovate to nearly orbicular, to 6 in. long, rounded or heart-shaped at base: fr. bluish-black. N. S. to Ga. and Tex.

Wálteri. Lvs. deciduous, ovate or oblong, to 4½ in. long, mostly heart-shaped at base: fr. coral-red. N. J. to Fla. and La.

SMITHIÁNTHA (*Nægelia*). *Gesneriaceæ.* Trop. American herbs with opposite soft usually cordate lvs., tubular red or yellowish-white fls. in terminal panicles, and capsular frs.; grown in a warm greenhouse as for gloxinias and others. Propagated by stolons or offsets.

cinnabarìna (*Gesneria cinnabarina*). To 2 ft., hairy: lvs. with red or purplish hairs: fls. cinnabar-red spotted with white 1½ in. long, drooping, the tube swollen to base. Mex.

hýbrida. Hort. hybrid between *S. zebrina* and *S. multiflora* var. *Leitchlinii*, having fls. dark purplish-red outside and yellow within with red dots.

multiflòra (*Gesneria amabilis*). To 1½ ft.: lvs. hairy: fls. white or cream, drooping, tube scarcely swollen. Mex.

robústa: hort. name, perhaps of *S. hybrida.*

zebrìna (*Gesneria zebrina*). To 3 ft., densely pubescent: lvs. marked along veins with purple-red or dark brown: fls. red, yellow spotted red beneath, 1½ in. long, tube contracted at base. Brazil. Var. **díscolor** has more contrastingly colored purplish-red and green foliage, fls. brown-spotted within; said to be a hybrid of *S. zebrina* and *S. multiflora.*

SMOKE-TREE: *Cotinus Coggygria, Dalea spinosa.*

SMOOTH: said of surfaces that have no hairiness, roughness or pubescence, particularly of those not rough or scabrous.

SMÝRNIUM. *Umbelliferæ.* Erect bien. herbs mostly of the Old World, with bi- or tri-ternately compound glabrous lvs. and greenish-yellow fls. in compound umbels, usually without involucres, fr. ovate, laterally flattened.

Olusàtrum. To 4 ft., stout: lower lvs. to 1½ ft. long, segms. broadly ovate, to 2½ in. long, coarsely serrate, crenate or occasionally lobed: umbels to 4 in. across: fr. to ¼ in. long. W. Eu. and Medit. region; nat. in Bermuda.

SNAIL-FLOWER: *Phaseolus Caracalla.*

SNAILSEED: *Cocculus.*

SNAKE-HEAD: *Chelone glabra.*

SNAKEROOT, BLACK: *Cimicifuga racemosa.* **Button**: *Eryngium aquaticum, Liatris.* **Seneca**: *Polygala Senega.* **Virginia**: *Aristolochia Serpentaria.* **White**: *Eupatorium rugosum.*

SNAKES-HEAD: *Fritillaria meleagris.*

SNAKEWEED: *Polygonum Bistorta.*

SNAKEWOOD TREE: *Cecropia palmata.*

SNAPDRAGON: *Antirrhinum.*

SNAPWEED: *Impatiens.*

SNEEZEWEED: *Helenium.*

SNEEZEWORT: *Achillea Ptarmica.*

SNOWBALL: *Viburnum.*

SNOWBERRY: *Chiococca, Symphoricarpos albus.* **Creeping:** *Chiogenes hispidula.*

SNOW-BUSH: *Breynia nivosa.* **-in-Summer:** *Cerastium tomentosum.* **-on-the-Mountain:** *Euphorbia marginata.* **-Plant:** *Sarcodes sanguinea.* **-Wreath:** *Neviusia alabamensis.*

SNOWDROP: *Galanthus.* **-Tree:** *Halesia.*

SNOWFLAKE: *Leucojum.* **Water:** *Nymphoides indicum.*

SOAP-BARK TREE: *Quillaja Saponaria.* **-Plant:** *Chlorogalum pomeridianum.*

SOAPBERRY: *Sapindus.*

SOAPWORT: *Saponaria.*

SOBOLE: sucker—ground-shoot.

SOBOLIFEROUS: bearing shoots from the ground; sometimes said of palms and other tree-like plants producing two or more trunks that arise in the nature of suckers, forming something like a set or cluster of stems in distinction from a single stem or trunk.

SOBRÀLIA. *Orchidaceæ.* Trop. American reed-like orchids, terrestrial or rarely epiphytic, with mostly leafy sts. and fls. commonly solitary or in terminal racemes; sepals and petals spreading from a campanulate base; lip wrapped around column forming a tube with gradually expanding blade. Treated much like Cœlogyne; see *Orchids.*

Kienastiàna: *S. macrantha* var.

leucoxántha. Sts. to 3 ft. high: lvs. to 7 in. long: fls. solitary, to about 4 in. long; sepals and petals white; lip with golden-yellow throat streaked with orange. Apr.–Sept. Costa Rica.

macrántha. Sts. to about 6 ft. high: lvs. to 12 in. long: fls. about 6 in. across; sepals and petals rose-violet; lip wavy-margined, violet with cream or yellow throat. May–Nov. Mex. to Costa Rica. Var. **Kienastiàna** (*S. Kienastiana*) is a dwarf var. with white fls.

virginàlis. Sts. to 3 ft. high: lvs. to about 6 in. long and 1½ in. wide: fls. white with yellow throat, wavy, about 3½ in. long, solitary. Colombia.

xantholeùca. Sts. to about 6 ft. high: lvs. to 11 in. long: fls. 1 or few and successive, about 6 in. across; sepals and petals lemon-yellow; lip lemon-yellow with orange throat marked with reddish lines. July–Sept. Guatemala.

SOILLESS GARDENING. The growing of plants in nutrient solutions, without aid or support of soil. Such culture has long been practiced as a laboratory and experimental procedure, but in recent years methods are perfected whereby plants may be grown without soil under glass with satisfaction and a new literature is developing. This particular subject of plant-growing is known also as Hydroponics.

In brief, the process consists of growing plants with their roots in water containing a solution of essential mineral requirements. The process, to be successful, must be under the constant supervision of a person who understands the principles of plant growth, as a trained technician. Because of this, the process of water-culture of plants is not advised for use by the amateur or the average commercial horticulturist. Many erroneous and fantastic assertions have been made about the water-culture production of crops. These include statements that quantities of fruits and vegetables may be produced on "skyscraper" farms in large cities, that they may be grown in the cellars of homes, in closets or in converted abandoned factories. All such statements are inaccurate in fact and misleading in implication.

There are commercial possibilities in the water-culture production of special high-priced crops in regions highly favorable climatically and that have a good water supply. In addition they must be situated to supply markets ordinarily serviced by regions of low soil fertility. Such an organization demands a trained staff and costly equipment. To date, no evidence is available on which to base any prediction as to the future development on a commercial basis of the water-culture method.

The use of prepared commercial mixtures of nutrient salts by amateurs will not remove the major difficulties of the process. The principal barrier to their success lies in the fact that plants do not take up nutrients in the same proportions at all stages of their development, and it is not feasible to add salts indiscriminately from time to time to compensate for the lack of balance of these commercial mixtures. Other factors are responsible for many of the amateur failures with water culture methods. These include inability to provide sufficient sunlight for the plants, insufficient aëration of the water solutions and a lack of facilities to compensate for loss of water from the nutrient solutions by transpiration or by evaporation. Formulæ are available to the amateur who, realizing the difficulties and limitations of the water-culture method, wishes to undertake it with serious purpose.

SOILS. Experience in choice and handling of land for orchards and vegetable-gardens is now extensive for practically all parts of the country; and while there is much need of additional investigation, the subject is one for special technical discussion. The usual treatment of soils, therefore, requires no description here. There are many available books and bulletins.

Tillage and fertilizing, together with sufficient drainage, are fundamental or primary requirements in the effective rearing of plants. Tillage has many and far-reaching results aside from destroying weeds and facilitating planting. It provides good root-hold if deep enough and it extends the feeding area at the same time that it renders soil nutrients more available. The frequently shallow-tilled surface conserves moisture by preventing evaporation in open lands; but when land is covered with a crop and therefore closely occupied by roots the moisture may be transpired through the plants before it reaches the upper layers, yet even in this case tillage of closely-rowed crops is useful in eliminating weeds and in keeping the land fit.

We now know that the soil reaction, *i.e.*, its alkalinity or acidity, is an important factor in the successful rearing of many ornamental plants with which the recorded experience is not extensive or sufficient, and this factor may be discussed as at present understood.

In 1926 Dr. Edgar T. Wherry, then in the United States Department of Agriculture, published in Bulletin No. 4 of the American Horticultural Society, a list of several hundred plants of horticultural interest arranged according to their soil acidity preferences. In *Better Homes and Gardens* for April, 1930, the same author contributed an article on the development and maintenance of acid-soil gardens. Extracts from these articles were published in Hortus for 1930, and since the work has stood the test of time, most of the same material is republished here, with revisions by Wherry, and quotations from his writing. The subsequent work of Messrs. Wiggin and Gourley, as published in 1931 in Bulletin 484 of the Ohio Agricultural Experiment Station, and that of Dr. G. M. Shear, as published in 1938 in Technical Bulletin 63 of the Virginia Agricultural Experiment Station, have also been taken into account. Several other state experiment stations have issued lists or tables of crop plants giving their acidity ranges under the climatic conditions prevailing in the region covered, and may be obtained on application or consulted in libraries.

"In recent years it has come to be recognized that certain species of plants, including some of the most highly prized ornamental shrubs, are favored by acids in the soil and injured or killed by alkaline materials, such as lime and manure. There has arisen, accordingly, a new type of horticulture, which may be termed, for short, acid-soil gardening.

"Do many sorts of plants require a high degree of acidity in their soils and so fit into this new type of garden? Yes, it may be said that the number is rather large. On scanning the catalog of a well-known eastern nursery, some 225 native American species were found to be included, and of these, 80, or more than one-third, represent plants which field observations have shown to prefer acid-soil conditions. Evidently, therefore, no one who goes in for the cultivation of our own American ornamentals can afford to ignore soil acidity.

"Perhaps the gardener has tried to grow some of these plants and they have dwindled and died in spite of all the care lavished on them. The reason has probably been that the soil was not sufficiently acid. Set aside a part of your garden as a special acid-soil bed and try again. Unless the climatic conditions are extremely unfavorable one will find that such plants can be successfully cultivated far from their native haunts in the woodlands."

The appearance of moss or of sorrel on a plot of ground is commonly supposed to indicate that the soil has become acid, but such is not necessarily the case, and actual tests as to reaction should always be made. There are simple outfits for the testing of the soil in respect to acid and alkaline reaction, with a dye that changes color one way or another. Directions come with the outfit and persons without experience are able to operate it.

It is often supposed that leaf-mold and all types of humus are acidifying materials, but "chemical examinations of hundreds of samples of these substances have shown that in the majority of cases they are neutral, or nearly so, and quite unsuited to this purpose. Peat moss derived from the disintegration of sphagnum moss can usually be depended upon to be strongly acid. So also can the upland peat which accumulates under pine, spruce, and hemlock trees, or under rhododendron, mountain-laurel, and blueberry bushes; or, lacking these, crumbling tree-bark, rotted wood, and well-weathered sawdust may be used. To be on the safe side, however, tests should invariably be made with soil testers, and no material which does not show a color corresponding to a high degree of acidity should be used to fill in the beds."

"Most acid-soil plants prefer a porous, open-textured soil, which can best be obtained by mixing with the organic substance just enumerated a considerable volume of sand as free as practicable from clay and from lime. White sand from a pine-barren or bank sand is particularly desirable, but river sand, such as used in cement work, is usually satisfactory.

"In case it is inconvenient to prepare a special acid-soil bed by digging out and refilling, treatment of the native soil with acidifying agents may be used and often gives good results. If a heavy mulch of any of the strongly acid organic materials already discussed is spread over the bed, rain or sprinkling-water will leach more or less acid from them and gradually carry it down to the plant roots. Fresh leaves of oak and various other trees yield a certain amount of acid and may be used for mulching, but when they become soggy, black, and rotted, they lose their acidity and must be renewed.

"Acidifying chemicals may also be used, especially when quick results are desired, although they must be applied cautiously. One of the most desirable chemicals is commercial tannic acid, which costs around 10 cents a pound. It may be scattered over the surface of the ground, then dissolved by soaking the bed thoroughly. Another substance which has found favor for use in the same manner is crude aluminum sulfate, which is even cheaper. It is extensively used for clearing water and can be conveniently obtained thru a local waterworks or from any dealer in heavy chemicals. Also, applications should never be made to mixed plantings, because the increase in acidity which would help an azalea, for instance, would be fatal to a nearby lilac bush.

"The amounts of these chemicals to be applied varies greatly with the conditions. In soils which are sandy, sterile, and moderately acid at the start, 4 ounces of acidifying agent a square yard may be sufficient to develop high acidity. Average neutral garden loams require 1 pound, whereas in limestone regions as much as 5 pounds to the same area may be necessary. In all cases it is desirable to wait a few weeks after making an application to give the acidifying substance time to mix thoroughly with the soil; then repeat the test on another sample from root level. If the desired degree of acidity proves not to have been obtained, the treatment can then be made again and again until the acid-tester shows proper reaction."

Even when a bed has been made acid enough for satisfactory growth of plants, it is not safe to assume that it will remain so indefinitely. The earthworm brings up lime from the subsoil and mixes it with the upper layers, thus often neutralizing an acid plot. The indicator tests should be made once or twice each year, and if high acidity is not being maintained, the application of acidifiers should be repeated.

Soil reactions are often stated in "pH units," but the numbers are logarithmic and difficult to interpret. It is simpler for the horticulturist to divide soils into four reaction-classes, which, with the plant habitats they characterize, are:

Circumneutral. . (pH 8 to 6)	Soils in which neither acid nor alkaline influences are markedly dominant. The soils of the Mediterranean region where so many of our garden plants are native are mostly of this class.
Minimacid. . . . . (pH 7 to 6)	Humus-rich meadows, swamps, and woods, in calcareous regions. Fields and gardens under standard types of cultivation.
Subacid. . . . . (pH 6 to 5)	Many sorts of marshes, meadows, swamps, and upland woods. Long-abandoned fields and gardens in non-calcareous regions.

Mediacid..... (pH 5 to 4)	Various kinds of peat bogs. Swamps where the water is lacking in calcium bicarbonate. Thickets of rhododendron, kalmia, and other ericaceous plants. Woods where such plants as hemlock, pine, spruce, or oak are dominant. Accumulations of upland peat, rotting wood, and similar materials. Mountain peaks and sandhills where the substrata are non-calcareous.

The following plant lists are taken from Bulletin 4 and other publications above referred to. The reactions given are considered to represent optimum values for the individual species, but many plants will grow nearly as well in soils of classes adjoining those in which the plant is listed. Common garden flowers not included in any of these lists appear to thrive equally well in soils of all degrees of acidity ordinarily encountered.

1. Circumneutral soil plants. Many, though not necessarily all, species of the genera:

Abelia
Acer
Actæa
Adiantum
Æsculus
Alyssum
Ampelopsis
Anemone
Antirrhinum
Apium
Asparagus
Aster
Astilbe
Berberis
Beta
Brassica
Bromus
Buddleja
Buxus
Calendula
Callicarpa
Callistephus
Campanula
Canna
Celastrus
Clematis
Coleus
Convolvulus
Cosmos
Cotoneaster
Cratægus
Crocus
Cucumis
Cucurbita
Dahlia
Daucus
Delphinium
Deutzia
Dianthus
Euonymus
Fagus
Forsythia
Fraxinus
Gaillardia
Gladiolus
Hedera
Helianthus
Hibiscus
Hyacinthus
Impatiens
Iris
Juniperus
Lactuca
Lespedeza
Ligustrum
Lonicera
Lychnis
Lycopersicon
Malus
Medicago
Melilotus
Mertensia
Narcissus
Œnothera
Pæonia
Papaver
Pastinaca
Pelargonium
Phaseolus
Philadelphus
Pisum
Poa
Polygonum
Portulaca
Primula
Prunus
Pyrus
Ranunculus
Rhamnus
Ribes
Rosa
Salvia
Scabiosa
Secale
Spinacia
Spiræa
Syringa
Tagetes
Taxodium
Taxus
Thuja
Trifolium
Triticum
Tropæolum
Tulipa
Ulmus
Viola
Wisteria
Yucca
Zinnia

2. Minimacid soil plants

Acanthus mollis
Adlumia fungosa
Æsculus Pavia
Agrostis palustris and alba
Allium Schœnoprasum
Amelanchier
Apocynum androsæmifolium
Aquilegia cærulea
  cærulea hybrida
  chrysantha
Aralia hispida
  spinosa
Aster undulatus
Avena sativa
Brassica Rapa
Calypso bulbosa
Cardamine pratensis
Centaurea Cyanus
Cerastium arvense
Cheilanthes tomentosa
Chrysogonum virginianum
Coreopsis, many species
Cornus florida
Corylus rostrata
Delphinium nudicaule
Dryopteris intermedia
  Linnæana
  spinulosa
Epilobium angustifolium
Fagopyrum esculentum
Filipendula hexapetala
Fuchsia hybrida
Garcinia Mangostana
Gillenia trifoliata
Helianthemum Chamæcistus
Houstonia cærulea
Iberis sempervirens
Linum usitatissimum
Litchi chinensis
Lonicera Periclymenum
Lotus corniculatus
Lupinus hirsutus
Miscanthus sinensis
Monarda didyma
Orchis rotundifolia
Petunia hybrida
Phaseolus lunatus macrocarpus
Phlox Drummondii
Prunus Persica
Rubus occidentalis
Rumex scutatus
Selaginella rupestris
Silene orientalis
  caroliniana
Stizolobium Deeringianum
Symplocos tinctoria
Trillium stylosum (Catesbæi)
Vigna sinensis, some varieties
Vitis, cult. species
Zea Mays

3. Subacid soil plants

Abies
Acer pensylvanicum
  spicatum
Agrostis capillaris
  stolonifera
Aletris farinosa
Aleurites Fordii
Anaphalis margaritacea
Antennaria
Arachis hypogæa
Aronia

- Asarum virginicum
- Aster linariifolius
  - macrophyllus
  - patens
  - spectabilis
- Athyrium Filix-femina
- Azalea (Rhododendron)
- Baptisia tinctoria
- Betula lenta
- Botrychium dissectum
  - matricariæfolium
  - obliquum
- Calluna vulgaris
- Campanula divaricata
- Carex (Cymophyllus) Fraseri
- Castanea dentata
  - pumila
- Ceanothus americanus
- Chamædaphne calyculata
- Chamælirium luteum
- Cheilanthes lanosa
- Chelone Lyonii
  - obliqua
- Chimaphila
- Chionanthus virginica
- Chrysopsis mariana
- Cimicifuga americana
- Citrullus vulgaris
- Claytonia caroliniana
- Clematis crispa
- Clethra
- Clintonia umbellulata
- Clitoria mariana
- Comptonia asplenifolia
- Convallaria majalis
- Coreopsis major
  - pubescens
  - rosea
  - verticillata
- Corydalis sempervirens
- Cunila mariana
- Cyclamen indicum
- Cypripedium arietinum
- Cytisus scoparius
- Dalibarda repens
- Dennstaedtia punctilobula
- Dentaria diphylla
- Dicentra eximia
- Diphylleia cymosa
- Disporum languinosum
- Dryopteris Boottii
  - Clintoniana
  - dilatata (americana)
- Erica
- Eryngium aquaticum
- Eupatorium aromaticum
- Fothergilla Gardenii
- Franklinia alatamaha
- Galium boreale
- Gaultheria procumbens
- Gaylussacia
- Gelsemium sempervirens
- Goodyera pubescens
  - repens
  - tesselata
- Gordonia lasianthus
- Habenaria bracteata
  - ciliaris
  - fimbriata
  - Hookeri
  - lacera
  - obtusata
  - peramœna
- Halesia tetraptera
- Heuchera villosa
- Houstonia serpyllifolia
- Hydrangea macrophylla
- Hypoxis hirsuta
- Ilex Cassine
  - glabra
  - opaca
- Ipomœa Batatas
- Iris carolina
  - Kaempferi
  - tenax
- Juniperus communis montana
  - horizontalis
- Kalmia angustifolia
  - latifolia
- Krigia montana
- Leucothoë
- Liatris graminifolia
  - squarrosa
- Lilium carolinianum
  - Grayi
  - philadelphicum
  - superbum
- Listera cordata
- Lupinus Hartwegii
  - perennis
- Lycopodium clavatum
  - complanatum (flabelliforme)
  - lucidulum
  - obscurum
- Lyonia ligustrina
- Magnolia (excepting M. glauca)
- Maianthemum bifolium
  - canadense
- Medeola virginica
- Melanthium virginicum
- Menyanthes trifoliata
- Mitchella repens
- Mitella nuda
- Monotropa uniflora
- Myrica
- Nemopanthus mucronatus
- Œnothera glauca
- Opuntia compressa
- Oxalis montana
- Parnassia asarifolia
- Paronychia dichotoma
- Phlox amœna
  - ovata
  - stolonifera
- Picea
- Pinus, many though not all species
- Polygala paucifolia
- Pteridium aquilinum (latiusculum)
- Pyrola
- Quercus Catesbæi
  - falcata
  - marilandica
  - Phellos
  - stellata
- Rhododendron (incl. Azalea)
- Rhodora canadensis
- Rubus idæus
- Salix repens
- Sedum anglicum
- Senecio cruentus
- Shortia galacifolia
- Smilax laurifolia
  - Walteri
- Solanum Melongena
  - tuberosum

Solidago bicolor
odora
Spiræa tomentosa
Spiranthes gracilis
odorata
Stellaria Holostea
Stewartia pentagyna
Styrax americana
Tradescantia rosea
Trilisa odoratissima
Tsuga caroliniana
Ulex europæus
Vaccinium, many species
Veronica spicata
Viburnum alnifolium
nudum
Viola pedata
pedata lineariloba
Woodsia ilvensis
Zenobia pulverulenta
Zephyranthes Atamasco
Zigadenus

4. Mediacid soil plants

Andromeda
Arenaria grœnlandica
Arethusa bulbosa
Arnica
Asarum Shuttleworthii
Asclepias rubra
Asplenium montanum
pinnatifidum
Calla palustris
Calopogon pulchellus
Chamæcyparis thyoides
Clintonia borealis
Coptis
Corema Conradii
Cornus canadensis
Cypripedium acaule
Darlingtonia californica
Dionæa muscipula
Drosera
Empetrum nigrum
Epigæa repens
Galax aphylla
Habenaria blephariglottis
cristata
orbiculata
Helonias bullata
Iris prismatica
verna
Kalmia polifolia
Ledum grœnlandicum
Leiophyllum
Lilium Catesbæi
Linnæa borealis var. americana
Loiseleuria procumbens
Lygodium palmatum
Magnolia glauca
Menziesia pilosa
Molinia cærulea
Paronychia argyrocoma
Pieris
Pogonia divaricata
ophioglossoides
Polypodium aureum
Potentilla tridentata
Quercus ilicifolia
Rhexia
Rubus hispidus
Sarracenia
Sorbus americana
Stenanthium robustum
Streptopus roseus
Trientalis borealis
Trillium undulatum
Vaccinium Vitis-Idæa var. minus
Woodwardia areolata
Xerophyllum asphodeloides

SOJA: *Glycine Max.*

SOLANÀCEÆ. Nightshade Family. More than 75 genera of wide distribution comprising herbs, shrubs, vines and trees, with usually alternate entire to pinnate lvs., bisexual fls. with 5-lobed calyx and gamopetalous corolla, the latter commonly wheel-shaped, 5 stamens of which 1 or more may be sterile, superior mostly 2-celled ovary and fr. a berry or caps. The family abounds in medicinal and poisonous properties and the potato, tomato, eggplant, red pepper, tobacco and others are of great economic importance. Genera herein treated are Atropa, Browallia, Brunfelsia, Capsicum, Cestrum, Cyphomandra, Datura, Fabiana, Grabowskia, Hyoscyamus, Iochroma, Lycium, Lycopersicon, Mandragora, Nicandra, Nicotiana, Nierembergia, Petunia, Physalis, Quincula, Salpichroa, Salpiglossis, Schizanthus, Solandra, Solanum, Streptosolen.

SOLÁNDRA. Chalice-Vine. *Solanaceæ.* Woody plants, erect or climbing, glabrous or pubescent, sometimes grown in warm greenhouses and frequently in the open in S. E. U. S. and Calif. for the large, showy, winter-blooming, tubular, white, creamy, or yellow, solitary fls. and the leathery entire lvs., and berry-like 2-celled fr. in the large calyx-lobes; native in trop. Amer.

Solandras need a temperature of at least 50° and plenty of sunlight, also abundant water from early autumn to late spring, when grown under glass. In summer, during the rest season, they should be kept dry. A somewhat sandy loam is best, as too rich soil produces rank growth and little bloom. Propagated by cuttings of firm young shoots taken with a heel, giving them slight bottom heat.

Cléggii: listed name.

grandiflòra (*Swartzia grandiflora*). To 30 ft. or more, climbing: lvs. to 5 in. long: fls. fragrant, white, cream-colored or somewhat yellowish, to 10 in. long, the slender part of tube included in an enlarged calyx which is 2–3 in. long. W. Indies.

guttàta (*Swartzia guttata*). To 20 ft., somewhat climbing, with hairy or pubescent twigs: lvs. to 6 in. long, pubescent underneath: fls. fragrant, cream-color changing to yellowish, spotted or feathered with purple, 9 in. long, the slender part of tube much longer than calyx which is 3 in. long and pubescent. Mex.—See *S. nitida.*

Hártwegii: *S. nitida.*

longiflòra (*Swartzia longiflora*). To 2 ft., with trailing branches: lvs. obovate, petioles purplish: fls. white, to 1 ft. long, 3 times as long as calyx, contracted at throat. W. Indies.

magnífica: hort. name.

nítida (*S. Hartwegii. Swartzia nitida*). To 20 ft. or more, erect or clambering and climbing, quite glabrous: lvs. mostly glossy: fls. yellow, 10 in. long, with purplish stripes, the corolla-lobes more or less reflexing. Mex.—Apparently the usual species in cult., although often passing as *S. guttata.*

spectábilis: hort. name for a white-fld. form.

SOLÀNUM. Nightshade. *Solanaceæ.* Very many species of herbs, shrubs and even trees, some of them climbing and some strongly spiny, including many ornamental subjects for the garden or conservatory, also the potato, eggplant, and a few medicinal plants: lvs. alternate, simple or compound: fls. often showy in white, yellow, blue and purple, wheel-shaped or shallowly bell-shaped: fr. a berry which is often decorative: native in many parts of the world, the following grown for ornament except *S. Melongena*, *S. muricatum*, *S. tuberosum* and sometimes *S. nigrum*. The genus is difficult to botanists.

Most of the species may be propagated from seeds, sown where the plants are to stand in the case of the annuals, but indoors for the foliage types. The greenhouse shrubby forms are increased also by softwood cuttings; *S. Pseudo-Capsicum*, Jerusalem-cherry, by both seeds and cuttings. The tuberous species are usually raised from the tubers, or from divisions of them, containing at least one eye or bud. See also *Eggplant*, *Potato*, *Tomato;* also *Potomato*.

aculeatíssimum (*S. ciliatum*). Per. undershrub to 2 ft., with spiny sts. and lvs.: lvs. broad-ovate, 5–7-lobed, 4 in. long: fls. white, 1 in. across, in few-fld. cymes: fr. orange, globose and corrugated, to 2 in. across. Tropics.

æthiòpicum (*S. Pierreanum*). Shrub to 2 ft., unarmed: lvs. oblong, 5 in. long, undulate, glabrous: fls. white, ½ in. across, in few-fld. cymes: fr. pale red, globose, often lobed, large. Trop. Afr. to Asia.

alàtum: *S. robustum*.

amazónicum. Shrub to 6 ft.: lvs. ovate-lanceolate, to 6 in. long, lobed or entire, veins and petiole minutely prickly, margins crenulate: fls. blue-violet with bright yellow star-shaped eye and stigma, to 2 in. across, in many-fld. leafy racemes. Mex.; not hardy N.

arbòreum. Tree to 40 ft.: lvs. oblong-cuneate, acuminate, to 8 in. long or more, glabrous, entire: corolla white, nearly ½ in. across, lobes laciniate-oblong, acute. Venezuela.

atropurpùreum. Shrubby, with dark red spiny sts.: lvs. 5–7-parted into lanceolate undulate or sinuately lobed segms., pale beneath: fls. pale yellow, ⅓ in. long, in racemes about 1 in. long: fr. white turning yellow, globose, ½ in. across. Brazil.

auriculàtum. Velvety-tomentose shrub to 20 ft., unarmed: lvs. ovate-oblong, to 8 in. long, entire, having small orbicular lvs. in axils: fls. violet or bluish-white, ½ in. across, in corymbs: fr. globose, ¾ in. across. Trop. Afr., trop. Amer.

aviculàre (*S. laciniatum*). Shrub to 10 ft., unarmed and glabrous: lvs. variable, lanceolate and entire or pinnately lobed, to 1 ft. or more long: fls. purplish, to 1 in. across, in cymes: fr. yellowish, ovoid, 1 in. long. New Zeal., Australia.

Capsicástrum. False Jerusalem-Cherry. Shrub to 2 ft., unarmed: lvs. oval or oblong, to 3 in. long, pubescent beneath, undulate: fls. white, ½ in. or less across: fr. scarlet or orange-red, ovoid and pointed, ½ in. across. Brazil. Var. **Mélvinii** is a compact form about 1 ft. high. Var. **nànum** is listed. Var. **variegàtum** has variegated lvs. —This species has pubescent twigs.

ciliàtum: *S. aculeatissimum*.

citrullifòlium. Ann. to 3 ft., with yellow prickles: lvs. 2-pinnatifid, to 6 in. long: fls. violet, to 1½ in. across, in racemes: fr. prickly, 1 in. across. Ia. to Tex. and Mex.

Clèvelandii: an improved form, probably of *S. Pseudo-Capsicum*.

coccíneum: *S. integrifolium*.

cornùtum. Pubescent very prickly ann. to 4 ft.: lvs. 2-pinnatifid, to 5 in. long: fls. yellow, 1 in. across, in cymes: fr. prickly, small. Mex.

críspum. Shrub or small tree: lvs. ovate to ovate-lanceolate, entire, to 4 in. long: fls. pale violet, ¾ in. across, in corymbs: fr. globose, pale yellow, about ¼ in. across. Chile, Peru.

crotonifòlium. Pubescent shrub with flexuose branches: lvs. oblong, entire, to 6 in. long, white-tomentose beneath: fls. tomentose outside, ½ in. across, in racemes: fr. globose, about ¼ in. across. N. S. Amer.

Dulcamàra. Bitter-Sweet. Shrubby climber to 8 ft.: lvs. ovate or ovate-oblong, to 4 in. long, entire or lobed at base: fls. violet spotted with green, ½ in. across, the lobes reflexed, in long-stalked cymes: fr. scarlet, ovoid, ½ in. long, showy but poisonous. Eu. to Asia; nat. in N. Amer.

elæagnifòlium. Per. to 3½ ft., silvery: lvs. oblong, to 6 in. long, wavy-margined: fls. violet or white, 1 in. across, in cymes: fr. yellow or black, globose, ½ in. across. Mo. to Ariz.

fasciculàtum: confused name.

Gayànum. St. woody, pubescent: lvs. oval-oblong, entire, ciliate: fls. blue, hairy outside: fr. about ¼ in. across. Chile.

gigantèum. To 25 ft., somewhat shrubby, the st. with short stout prickles: lvs. oblong, to 8 in. long, white-tomentose beneath: fls. pale violet or blue, ¾ in. across, in many-fld. cymes: fr. red, globose, ⅓ in. across. India, Ceylon.—Called "African-holly" in S. Calif. where it is grown out-of-doors.

grâcile. Pubescent ann. to 2 ft.: lvs. oblong-lanceolate, to 4 in. long, whitish beneath: fls. white, ⅓ in. across, in racemes about 1 in. long: fr. black, globose, ¼ in. across. Brazil.

guatemalénse: *S. muricatum*.

Héndersonii. A form of *S. Pseudo-Capsicum* or a hybrid, having numerous white fls. and orange-red frs.

heterodóxum. Spiny pubescent ann. to 3 ft.: lvs. 2-pinnate: fls. blue, ½ in. across, in short racemes: fr. green turning black, globose, ¼ in. across. Mex.

inæquàle (*Cyphomandra fragrans*). Shrub to 8 ft., branches greenish-yellow to gray, glabrous: lvs. ovate to oblong-lanceolate, to 4½ in. long, short-petioled: fls. white, to ½ in. across, 10–20 in raceme-like cymes: berry globose, yellow. Brazil.

integrifòlium (*S. coccineum*). Scarlet or Tomato Eggplant. Pubescent spiny ann. to 3 ft.: lvs. ovate or oblong-ovate, sinuate-lobed, to 8 in. long: fls. white, ¾ in. across, in few-fld. clusters: fr. scarlet or yellow, globular, to 2 in. across, furrowed, grown for ornament. Afr.

jasminoìdes. Shrubby climber to 10 ft., glabrous and unarmed: lvs. ovate-lanceolate, to 3 in. long, entire or lower ones pinnate: fls. star-shaped, white tinged blue, 1 in. across, in branching clusters. Brazil. Var. **grandiflòrum** has large clusters of fls.

laciniàtum: *S. aviculare*.

lanceolàtum: *S. laurifolium*.

laurifòlium (*S. lanceolatum*). Shrub to 8 ft., often with prickles: lvs. oblong or oblanceolate, to 7 in. long, densely tomentose beneath: fls. pale blue, ½ in. long, in many-fld. cymes: fr. ⅓ in. across. Mex.

Lycopérsicum: the same as *Lycopersicon esculentum*.

macranthèrum. Woody climber: lvs. ovate-acuminate, entire or somewhat repand, long-petioled, pubescent: fls. violet, in corymb-like clusters, anthers conspicuous although short: berry red. Mex.; planted in Calif.

macránthum. Spiny pubescent shrub to 6 ft. or more: lvs. ovate to lanceolate, sinuately lobed, to 1 ft. or more long: fls. bluish-violet, to 2 in. across, in racemes to 5 in. long. Brazil.

marginàtum. Spiny shrub to 4 ft.: lvs. oblong-ovate, sinuately lobed, to 8 in. long, densely white-tomentose beneath: fls. white lined with blue, 1 in. across, in cymes: fr. yellow, globose, 1½ in. across, spiny. N. Afr.

Melongèna. Pubescent spiny herb or subshrub to 3 ft.: lvs. ovate, angled or lobed, to 9 in. long: fls. violet-purple, to 1½ in. across, usually solitary: fr. blackish-purple, 6 in. long. Afr., Asia. Var. **depréssum.** Dwarf Eggplant. Small and glabrous: lvs. to 6 in. long: fr. to 5 in. long. Var. **esculéntum.** Common Eggplant. Grown as ann.: lvs. to 15 in. long: fls. nodding, to 2 in. across: fr. shining, to 1 ft. long, purple, white, yellowish or striped. Var. **serpentìnum.** Snake Eggplant. Fr. to 1 ft. long and 1 in. thick, curled at end.

muricàtum (*S. guatemalense*). Pepino. Spiny herb or subshrub to 3 ft.: lvs. oblong-lanceolate, to 6 in. long, entire or undulate: fls. bright blue, to ¾ in. across, in long-stalked clusters: fr. yellow marked with purple, ovoid, to 6 in. long, edible. Peru.

nìgrum. Prostrate or erect ann. to 2½ ft.: lvs. ovate or lanceolate-ovate, entire or angled, to 5 in. or more long, eaten as greens: fls. white, ¼ in. across, in drooping clusters: fr. black, ¼ in. or more across. Cosmopolitan.—Cult. forms are known as "Garden Huckleberry" (var. *guineense*), "Wonderberry" and "Sunberry."

Pierreànum: *S. æthiopicum*.

Pseùdo-Cápsicum. Jerusalem-Cherry. Shrub to 4 ft., glabrous and unarmed: lvs. oblong, to 4 in. long, undulate, shining above: fls. white, ½ in. across, solitary or clustered: fr. scarlet or yellow, globular, ½ in. across, long persistent, for which it is grown in pots. Old World.

Pseùdo-Melongèna. Glabrous unarmed ann.: lvs. ovate, undulate, dark green: fls. nodding: fr. red and green, large and fleshy. Habitat unknown. Probably a form of *S. integrifolium*.

Rantonnétii. Shrub to 6 ft., unarmed and nearly glabrous: lvs. ovate or oval, to 4 in. long, undulate: fls. dark blue or violet with paler eye, 1 in. across, in clusters: fr. red, heart-shaped, 1 in. long, drooping. Paraguay, Argentina.

robústum (*S. alatum*). Spiny densely rusty-tomentose shrub to 5 ft., with winged sts.: lvs. broad-ovate, sinuately lobed, to 1 ft. long: fls. white, 1 in. across, in axillary racemes: fr. orange, globose, ½ in. Brazil.

rùbrum: a listed name of uncertain botanical standing.

Seaforthiànum. Shrubby climber to 10 ft., glabrous and unarmed: lvs. mostly pinnate, to 8 in. long, the lfts. unequal: fls. star-shaped, blue or purple, to 1 in. across, in cymes: fr. scarlet, globose, ⅓ in. across. Trop. Amer.

sisymbrifòlium. Sticky-pubescent spiny ann. to 4 ft.: lvs. pinnate into sinuate or toothed lobes: fls. light blue or white, 1¼ in. across: fr. red, globose, about ½ in. across. Trop. Amer.; nat. in N. Amer.

sodomèum. Spiny pubescent shrub to 6 ft.: lvs. pinnate into undulate or entire lobes: fls. violet, about 1 in. across, in cymes: fr. shining yellow, globose, 1 in. across. Medit. region.

texànum: a spineless race of *S. integrifolium.*

Tórreyi. Hairy per. to 3 ft.: lvs. ovate, to 6 in. long, 5–7-lobed: fls. violet, to 1½ in. across, in cymes: fr. yellow, globose, 1 in. across. Kans. to Tex.

triquètrum. Vine-like per. with sts. to 4 ft. long, glabrous and unarmed: lvs. ovate to lanceolate, to 2½ in. long, entire or slightly 3-lobed at base: fls. purplish, ½ in. across: fr. globose, ⅓ in. across. Tex., Mex.

tuberòsum. Potato. Sts. weak, to 3 ft. long, unarmed, with underground edible tubers: lvs. pinnate, to 10 in. long, the lfts. ovate with smaller ones between: fls. white or bluish, about 1 in. across, in clusters: fr. yellowish or green, globular, to ¾ in. across. Probably Andes.

verbascifòlium. Tomentose shrub or tree to 30 ft., unarmed: lvs. ovate or oval, to 1 ft. long, entire or slightly undulate: fls. white, ½ in. across, in cymes: fr. yellow, globose, to ¾ in. across. Tropics.

Wállacei. Sticky-hairy shrub to 3 ft.: lvs. cordate-ovate, undulate: fls. violet, to 1¾ in. across, in cymes: fr. dark purple. Calif. and isls.

Warscewíczii. Rusty-tomentose shrub to 6 ft., with short stout spines: lvs. to 1 ft. or more long, lobed to half width of blade: fls. white, 1½ in. across, in racemes: fr. pale yellow, shining, ½ in. across. S. Amer.

Wéndlandii. Shrubby climber, prickly and glabrous: lvs. pinnate, with a large terminal lft., or upper lvs. simple: fls. lilac-blue, to 2½ in. across, in branched clusters: fr. globose. Costa Rica.

Xántii. Pubescent shrub with erect or decumbent sts. to 2 ft. long: lvs. ovate, to 1¾ in. long, entire or lobed: fls. violet, to 1 in. across, in cymes: fr. green or purplish, globose. Calif.

SOLDANÉLLA. *Primulaceæ.* Per. herbs native in mts. of Eu., sometimes grown in rock-gardens, with basal lvs., nodding blue or violet or rarely white fls., solitary or in umbels, the corolla with fringed lobes. Grown in shady situations in moist soil. Propagated by division or seeds.

alpìna. To 6 in.: lvs. roundish, to 1½ in. across: fls. pale blue, ½ in. long, in 1–3 fld. umbels, in spring.

mínima. To 4 ft.: lvs. orbicular-ovate: fls. pale bluish-purple with darker markings, solitary, corolla split about ⅓ of the way, to the base, pedicels hairy.

montàna. To 15 in.: lvs. roundish, to 2½ in. across: fls. blue, to ¾ in. across, in 3–10-fld. umbels, May–July.

pusílla. To 6 in.: lvs. roundish, to ½ in. across: fls. blue or violet, ½ in. long, usually solitary, in May.—Differs from *S. minima* in its rough, but non-pubescent, pedicels.

SOLENÁNTHUS. *Boraginaceæ.* Per. herbs, distinguished from Cynoglossum by the anthers exserted and not included within the tube of corolla, and from Lindelofia by the usually erect and rarely spreading short corolla-lobes; S. and E. Eu. and W. Asia. Propagated by division or seed. Useful in the hardy border or amongst shrubbery.

apennìnus (*Cynoglossum apenninum*). To 3 ft.: basal lvs. ovate-oblong, coarse, st.-lvs. narrowly lanceolate: fls. blue, in dense axillary panicled racemes. S. Eu.

SOLIDÀGO. Goldenrod. *Compositæ.* Erect herbaceous perennials of many kinds, useful for borders and colonizing: lvs. simple and alternate: heads small, yellow or occasionally white, in thyrses, spikes, racemes or compound panicles, of ray- and disk-fls., blooming in late summer and autumn; pappus of bristles: native mostly in N. Amer. and characteristic of its late summer and autumnal flora. Any number of the species may be transferred to home grounds.

The goldenrods improve in the garden but some of them become weedy if the soil is too rich. They are easily grown from seed, blooming the second year; the mature plants may be divided in spring or in autumn.

álgida. To 1 ft., sts. tufted: lvs. oblanceolate, to 4 in. long, entire or toothed, ciliate: heads in dense oblong or globose panicles. Mts., Wash.

alpéstris: *S. Virgaurea.*

altíssima. To 8 ft., pubescent: lvs. lanceolate, to 6 in. long, mostly toothed: heads in recurved one-sided racemes forming dense broadly pyramidal panicles. Me. to Ga. and Tex.

árctica: a listed name.

argùta. To 4 ft.: lvs. ovate, to 16 in. long, coarsely toothed: heads in one-sided racemes in terminal panicles. Me. to Va. and Tenn.

bellidifòlia. To 1 ft., glabrous: lvs. oblong to obovate, to 2 in. long, wavy-toothed, ciliate: heads in dense clusters to 4 in. long. Mts., Wash.

bícolor. Silverrod. To 4 ft.: lvs. oblong, to 4 in. long, toothed, pubescent: heads crowded in a narrow spike to 7 in. long, rays white. P. E. I. to Ga. and Tenn.

Boòttii. To 5 ft.: lvs. ovate or oblong-lanceolate, to 6 in. long, toothed or entire: heads in one-sided spreading racemes in the loose panicle. Va. to Fla. and Tex.

brachýstachys: hort. name.

Búckleyi. To 2 ft.: lvs. oblong, to 3½ in. long, toothed, pubescent beneath: heads in small axillary clusters. Ala.

cæ̀sia. Wreath G. To 3 ft., glabrous, often glaucous: lvs. lanceolate, to 5 in. long, toothed: heads in axillary clusters or racemes. N. S. to Fla. and Tex.

canadénsis (*S. reflexa*). To 5 ft.: lvs. linear-lanceolate, to 5 in. long, entire or toothed: heads in one-sided racemes forming large panicles. Newf. to Va. and Tenn.

capulínsis: listed as 2 ft. high with many heads of large florets.

caroliniàna: probably *S. tenuifolia.*

ciliòsa. To 10 in., sts. pilose above: lvs. spatulate to linear-lanceolate, to 2 in. long, basal ones crenate-serrate, upper st.-lvs. narrow and entire, ciliate at base: heads yellow, in small dense thyrse. Alta. to Colo. west to B. C. and Ariz.

corymbòsa: probably only a southern form of *S. rigida.*

Cúrtisii. To 3 ft., glabrous or remotely pubescent: lvs. lanceolate, to 6 in. long, acuminate, sharply serrate: heads small, in loose axillary clusters and short terminal thyrses. Mts., Va. and W. Va. to Ga. and Ky.

Cútleri. To 1 ft.: lvs. obovate, to 4 in. long, toothed: heads in short racemes. Mts., Me. to N. N. Y.

decúmbens. To 7 in., sts. decumbent, glabrous: basal lvs. spatulate, obtuse, distal half toothed: heads few, in short dense infl. Mts., Wyo. to New Mex.

elongàta. To 3 ft.: lvs. narrow-lanceolate, to 4 in. long, toothed, nearly glabrous: heads in dense thyrse-like panicles. B. C. to Mont. and Calif.

erécta. To 3 ft., nearly glabrous: lower lvs. oval, to 6 in. long, toothed, upper lanceolate, entire: heads in a narrow terminal thyrse. N. Y. to Ga. and Ala.

fistulòsa. To 7 ft.: lvs. ovate-oblong to lanceolate, to 4 in. long, entire, rough on edges and midrib beneath: heads in one-sided racemes in the panicles. N. J. to Fla. and La.

flexicaùlis. To 3 ft., nearly glabrous, with zigzag angled sts.: lvs. ovate, to 7 in. long, sharp-toothed: heads in axillary clusters. N. S. to Ga. and Mo.

glabérrima. Differs from *S. missouriensis* in a more open somewhat one-sided infl. and broader bracts. Mich. to Ariz.

glàbra: a name of uncertain application.

glomeràta. To 4 ft.: lvs. spatulate or oval, to 1 ft. long, toothed: heads in axillary clusters. N. C., Tenn.

graminifòlia (*S. lanceolata. Euthamia graminifolia*). To 4 ft.: lvs. linear-lanceolate, to 5 in. long, entire: heads in flat-topped compound corymbs. N. B. to Fla. and Neb.

híspida. To 3 ft., hairy: lvs. oval or oblong, to 5 in. long, mostly toothed: heads in dense terminal racemes. Newf. to Ga. and Mo.

Jóhnsonii: listed name.

júncea. To 4 ft., glabrous: lvs. lanceolate or oval-lanceolate, to 1 ft. long, toothed: heads in one-sided racemes forming a spreading panicle. N. B. to N. C. and Mo.

lanceolàta: *S. graminifolia.*

latifòlia. To 3 ft.: lvs. ovate, to 7 in. long, sharp-toothed: heads in short axillary racemose clusters. N. S. to Ga. and Mo.

Lèavenworthii. To 4 ft.: lvs. linear-spatulate to linear-lanceolate, to 5½ in. long, toothed, margins ciliate: heads in one-sided racemes in the panicle. S. C. to Fla.

Líllei: listed name.

Lindheimeriàna. To 3 ft., stoloniferous, pubescent: lvs. broad-lanceolate to oval, entire, rough: heads in narrow thyrse. Kans. to N. Mex.

mìnor (*Euthamia minor*). To 3 ft., slender, glabrous, branched above middle: lvs. nearly acicular, to 2 in. long and 1/16 in. wide, punctate: heads in numerous small corymbs. Va. to Fla. and Ala.

missouriénsis. To 1½ ft., glabrous: lvs. linear-oblanceolate, to 6 in. long, entire or lower toothed: heads in a round-topped panicle. B. C. to S. D.—See *Solidaster*.

móllis. To 1 ft., stout and somewhat hairy: lvs. oblong to oblanceolate, to 3 in. long, entire, 3-nerved, canescent or rough: heads yellow, in thyrsoid panicles. Minn. to Man., south to Mex.

neglécta. To 4 ft.: lvs. lanceolate, to 1 ft. long, toothed: heads in one-sided racemes forming thyrsoid panicles. Swamps, Me. to Md. and Ill.

nemoràlis. To 2 ft., gray-pubescent: lvs. oblanceolate, to 6 in. long, wavy-toothed: heads in one-sided racemes in the panicles. N. S. to Fla. and Ariz.

occidentàlis (*Euthamia occidentalis*). To 5 ft., glabrous: lvs. linear, to 4 in. long, entire: heads in corymbose clusters. B. C. to Rocky Mts.

odòra. To 4 ft.: lvs. lanceolate, to 4 in. long, entire, anise-scented: heads in one-sided racemes in large panicles. N. S. to Fla. and Tex.

ohioénsis. To 3 ft., glabrous: lvs. lanceolate or oblong-lanceolate, to 1 ft. long, toothed toward tip: heads in terminal compound corymbs. N. Y. to Wis.

pállida. To 2½ ft.: lvs. obovate to lanceolate, to 6 in. long, entire, pale: heads in a dense elongated panicle. S. D., Neb., Colo.

pátula. To 7 ft.: lvs. oval or oblong, to 16 in. long, toothed or entire, rough above: heads in one-sided racemes in loose panicles. Swamps, Me. to Ga. and Tex.

pùbens. To 5 ft., pubescent: lvs. spatulate, to 6 in. long, toothed: heads in axillary raceme-like clusters. N. C., Tenn., Ga.

pubérula. To 3 ft.: lvs. oblong-lanceolate, to 2 in. long, toothed or entire: heads in terminal thyrse. P. E. I. to Fla. and Miss.

rádula. To 4 ft., rough-hairy: lvs. oblanceolate, to 3 in. long, wavy-toothed or nearly entire: heads in one-sided racemes. N. C. to Tex.

refléxa: *S. canadensis.*

Ríddellii. To 3 ft., nearly glabrous: lvs. lanceolate, to 1 ft. long, entire: heads in dense corymbs. Ont. to Mo.

rígida. To 5 ft., gray-pubescent: lvs. ovate or oblong, to 2 in. long, usually entire: heads in dense compound corymbs. Mass. to Ga. and Tex.

rigidiúscula. To 4 ft.: lvs. lanceolate or ovate-lanceolate, to 5 in. long, entire or toothed: heads in dense narrow thyrse. Ohio to Colo. and Tex.

rugòsa. To 8 ft.: lvs. oval to oblong-lanceolate, to 4 in. long, toothed: heads in one-sided racemes in compound panicles. Newf. to Fla. and Tex.

scopulòrum. To 1 ft.: lvs. oblanceolate to linear-lanceolate, to 6 in. long, toothed toward apex: heads in corymbs. Alta. to Colo. and Utah.

sempérvirens. To 8 ft., nearly glabrous: lvs. oblong or lanceolate, to 1 ft. long, entire, fleshy: heads in one-sided racemes in large panicles. N. S. to Fla. and Mex., along coast.

serótina. To 8 ft., nearly glabrous: lvs. lanceolate or oblong-lanceolate, to 6 in. long, toothed: heads in large panicles. N. Amer.

Shórtii. To 4 ft., nearly glabrous: lvs. oblong-lanceolate, to 4 in. long, toothed: heads in one-sided racemes in large panicles. Falls of Ohio River.

speciòsa. To 7 ft., nearly glabrous: lvs. ovate to oblong, to 10 in. long, toothed: heads in large terminal thyrse. Mass. to N. C. and Ark.

spectábilis. To 2½ ft.: lvs. oblong to linear, toothed: heads in dense compound thyrse. Nev., Calif.

squarròsa. To 5 ft., nearly glabrous: lvs. spatulate or oblong, to 10 in. long, toothed: heads in terminal narrow thyrse to 1 ft. long. N. B. to N. C. and Ohio.

strícta. To 8 ft.: lvs. oblong to linear, to 8 in. long, entire, glabrous: fls. in dense thyrse-like panicles. N. J. to Fla. and La., Cuba.

tenuifòlia (*Euthamia tenuifolia*). To 1½ ft., glabrous: lvs. narrow-linear, to 3 in. long, entire: heads in dense flat corymbs. Mass. to Fla. and La.

trinervàta. To 2 ft., gray-puberulent, sts. decumbent at base: lvs. oblanceolate, to 4 in. long, margins usually ciliate: heads yellow, in dense leafy panicles. S. D. to Utah south to Ariz. and New Mex.

uliginòsa. To 4 ft., glabrous: lvs. oblong-lanceolate or lanceolate, to 9 in. long, toothed: heads in dense terminal thyrse. Swamps, Newf. to N. C. and Wis.

vérna. To 3 ft., soft-pubescent: lvs. oblong-lanceolate, to 4 in. long, serrulate, hispidulous above, long-petioled: heads bright yellow, in lax infl. N. C. to S. C.

Virgaùrea (*S. alpestris*). EUROPEAN G. To 3 ft.: lvs. obovate, to 7 in. long, toothed: heads in dense terminal thyrse to 10 in. long. Eu.

Wárdii. To 3 ft.: lvs. lanceolate or ovate-lanceolate, to 3½ in. long, entire or with few teeth: heads in narrow leafy panicles. Mo. to Okla.

SOLIDÁSTER (*Asterago*). *Compositæ.* A bigeneric hybrid, presumably of hort. origin, between *Aster ptarmicoides* and an unknown species of Solidago. **S. lùteus** (*Aster hybridus luteus* and *Solidago missouriensis* of hort.). Per. to 2½ ft., scabrous: lvs. lanceolate, to 4 in. long, margins remotely serrate: heads numerous, ray-fls. canary-yellow, disk-fls. golden-yellow, in much branched corymbiform panicles.

SOLÍSIA. *Cactaceæ.* Segregate from Pelecyphora, being solitary rather than cespitose, juice milky, fls. small and lateral, tubercle axils naked. See *Cacti.*

pectinàta (*Pelecyphora pectinata*). Globose, to 1 in. or slightly more diam., hidden by the overlapping clusters of 20–40 radial pectinate white spines: fls. yellow. Mex.—There is a cristate form.

pseudopectinàta: probably *Pelecyphora pseudopectinata.*

SOLITARY: borne singly or alone.

SÓLLYA. *Pittosporaceæ.* Australian evergreen climbing shrubs, with alternate simple lvs., small blue attractive nodding fls. in terminal cymes, and capsular frs.

One species is grown out-of-doors in the South where it makes a good cover for banks or fences, and in the greenhouse in the North. Propagated by seeds and cuttings under glass.

heterophýlla. AUSTRALIAN BLUEBELL CREEPER. To 6 ft. or more, twining: lvs. variable, from narrow lanceolate to oblong, to 2 in. long, much paler beneath: fls. to ½ in. long.

SOLOMONS-SEAL: *Polygonatum.* **False:** *Smilacina.*

SÓNCHUS. *Compositæ.* Old World ann. and per. succulent herbs, some of them weedy, with alternate lvs. and heads of yellow ligulate fls. in corymbs or panicles; pappus of soft white bristles. One species is sometimes grown for ornament in S. Calif.

congéstus (*S. Jacquinii*). Per. to 2 ft.: lvs. oblanceolate, to 1 ft. long, pinnatifid to about middle: heads to 3 in. across, in panicles. Canary Isls.

Jácquinii: *S. congestus.*

màjor: hort. name.

SONERÌLA. *Melastomaceæ.* Trop. herbs or subshrubs with simple 3–5-nerved lvs. that are often ornamental, showy fls. in racemes or spikes, and capsular frs.

One species is grown under glass in a temperature of about 75° and a humid atmosphere. Propagated by well-ripened cuttings under a bell glass, by division and also by seeds.

margaritàcea. Lvs. ovate-lanceolate, purplish below, having rows of pearly spots between the nerves: fls. rose. Java.

SÓPHORA. *Leguminosæ.* Mostly woody plants with pinnate lvs., papilionaceous fls. in terminal panicles or racemes, and usually cylindrical or 4-winged pods; often showy in bloom.

Sophoras are planted for ornament, the evergreen species hardy only in the southern states. Propagated by seeds, greenwood cuttings, layers or grafting.

affìnis. Tree to 20 ft.: lfts. to 1½ in. long: fls. white or pinkish, ½ in. long, in axillary racemes to 6 in. long: pods to 3 in. long. Ark., Tex.

Dàvidii: *S. viciifolia.*

japónica. JAPANESE PAGODA-TREE. CHINESE SCHOLAR-TREE. Deciduous tree to 80 ft.: lfts. to 2 in. long: fls. yellowish-white, ½ in. long, in panicles to 15 in. long: pods to 3 in.

long. China, Korea; hardy N. Var. **péndula** has pendulous branches. Var. **violàcea** (*S. violacea*) has lfts. appressed-pubescent, fls. with wings and keel tinged purplish.

microphýlla (*S. tetraptera* var. *microphylla*). Differs from *S. tetraptera* in the lfts. only ⅓ in. long and fls. to 1½ in. long. New Zeal.

platycárpa: *Cladrastis platycarpa.*

secundiflòra (*Broussonetia secundiflora*). Mescal Bean. Evergreen shrub or tree to 40 ft.: lfts. to 2½ in. long, shining: fls. violet-blue, 1 in. long, fragrant, in terminal racemes to 4 in. long: pods to 8 in. long. Tex. to N. Mex.

tetráptera (var. *grandiflora*). Evergreen tree to 40 ft.: lfts. to 1 in. long: fls. golden-yellow, 2 in. long, in 4–8-fld. racemes: pods to 8 in. long, 4-winged. New Zeal.

viciifòlia (*S. Davidii*). Deciduous shrub to 8 ft.: lfts. to ½ in. long: fls. bluish-violet to nearly white, to ¾ in. long, in 6–12-fld. racemes: pods to 2 in. long. China; hardy N.

violàcea: *S. japonica* var.

SOPHROLÆLIOCÁTTLEYA. *Orchidaceæ.* A group comprising hybrids between the genera Sophronitis, Cattleya, and Lælia.

Báldwinii (*C. Warscewiczii* × *Sophrolæliocattleya* Meuse).

ràdians (*C.* Princess Royal × *Sophrolæliocattleya* Isabella).

SOPHRONÌTIS. *Orchidaceæ.* Small epiphytes, mostly native of Brazil, with 1–2-lvd. pseudobulbs and showy fls. either solitary or in few-fld. racemes; sepals and petals similar or petals broader; lip adnate to column at base, entire or 3-lobed. Grown mostly in shallow pans under the roof; see *Orchids.*

cérnua. Lf. solitary, about 1 in. long: infl. 2–5-fld.; fls. about 1 in. across, cinnabar-red with lip shading to orange or whitish at base. Oct.–Apr. Brazil.

coccínea (*S. grandiflora*). Lf. solitary, to 3 in. long: fl. solitary, scarlet with yellow near base of lip, to about 3 in. across. Blooming all year. Brazil.

grandiflòra: *S. coccinea.*

SORBÀRIA (*Schizonotus*). False-Spirea. *Rosaceæ.* Deciduous shrubs of Asia with alternate pinnate and toothed lvs., and small white fls. in large terminal panicles.

Sorbarias are cultivated for ornament; they spread rather rapidly by suckers. They thrive in moist rich soil. Propagated by seeds, by suckers, by cuttings of ripe wood or root-cuttings.

Àitchisonii (*Spiræa Aitchisonii*). To 10 ft.: lfts. 15–21, less than ½ in. wide, glabrous: panicles to 10 in. long, upright. July–Aug. W. Asia.

arbòrea. To 18 ft.: lfts. 13–17, more than ½ in. wide, pubescent beneath: panicles to 1 ft. long, loose and spreading. July–Aug. China; hardy N. Var. **glabràta** has glabrous lfts.

assúrgens. To 10 ft.: lfts. 13–17, more than ½ in. wide, pubescent on veins beneath: panicles to 6 in. long, upright. July. China; hardy N.

Lindleyàna: *S. tomentosa.*

sorbifòlia (*Spiræa sorbifolia*). To 6 ft., hardy: lfts. 13–23, more than ½ in. wide, nearly glabrous beneath: panicles to 10 in. long, dense and upright. June–July. Asia; sometimes spontaneous; hardy far N. Var. **stellípila** (*S. stellipila*), lvs. stellate-pubescent beneath.

stellípila: *S. sorbifolia* var.

tomentòsa (*S. Lindleyana. Spiræa Lindleyana*). To 18 ft.: lfts. 15–21, more than ½ in. wide, pubescent on veins when young: panicles to 1 ft. long, loose and spreading. July–Aug. Himalayas; stands far S.

SORBARÒNIA. *Rosaceæ.* Hybrids between Sorbus and Aronia, with simple or partly pinnate lvs. Hardy N.

fállax (*Sorbus heterophylla*). Hybrid between *S. Aucuparia* and *A. melanocarpa:* similar to *S. hybrida* but nearly glabrous and with blackish fr.

hýbrida (*Sorbus spuria*). Hybrid between *S. Aucuparia* and *A. arbutifolia:* lvs. to 3 in. long, with lobes or lfts. toward base, pubescent beneath: fls. white or pinkish: fr. dark purple.

SORBOPỲRUS. *Rosaceæ.* Hybrids of Sorbus and Pyrus. **S. auriculàris** is a tree to 40 ft., with branchlets, under side of lvs., long pedicels and calyx tomentose or thickly pubescent: lvs. broad-elliptic, abruptly short-pointed, mostly rather broad at base, strongly serrate: fls. about ½ in. across, white, many in a corymb: fr. about ½ in. diam., pyriform, green or yellowish. A very old European plant considered to be a hybrid between *Pyrus communis* and *Sorbus Aria*, known under a variety of names as *Pyrus auricularis, P. Pollveria, P. Bollwylleriana, Sorbus Bollwylleriana, Bollwilleria auricularis.* It is sometimes planted for ornament and interest; hardy N.

SÓRBUS. Mountain-Ash. *Rosaceæ.* Various deciduous trees or shrubs native in the north temp. zone, and hardy N., with alternate simple or pinnate lvs., white fls. in terminal compound corymbs in late spring, and fr. a berry-like usually bright red pome.

Most of the species are hardy in the North and will thrive even in dry soil. Propagated by seeds sown when ripe or stratified, by layers, or rare kinds by budding or grafting on *S. americana* or *S. Aucuparia.*

alnifòlia. To 20 ft., branchlets glabrous or slightly pubescent: lvs. simple, ovate to elliptic, to 4 in. long, usually glabrous beneath: infl. 6–10-fld., styles 2, fr.-calyx deciduous. E. Asia.

americàna (*Pyrus americana*). American M. To 30 ft.: lvs. of 11–17 lfts. to 4 in. long: fls. about ⅕ in. across, the infl. glabrous. Newf. to N. C. and Mich.

amurénsis. Similar to *S. Aucuparia* but with acuminate more deeply toothed lfts. and orange-red frs. N. E. Asia.

Ària (*Pyrus Aria*). White Beam-Tree. To 50 ft.: lvs. simple, elliptic, to 5 in. long, doubly toothed, white-tomentose beneath: fls. ½ in. across, the infl. tomentose. Eu. Vars. with yellow lvs. are **aùrea, chrysophýlla** and **lutéscens.** Var. **Decaisneàna** (var. *majestica*) has larger lvs. Var. **latifòlia** is *S. latifolia* and var. **quercifòlia** is *S. hybrida.*

Aucupària (*Pyrus Aucuparia*). European M. Rowan. To 50 ft.: lvs. of 9–15 lfts. to 2 in. long: fls. ⅓ in. across, the infl. pubescent. Eu. Commonly planted. Some of the hort. vars. are: **edùlis,** fr. used for preserves; **fastigiàta,** of narrow-pyramidal habit; **lùteo-variegàta,** lvs. variegated with yellow; **péndula,** branches long and drooping; **xanthocárpa** (var. *Fifeana*), fr. orange-yellow.

Bollwylleriàna: *Sorbopyrus auricularis.*

Chamæméspilus. To 10 ft.: lvs. elliptic or oblong, to 3 in. long, toothed: fls. pink, the infl. tomentose. Eu.

commíxta. To 25 ft.: lvs. of 11–15 lfts. to 3 in. long: fls. ⅓ in. across, the infl. glabrous. Japan, Korea.

decòra. To 30 ft.: lvs. of 11–17 lfts. to 3 in. long: fls. ⅓ in. across, the infl. pubescent: fr. bright red, to nearly ½ in. across. Lab. to N. Y. and Minn.

díscolor (*S. pekinensis*). To 30 ft.: lvs. of 11–15 lfts. to 3 in. long, glaucous beneath: fls. ⅓ in. across, the infl. nearly glabrous: fr. white or yellowish. N. China.

doméstica (*Pyrus domestica. P. Sorbus*). Service-Tree. To 60 ft.: lvs. of 11–21 lfts. to 3 in. long, tomentose beneath: fls. ½ in. across, the infl. tomentose. S. Eu., N. Afr., W. Asia. Var. **pomífera** has apple-shaped fr. and **pyrífera** pear-shaped.

dumòsa. Shrub to 15 ft., winter-buds white-villous: lvs. of 11–14 lfts. to 2½ in. long, doubly serrate: infl. to 3 in. across, white-villous, fls. about ⅓ in. across. Alta. to Ore. south to Colo. and N. Mex.

europæa: listed name of unknown botanical standing; the plant may be *S. Aucuparia.*

Fólgneri. To 30 ft., young sts. hairy: lvs. simple, to 3½ in. long, elliptic-ovate, serrate, white-woolly beneath: infl. to 4 in. across: fr. red, to ½ in. diam. Cent. China.

heterophýlla: *Sorbaronia fallax.*

Hóstii. Hybrid between *S. Chamæmespilus* and *S. Mougeotii:* to 12 ft.: lvs. simple, tomentose beneath: fls. pinkish.

hýbrida (*S. quercifolia. Pyrus pinnatifida*). Hybrid between *S. Aucuparia* and *S. intermedia:* to 40 ft.: lvs. lobed or sometimes divided, tomentose beneath: fls. ½ in. across, the infl. pubescent. Var. **Meiníchii** (var. *neuillyensis*) has distinct lfts.

intermèdia (*S. scandica*). To 30 ft.: lvs. to 4 in. long, pinnately lobed to ⅓ or less the width, gray-tomentose beneath: fls. ½ in. across, the infl. tomentose. N. Eu.

lanuginòsa: *S. thuringiaca.*

latifòlia. Hybrid between *S. Aria* and *S. torminalis:* to

50 ft.: lvs. ovate, to 4 in. long, with shallow lobes, tomentose beneath: fls. ½ in. across, the infl. tomentose.

majéstica: *S. Aria* var. *Decaisneana.*

Mougeòtii. To 60 ft.: lvs. ovate or ovate-oblong, lobed, white-tomentose beneath. Mts. of Cent. Eu.

occidentàlis (*S. pumila*). Shrub to 10 ft.: lvs. of 7–11 lfts. to 2½ in. long, serrate near tip only, bluish-green: infl. to 3 in. across. B. C. to Ore. and Ida.

pekinénsis: *S. discolor.*

pohuashanénsis. Small tree: lvs. of 11–15 lfts. to 2½ in. long, pubescent beneath, with large persistent stipules: infl. tomentose. China.

pùmila: *S. occidentalis.*

quercifòlia: *S. hybrida.*

sambucifòlia. To 8 ft.: lvs. of 9–11 lfts. to 3 in. long, shining above: fls. ½ in. across, the infl. pubescent. N. Asia, Japan.

scándica: *S. intermedia.*

scopulìna. Shrub to 15 ft.: lfts. 11–14, oblong-lanceolate, about 2 in. long, acute: infl. villous. S. D. to B. C. south to New Mex. and Ariz.

sitchénsis. Shrub to 15 ft.: lfts. 9–13, elliptic to oblong-lanceolate, obtuse, coarsely serrate, glabrous: fr. bright red, to ⅜ in. across. Alaska to Ida. and Ore.

spùria: *Sorbaronia hybrida.*

thuringìaca (*S. lanuginosa*). Hybrid between *S. Aucuparia* and *S. Aria:* lvs. with 1–3 pairs of lfts.

torminàlis (*Pyrus torminalis*). Wild Service-Tree. To 50 ft.: lvs. ovate, to 5 in. long, with pointed lobes: fls. ½ in. across, the infl. tomentose. Eu., N. Afr., Asia Minor.

SÓRGHUM (*Holcus*, in part). *Gramineæ.* Tall coarse quick-growing broad-lvd. ann. and per. grasses native in warm parts of Old World, the spikelets borne in large terminal panicles which in some species mature into heavy grain-bearing heads or tassels; grown for grain and forage and for the syrup extracted from the stalks of *S. vulgare* var. *saccharatum.* The species are not clearly defined and there are many forms. See *Grasses.*

halepénse (*Andropogon halepensis. Holcus halepensis*). Johnson-Grass. Means-Grass. Aleppo-Grass. Per. to 6 ft., very leafy, with strong creeping rootstocks: lvs. to 2 ft. long and 1 in. wide: panicles loose, to 2 ft. long, the branches spreading. Medit. region but widely nat.—Grown for forage and pasture, mostly in the S.; becomes an invading weed.

nìgrum: *S. vulgare.*

sudanénse: *S. vulgare* var.

virgàtum (*Holcus virgatus*). Tunis-Grass. Ann.: panicles to 2 ft. or more long, very narrow and slender, spikelets awned. Afr.

vulgàre (*Andropogon Sorghum. Holcus Sorghum. S. nigrum*). Sorghum. Ann. to 12 ft. or more, often with juicy pith yielding syrup: lvs. to 2 ft. long and 2 in. wide: panicles variable, the spikelets large and broad and persistent at maturity. Probably Afr.; long cult. and the source of many races, some of which yield important grain as well as forage; one is broom-corn and one the sweet or syrup sorghum. Var. **caffròrum** (*Holcus caffrorum*). Kafir. Pith dry: panicles dense, oblong or cylindric, grains large. S. Afr. Var. **caudàtum** (*Holcus Sorghum* var. *caudatus*). Feterita. To 14 ft.: panicles very dense, oblong, grains large, white, yellow or red. Cent. Afr. Var. **Drúmmondii** (*Holcus Sorghum* var. *Drummondii*). Chicken-Corn. To 6 ft.: panicles to 16 in. long, the branches ascending, grains small, orange. Guinea. Var. **Dúrra** (*Holcus Durra. Holcus Sorghum* var. *Durra*). Durra. Pith dry: panicles ovate, recurved, grains large. Nile region. Var. **Róxburghii** (*Holcus Sorghum* var. *Roxburghii*). Shallu. Panicles oblong, becoming loose, grains small. Afr., India. Var. **saccharàtum** (*Holcus saccharatus. Holcus Sorghum* var. *saccharatus*). Sorgho, Sweet or Sugar S. Pith juicy and sweet, employed in the making of syrup. Var. **sudanénse** (*Holcus sudanensis*). Sudan-Grass. To 10 ft.: lvs. to 2 ft. long and ½ in. wide: panicles to 1 ft. long and 6 in. across, the branches ascending. Afr. Var. **téchnicum** (*Holcus Sorghum* var. *technicus*). Broom-Corn. Panicles to 2 ft. or more long, spikelets usually awned.

SORREL: *Rumex.* **Jamaica:** *Hibiscus Sabdariffa.* **-Tree:** *Oxydendrum arboreum.* **Wood-:** *Oxalis.*

SORROWLESS TREE OF INDIA: *Saraca indica.*

SORUS: a heap or cluster; the fruit-dots or -clusters of ferns (plural sori).

SOTOL: *Dasylirion.*

SOUR-BERRY: *Rhus integrifolia.* **-Wood:** *Oxydendrum arboreum.*

SOURSOP: *Annona muricata.*

SOUTHERNWOOD: *Artemisia Abrotanum.*

SOYBEAN: *Glycine Max.*

SPADIX: a thick or fleshy spike of certain plants, as the Araceæ, surrounded or subtended by a spathe.

SPANISH BAYONET: *Yucca aloifolia.* **Dagger:** *Yucca gloriosa.*

SPARÁXIS. Wand-Flower. *Iridaceæ.* Spring-blooming S. African cormous herbs, with narrow mostly basal lvs. and fls. in short spikes, the perianth-tube short. Cult. and treatment as for *Ixia.*

bulbífera. To 1 ft.: lvs. lanceolate, to 1 ft. long, usually 3-4: fls. yellow, solitary, perianth-tube to ½ in. long.

grandiflòra. To 1 ft.: fls. yellow or purple, 1 in. or more long. Var. **álba,** fls. white. Var. **atropurpùrea,** fls. dark purple.

Píllansii. Perhaps to 2 ft. or more: fls. soft rose with yellow center.

pulchérrima: *Dierama pulcherrima.*

trícolor. To 1½ ft.: fls. dark purple or yellow tinged with brown-purple or white with purple, having a yellow throat and dark blotch at base of each segm., 1 in. or more long.

tubiflòra: listed as light yellow.

SPARKLEBERRY: *Vaccinium arboreum.*

SPARMÁNNIA. *Tiliaceæ.* White-hairy trees and shrubs of Afr. with alternate toothed or lobed large lvs., white fls. in terminal umbels, and spiny capsular fr. See *Rehmannia* for another use of the name Sparmannia.

A few species are planted out-of-doors in the South and in the greenhouse, where they should be given a moderate temperature and plenty of air and light. Propagated by cuttings of the young shoots.

africàna. To 20 ft., often with many trunks: lvs. 5–7-angled, to 9 in. long, heart-shaped at base: fls. to 1½ in. across, white with yellow stamens: fr. ½ in. across. S. Afr. Var. **flóre-plèno** has double fls.

palmàta (*Entelea palmata*). Shrub: lvs. deeply 5-7-lobed: fls. purplish, in dense umbels. S. Afr.

SPÁRTIUM. *Leguminosæ.* Ornamental shrub native in S. Eu., and grown out-of-doors as far north as Cent. U. S., and on the Pacific coast. Propagated by seeds and greenwood cuttings under glass.

júnceum (*Genista juncea*). Spanish Broom. Weavers Broom. To 10 ft., with almost leafless rush-like branches: lvs. simple, to 1 in. long: fls. yellow, papilionaceous, fragrant, 1 in. long, in terminal racemes to 18 in. long: pods flattened, hairy, to 4 in. long. Var. **nànum,** a dwarf form, is listed.

multiflòrum: *Cytisus multiflorus.*

scopàrium: *Cytisus scoparius.*

SPARTOCYTISUS NUBIGENUS: *Cytisus fragrans.*

SPATHE: the bract or leaf surrounding or subtending a flower-cluster or a spadix; it is sometimes colored and flower-like, as in the calla (Zantedeschia).

SPATHIPHÝLLUM. *Araceæ.* Trop. American nearly trunkless herbs, having oblong lvs. with strong midribs and sheathing petioles, and bisexual fls. on erect densely-fld. spadices which are shorter than the spathes; grown as foliage plants in a warm greenhouse.

cándidum: *S. Patinii.*

cannæfòlium. Lvs. to 20 in. long and 7 in. wide, tapering at base, petioles 6–18 in. long: spathe green outside and whitish within, 3–8 in. long; spadix greenish-yellow. W. Indies.

Clèvelandii: listed name of unknown botanical standing.

cochlearispàthum (*S. heliconiifolium*). Lvs. to 2½ ft. long and 10 in. wide, thin, the margin often slightly wavy, the petioles to 2½ ft. long: spathes to 10 in. long, the spadix whitish. Mex., Cent. Amer.

floribúndum. Lvs. to 6 in. long and 2½ in. wide, unequal sided, dark green above and paler beneath, the petioles to 6 in. long: spathes to 2½ in. long, white, the spadix greenish-yellow or white. Colombia.

heliconiifòlium: *S. cochlearispathum.*

Patínii (*S. candidum*). Lvs. to 10 in. long and 2½ in. wide, the petioles to 1 ft. long: spathes about 3 in. long, whitish. Colombia.

SPATHÒDEA. *Bignoniaceæ.* Evergreen trees of trop. Afr. with pinnate lvs., bell-shaped orange-red or scarlet fls. in terminal racemes or panicles, the calyx split and sheath-like, and woody capsular frs.

One species (*S. campanulata*) is grown as a street tree in the tropics and sometimes in southern United States. It requires fertile well-drained soil for best results but grows under many conditions. Propagated by seeds or cuttings.

campanulàta. To 70 ft.: lvs. of 9–19 ovate-lanceolate entire nearly glabrous lfts. to 4 in. long: fls. scarlet, 4 in. long, with leathery calyx 2½ in. long: fr. 8 in. long and 2 in. across.—Showy tree.

nilótica. Much branched, to 20 ft., branchlets pubescent: lvs. of 9–15 lfts., ovate-oblong, to 4 in. long, densely pubescent beneath, entire, leathery: corolla as in above, calyx to 2 in. long.

SPATHOGLÓTTIS. *Orchidaceæ.* Old World terrestrial orchids with inconspicuous pseudobulbs bearing 1 to several plaited lvs. and infl. rising from below the pseudobulb: fls. rather large, in racemes, the petals often broader than the sepals; lip 3-lobed. Grown in a warm greenhouse; see *Orchids.*

Vieillárdii. Lvs. to 40 in. long: scape to 24 in. high, many-fld. above; fls. 2 in. across; sepals and petals whitish to pale lilac; lip with orange-brown side lobes and lilac mid-lobe. Sept.–Nov. Oceania.

SPATHYEMA: *Symplocarpus.*

SPATTERDOCK: *Nuphar.*

SPATULARIA: *Saxifraga.*

SPATULATE, SPATHULATE: oblong with the basal end attenuated; somewhat spoon- or ladle-shaped.

SPEARMINT: *Mentha spicata.*

SPECIES (the word is either singular or plural). A kind of plant or animal distinct from other kinds in marked or essential features, that has good characters of identification, and may be assumed to represent in nature a continuing succession of individuals from generation to generation.

The term is incapable of exact definition; it is only by long practice in systematic botany or zoölogy that a person arrives at a defensible conception of species-lines, and these persons become the authorities. Certain species, as sassafras, orchard-grass, Madonna lily, are well-marked and clearly definable, whereas others may be so variable that the species is difficult to diagnose with clearness. Plants that to one person constitute a single species may to another person represent two or more species; there is no absolute criterion.

The species is the primary or fundamental concept in the understanding of the forms of life. It is the unit in classification. Species are combined into genera (see *Genus*), and variations or subordinate forms of them are varieties (see *Variety*). Botanical binomial nomenclature begins with Species Plantarum (Species of Plants) of Linnæus published in 1753. The name of a species is two words, one representing the genus or group and the other identifying the particular kind or member of the group. Thus there are some 300 species of violets, all of the genus *Viola;* the florists violet is named *Viola odorata,* the horned violet *V. cornuta,* the birds-foot violet *V. pedata;* in this case *odorata, cornuta, pedata* are *specific* or *species-names.*

Authors differ on the limits or definition of genera, and thus it happens that a species may be placed in different genera by different writers, but the original specific name normally follows it in whatever genus it may rest; thus the peach was *Amygdalus Persica* to Linnæus and this disposition of it is followed by some of the contemporary authors; other authors prefer to place it in the genus with the other orchard stone-fruits, and it is then *Prunus Persica.* Some authors keep the genus Azalea separate, others unite it with Rhododendron; the pinxter-flower may therefore bear the name *A. nudiflora* or *R. nudiflorum.*

The number of species of plants is unknown. Of course the count depends to some extent on the varying definitions by different authors. The earth is yet only partially explored for the species of plants and animals. Among the seed-plants or spermatophytes ("flowering plants") probably upwards of a million specific names have been published; many of these names are duplicates or synonyms, but it is probably fair to assume that more than half of them represent separate species in nature. The species of plants have originated under natural conditions, yet some of them have been recognized only after having been introduced to cultivation; it is not yet agreed whether any plants distinct and permanent enough to be called species have been produced as the direct results of the processes of cultivation: knowledge of this subject is yet scant and imperfect. See *Cultigen, Indigen.*

SPECULÀRIA. *Campanulaceæ.* Several ann. herbs, mostly in the northern hemisphere, differing from Campanula chiefly in the wheel-shaped corolla, long calyx-tube, and other technical floral characters. Grown in the flower-garden, rock-garden and for edgings. Propagated readily by seeds.

pentagònia (*Campanula pentagonia*). To 1 ft., hairy: lvs. obovate to linear-lanceolate, nearly entire: fls. blue, solitary, the calyx-lobes spreading. Asia Minor.

perfoliàta. To 1½ ft., hairy: lvs. round-cordate, ½ in. long, wavy-toothed, clasping: fls. blue. N. Amer.—Weedy plant but attractive in good moist land not too much exposed to sun.

Spéculum-Véneris (*S.* and *Campanula Speculum*). VENUS LOOKING-GLASS. To 15 in., nearly glabrous: lvs. oblong, to 1½ in. long, toothed: fls. violet-blue or white, sometimes double, ¾ in. across, 1–3 together, the calyx-lobes reflexed. Eu., N. Afr., W. Asia.

SPEEDWELL: *Veronica.*

SPEGAZZÍNIA. *Cactaceæ.* A small S. American genus perhaps not wholly distinct from Parodia, but distinguished from it by its swollen rootstock which is separated from the plant-body by a slender constriction and its stouter spines.

Fidaiàna. Solitary, becoming cespitose or branched by means of offshoots from upper areoles, globose to ovoid, about 2½ in. diam.; ribs usually 13–15, high, tubercled, areoles large and woolly; spines pale yellow to blackish, flexuous, radials 9, to 1¼ in. long, centrals 3–4, to 2 in. long: fls. deep yellow, to 1¼ in. long, segms. obtuse. Bolivia.

Neumanniàna. Differs from *S. Fidaiana* in its fls. orange-red and segms. acute. Bolivia.

SPELT: *Triticum Spelta.*

SPENCÈRIA (sometimes, but not originally, spelled Spencera). *Rosaceæ.* A small and perhaps monotypic genus from W. China, differing from Agrimonia in having about 30–40 stamens, a spineless but pilose calyx-tube, a funnel-shaped involucre of 2 connate bracts, and stigmas filiform not capitate. **S. ramalàna.** Per. herb to 1 ft. high, sts. many and erect from branched rhizomes, silvery-pilose throughout: basal lvs. pinnate, lfts. about 12, broadly elliptic, to ⅝ in. long, 2-toothed; st.-lvs. of 1–2 pairs of lfts. or simple, acute: fls. bright golden- to reddish-yellow, about 1 in. across, on pedicels to 1¾ in. long, in stiff loose racemes: fr. a subglobose hair-tufted achene to ⅛ in. long.

SPÉRGULA. *Caryophyllaceæ.* Small ann. herbs in temp. regions of the world: lvs. awl-shaped, usually clustered in the axils: fls. white, in terminal cymes. Spurry is sometimes grown for forage and as a green-manure crop on poor sandy soils.

arvénsis. Differs from *S. sativa* in being bright green, not sticky, and seeds with whitish papillæ.

pilífera: *Sagina subulata.*

satìva. Spurry. Dull green, sticky, to 1½ ft.: lvs. linear, in clusters of 6–8 at the nodes: fls. small, numerous; seeds not papillate. Eu.; sometimes escaped in E. U. S.

SPERGULÀRIA (*Tissa*). *Caryophyllaceæ.* Low ann. or per. herbs growing in salt marshes or shores, with linear or bristle-like lvs. and small pink or whitish fls. in terminal cymes.

azoroìdes: listed name of pink-fld. form to 10 in. high.

marìna: *S. salina.*

salìna (*S.* and *Arenaria marina*). To 8 in., ann. or bien.: lvs. cylindrical, fleshy, to 1½ in. long: fls. pink. N. Amer., Eu., N. Asia.

SPHÁCELE. *Labiatæ.* Shrubs or subshrubs native in Calif., Hawaii and S. Amer., one offered in Calif.: fls. solitary in axils of bracts, forming leafy racemes; corolla with 4 small lobes and one larger lobe. The name is pronounced in three syllables.

calýcina. To 5 ft., pubescent: lvs. ovate or oblong-ovate, to 4 in. long, toothed: fls. white or pinkish, about 1 in. long; calyx inflated in fr. Calif.

SPHÆRÁLCEA (*Phymosia*). Globe-Mallow. *Malvaceæ.* Herbs or sometimes woody, mostly of warm regions in Amer. and Afr., with alternate usually angled or lobed lvs., lilac to purple and red fls. solitary or clustered, and many carpels in a ring around an axis; grown in the garden, and sometimes under glass. Propagated by seeds or greenwood cuttings.

acerifòlia (*Phymosia acerifolia*). Per. to 3 ft., gray-pubescent: lvs. maple-like, deeply 5-lobed: fls. rose, 2 in. across, in spike-like clusters, calyx-lobes ovate, briefly acuminate. Wash. to Calif.

ambígua. Per. to 3 ft.: lvs. cordate or orbicular, often somewhat 3–5-lobed: fls. rose- or brick-red, 1½ in. across, in racemes. Deserts, Calif., Ariz., Utah.

angustifòlia. Per. to 6 ft.: lvs. lanceolate, toothed: fls. pink or red, 1 in. across in clusters. Mex.

cisplatìna (*Malva miniata*). Subshrub to 4 ft.: lvs. 3-lobed, the middle lobe the longest: fls. brick-red, to 1¼ in. across, in axillary clusters. La Plata.

coccínea: *Malvastrum coccineum.*

cuspidàta. Per. to 3 ft., pubescent: lvs. lanceolate or linear-lanceolate, slightly toothed: fls. pink or red, ½ in. across, in clusters. Colo. to Mex.

fasciculàta: *Malvastrum fasciculatum.*

Munroàna. Per. to 2 ft.: lvs. obscurely 3-lobed: fls. scarlet or rose, 1 in. across, in clusters. W. N. Amer.

remòta (*Phymosia remota*). Per. to 4½ ft., bushy, densely pubescent: lvs. maple-like, 5–7-lobed: fls. rose, to 2 in. across, in spike-like clusters, calyx-lobes long and narrowly acuminate. Ill.

rivulàris (*Phymosia rivularis*). Per. to 6 ft.: lvs. maple-like, 5–7-lobed: fls. pink or white, 2 in. across. Alta. to Colo. and Nev.

ròsea (*S. vitifolia*). Similar to *S. umbellata* but with bractlets united below the middle rather than distinct, and longer fls. Guatemala.

subrhomboídea. Per. to 1½ ft.: lvs. rhombic, 3-parted halfway down, grayish-green: fls. scarlet, ⅛ in. long, in dense panicles. Utah.

umbellàta. Shrub or tree to 15 ft.: lvs. rotund, shallowly 7-lobed: fls. scarlet, white at base, 2 in. across, in clusters. Mex.

vitifòlia: *S. rosea.*

SPHÆROGYNE LATIFOLIA: *Tococa platyphylla.*

SPHÆROSTIGMA: *Œnothera.*

SPHALMÁNTHUS. *Aizoaceæ.* Sts. creeping: lvs. opposite, sessile, semi-cylindrical: fls. in few-fld. cymes, stalked, petals numerous in several rows; stigmas 4–5. Allied to Mesembryanthemum; S. Afr.

longispínulus (*M. longispinulum. Aridaria longispinula*). Lvs. to 1 in. long and ⅙ in. wide, dotted: fls. yellow, 1½ in. across, on stalks to 2 in. long.

SPHENOGYNE: *Ursinia.*

SPHENOSCIADIUM: *Selinum.*

SPICE-BUSH: *Lindera Benzoin.*

SPIDER-FLOWER: *Cleome spinosa.*

SPIDERWORT: *Tradescantia.* **Family:** *Commelinaceæ.*

SPIGÈLIA. *Loganiaceæ.* American herbs with opposite entire lvs., tubular red, yellow or purplish fls. in one-sided cymes, and capsular frs.; one species is sometimes transplanted to the border.

marilándica. Pink-Root. Per. to 2 ft.: lvs. ovate, to 4 in. long, sessile: fls. red outside, yellow inside, to 2 in. long. May–July. N. C. to Fla. and Tex.

SPIKE: compact more or less simple indeterminate mostly elongated cluster with flowers sessile or nearly so.

SPIKENARD, AMERICAN: *Aralia racemosa.*

SPILÁNTHES. *Compositæ.* Mostly creeping or spreading herbs with opposite toothed lvs. and terminal long-stalked heads of yellow or white ray-fls. and yellow disk-fls.; pappus of awns. One species is grown for the lvs. which give a pungent flavor to salads.

oleràcea. Diffuse: lvs. broadly ovate, wavy-toothed: heads ovoid, without ray-fls., greenish-yellow, to 1 in. long, the involucre-bracts oblong. Aug.–Oct. Tropics.—This plant has apparently been grown as *S. alba* but that species has white fls. and the involucre-bracts are narrow.

SPINACH (*Spinacia oleracea*). A better understanding of the value of spinach in the diet is probably the most important factor responsible for the more than seven-fold increase in the acreage of this vegetable in the last twenty years. Texas now contributes about two-thirds of the present acreage grown for shipment in a fresh condition. See *Spinacia.*

Spinach is essentially a cool-season crop. The plants run quickly to seed at high temperatures and under a long daily light period. Close crowding in the row contributes to the early development of the seed-stalks.

Culture of spinach is possible during the winter where the weather is mild; elsewhere, it is grown as a spring and fall crop. The seed is sown in drills 10 to 15 inches apart. Large scale commercial plantings are seldom thinned, the stand being adjusted by the rate of seeding. Stocky plants are obtained when they are thinned to a spacing of 4 to 5 inches in the row. The plants are harvested by cutting the stem near the ground level, before seed-stalk elongation commences.

New Zealand spinach (*Tetragonia expansa*) does well in hot weather. The seed should be soaked before planting. When the plants are spaced 1 to 2 feet in rows 3 to 4 feet apart, the much branched growth spreads out to form a mat over the ground. The apical 3 to 4 inches of the branches are cut off and cooked like the true spinach.

SPINACH-RHUBARB: *Rumex abyssinicus.*

SPINÀCIA. Spinach. *Chenopodiaceæ.* Asian annuals with alternate lvs. and small unisexual fls., the pistillate axillary and the staminate in terminal spikes or panicles; one species commonly grown for greens. **S. oleràcea.** Prickly-seeded S. To 2 ft.: lower lvs. broadly ovate to orbicular, lobed at base and sometimes on sides, st.-lvs. narrower: fr. or "seed" inclosed in a spiny caps.-like body. S. W. Asia. Var. **inérmis** (var. *glabra*), Round-seeded S., has spineless seeds. See *Spinach.*

SPINDLE-TREE: *Euonymus.*

SPINE: a strong and sharp-pointed woody body mostly arising from the wood of the stem, representing a branch or a separate outgrowth.

SPINESCENT: more or less spiny.

SPINOVITIS: *Vitis Davidii.*

SPIRÆA. Spirea. *Rosaceæ.* Attractive deciduous shrubs with alternate simple lvs., white or pink fls. in umbel-like racemes, corymbs or panicles, and fr. a dehiscent follicle; native in the northern hemisphere and popular ornamental subjects for lawn and landscape planting.

Spireas thrive in any good land but require plenty of moisture and sunny exposure. Propagated by seeds sown as soon as ripe or stratified, by cuttings of green wood in summer under glass, by cuttings of mature wood and some species by layers. There are many horticultural forms and hybrids. The species are hardy to New York City and beyond unless otherwise stated.

The planter may find a wide range of adaptable white-flowered and pink-flowered shrubs among the spireas. If allowed to take their natural growth, without shearing, they soon make attractive masses with side branches arching or drooping to meet the ground in good flowing lines. A baker's dozen of them are *S. prunifolia, Thunbergii, Vanhouttei, trilobata, crenata, hypericifolia, chamædryfolia, japonica, salicifolia, cantoniensis, Billiardii, tomentosa, Bumalda,* hardy and dependable over a wide range of country. Little pruning will be necessary, although *S. Thunbergii* and some others may be injured on the tips by winter and these parts may be cut back. The spring-flowering kinds, as *S. prunifolia, Vanhouttei, trilobata, crenata,* may be pruned after blooming, if at all; the summer-flowering kinds, as *S. Bumalda, Billiardii, japonica, salicifolia, tomentosa,* may be pruned in spring (if at all) to stimulate flower-bearing shoots of the season.

Àitchisonii: *Sorbaria Aitchisonii.*

álba. Meadowsweet. To 6 ft.: lvs. pubescent on veins beneath: fls. white, in elongated leafy pubescent panicles. June–Aug. N. Y. to Ga. and Miss.

albiflòra (*S. japonica* var. *alba*). To 2 ft.: lvs. glabrous: fls. white, in dense compound pubescent corymbs. July–Aug. Japan.

alpìna. Shrub to 4½ ft., twigs puberulous, angled: lvs. oblong-obovate to oblanceolate, to 1 in. long, obtuse to mucronulate, glabrous, entire: fls. ivory-colored, to ⅕ in. across, in small dense umbels. N. E. Asia to W. China.

amœna. To 6 ft.: lvs. pubescent on veins beneath: fls. white or pinkish, in corymbs to 4 in. across. July. Himalayas; needs protection N.

argùta. Hybrid between *S. Thunbergii* and *S. multiflora:* fls. white, in many-fld. umbels, borne profusely in May.

ariæfòlia: *Holodiscus discolor* var. *ariæfolius.*

Arúncus: *Aruncus sylvester.*

assúrgens: probably *Sorbaria assurgens.*

astilboìdes: *Astilbe astilboides.*

aùrea: hort. name applied to golden-foliaged forms of several species.

bélla. To 3 ft., diœcious: lvs. nearly glabrous, glaucous beneath: fls. pink, in compound corymbs. June. Himalayas; not hardy N.

bethleheménsis: *S. latifolia.*

betulifòlia. To about 3 ft., sts. striped: lvs. elliptic, to 1½ in. long, obtuse, crenate-serrate: fls. white, in terminal simple corymbs. Siberia to Japan.

Billiárdii (*S. californica. S. Lenneana. S. eximia*). Hybrid between *S. Douglasii* and *S. salicifolia:* to 6 ft : lvs. gray-tomentose beneath when young: fls. bright pink, in dense pubescent panicles. July–Aug. Vars. **álba** and **ròsea** are listed.

blánda. Hybrid between *S. chinensis* and *S. cantoniensis:* lvs. gray-tomentose beneath: fls. white, in pubescent umbels.

Blùmei (*S. rupestris*). To 5 ft.: lvs. blue-green beneath, glabrous: fls. unisexual, white, in many-fld. umbels. June. Japan, Korea; not hardy N.—See *S. trilobata.*

brachýbotrys (*S. pruinosa*). Hybrid between *S. canescens* and *S. Douglasii:* lvs. gray-tomentose beneath: fls. pink, in dense tomentose panicles.

bracteàta: *S. nipponica.*

bullàta (*S. crispifolia*). To 1½ ft.: lvs. nearly glabrous, thick and bullate: fls rose, in corymbs. July–Aug. Japan.

Bumálda (*S. pumila*). Hybrid between *S. japonica* and *S. albiflora:* to 2 ft.: lvs. glabrous: fls. deep pink to white, in flat corymbs. Anthony Waterer, with bright carmine fls., is the common form. Var. **Frœbelii** (*S. Frœbelii*) is taller, with bright crimson fls. Other listed vars. are **críspa** and **Wallùfii.**

cæspitòsa: *Petrophytum cæspitosum.*

califórnica: *S. Billiardii.*

callòsa: *S. japonica.*

camtschática: *Filipendula camtschatica.*

càna. To 3 ft. or more: lvs. grayish-pubescent on both sides: fls. white, in dense pubescent umbels. May. S. Eu.

canéscens (*S. flagelliformis. S. rotundifolia*). To 10 ft.: lvs. grayish-green, pubescent beneath: fls. white, in dense pubescent corymbs. July. Himalayas; may need protection N.

cantoniénsis (*S. Reevesiana*). To 5 ft.: lvs. bluish-green and glabrous beneath: fls white, in dense glabrous umbels. June. China, Japan. Var. **lanceàta** has lanceolate lvs. and double fls.

capitàta: *Physocarpus capitatus.*

carpinifòlia: *S. latifolia.*

chamædryfòlia (*S. flexuosa*). To 5 ft.: lvs. bright green, nearly glabrous: fls. white, in umbel-like glabrous corymbs. May-June. N. E. Asia. Var. **ulmifòlia** (*S. ulmifolia*) has broader doubly toothed lvs.

chinénsis. To 5 ft.: lvs. yellow-tomentose beneath: fls. white, in many-fld. densely pubescent umbels. May. China; not hardy N.

cinèrea. Hybrid between *S. hypericifolia* and *S. cana:* lvs. pubescent, usually entire: fls. white, in umbels.

cineráscens: *Petrophytum cinerascens.*

confùsa: *S. media.*

conspícua. Hybrid between *S. albiflora* and probably *S. latifolia:* to 3 ft.: lvs. pubescent only on veins beneath: fls. pink, in clusters forming a broad-pyramidal panicle.

corymbòsa. To 3 ft. or less: lvs. bluish-green beneath and nearly glabrous: fls. white, in slightly pubescent corymbs to 4 in. across. June–July. N. Y. to Ga. and Ky.

crenàta. To 3 ft.: lvs. grayish-green, becoming glabrous, 3-nerved: fls. white, in dense pubescent umbels. May. S. E. Eu., Asia.

crispifòlia: *S. bullata.*

dasyántha. Lvs. white-tomentose beneath: fls. whitish, infl. grayish-tomentose. China.

Dàvidii: probably *Astilbe Davidii.*

decúmbens. Procumbent, to 10 in.: lvs. glabrous, elliptic-oblong, to 1¼ in. long, ends acute, toothed: fls. white, in corymbs. June. S. Eu.

densiflòra. To 2 ft.: lvs. pale beneath, toothed above middle: fls. rose, in dense glabrous corymbs to 1½ in. across. June. B. C. to Ore. and Wyo.

digitàta nàna: hort. name.

díscolor: *Holodiscus discolor.*

Doúglasii. To 8 ft.: lvs. white-tomentose beneath: fls. deep rose, in long narrow tomentose panicles. July–Aug. B. C. to Calif. Var. **ròsea** is listed.

exímia . *Billiard i.*

Filipéndula: *Filipendula hexapetala.*

flagel'ifórmis: *S. canescens.*

flexuòsa: *S. chamædryfolia.*

Fontenàysii. Hybrid between *S. canescens* and *S. salicifolia:* to 6 ft.: lvs. pale and nearly glabrous beneath: fls. white, in pubescent panicles. June–July.

Fórtunei: *S. japonica* var.

Fóxii. Hybrid between *S. corymbosa* and *S. japonica:* lvs. glabrous: fls. white or pinkish, in pubescent corymbs.

Frœbelii: *S. Bumalda* var.

gemmàta. To 10 ft.: lvs. gray-green beneath entire: fls. white, in glabrous umbels. May. China.

gigantèa: *Filipendula camtschatica.*

Héndersonii: *Petrophytum Hendersonii.*

Hénryi. To 8 ft.: lvs. pubescent beneath: fls. white in loose pubescent corymbs. June. China. Var. **notábilis** has larger corymbs.

Hoòkeri: hort. name of uncertain application.

Húmboldtii: *Aruncus sylvester.*

hypericifòlia. To 6 ft.: lvs. grayish-green, nearly glabrous: fls. white, in sessile umbels. Apr.–May. S. E. Eu., Asia. Var. **nàna** (*S. nana*) is a low compact form. Var. **obovàta** (*S. obovata*) has obovate lvs.

idahoénsis. To 7 ft. or more: lvs. elliptic to ovate-elliptic, to 4 in. long, sharply serrate and often doubly so, glabrous: fls. rose-pink, in elongate panicles. Ida.

japónica (*S. callosa*). To 6 ft.: lvs. pale beneath, pubescent only on veins: fls. pink, in compound pubescent corymbs. June–July. Japan. Var. **álba** botanically is *S. albiflora* but plants so named in the trade may be *S. japonica* var. *ovalifolia.* Var. **Fórtunei** (*S. Fortunei*) is taller, with glabrous lvs. and pink fls. Var. **macrophýlla,** lvs. to 6 in. long, bullate. Var. **ovalifòlia,** fls. white. Var. **rubérrima,** fls. deep pink.

lævigàta: *Sibiræa lævigata.*

lanceolàta: name referable either to *S. alba* or *S. cantoniensis.*

latifòlia (*S. bethlehemensis. S. carpinifolia*). To 5 ft.: lvs. glabrous: fls. white or pinkish, in glabrous panicles. June–Aug. Newf. to N. C.

Lenneàna: *S. Billiardii.*

Lindleyàna: *Sorbaria tomentosa.*

lobàta: *Filipendula rubra.*

longigémmis. To 5 ft., twigs glabrous: lvs. ovate- to oblong-lanceolate, to 2½ in. long, acuminate, glabrous, margins doubly or incisely serrate, teeth gland-tipped: fls. white, to ¼ in. across, in loose corymbs to 3 in. across. N. W. China.

lùcida. To 3 ft.: lvs. glabrous, shining above: fls. white, in flat glabrous corymbs to 4 in. across. June–July. B. C. to Ore. and S. D.

macrothýrsa. Hybrid between *S. Douglasii* and *S. latifolia:* lvs. elliptic to obovate, finely pubescent beneath: fls. bright pink, in dense panicles.

Margarìtæ. Hybrid between *S. japonica* and *S. superba:* to 5 ft.: lvs. pale beneath and pubescent only on veins: fls. bright rose, in leafy pubescent corymbs. July.

mèdia (*S. confusa*). To 5 ft.: lvs. slightly pubescent: fls. white, in many-fld. glabrous umbel-like racemes. May. Eu., Asia. Var. **móllis** has lvs. more pubescent.

Ménziesii. To 5 ft.: lvs. pale beneath, pubescent only on veins: fls. rose, in dense narrow pubescent panicles. June–Aug. Alaska to Ore. Var. **macrothýrsa** is *S. macrothyrsa.* Var. **triúmphans** is probably *S. Billiardii.*

Miyàbei. To 3 ft.: lvs. glabrous, to 2 in. long, ovate to ovate-oblong, acute, doubly incised-serrate: fls. white, in pubescent compound corymbs. June. Japan.

mollifòlia. To 7 ft., twigs pubescent becoming glabrous, branches arching and angled: lvs. elliptic-oblong to obovate, to ¾ in. long, acute, silky-pubescent, 2–3-toothed at apex or entire: fls. white, to ⅓ in. across, in dense umbels to 1 in. across. W. China.

multiflòra. Hybrid between *S. crenata* and *S. hypericifolia:* fls. white, before the lvs.

nàna: *S. hypericifolia* var.

Neẁmannii: listed name for dwarf form.

Nicoudiértii: *S. pikoviensis.*

nippónica (*S. bracteata*). To 8 ft.: lvs. blue-green beneath, glabrous: fls. white, in many-fld. umbel-like racemes. June. Japan. Var. **rotundifòlia** has larger lvs. and fls.

Nobleàna: *S. sanssouciana.*

Nórmandii: a dwarf form of *S. Bumalda*, turning brilliant scarlet in autumn.

nòtha. Hybrid between *S. corymbosa* and *S. latifolia:* lvs. nearly glabrous: fls. white or pinkish, in glabrous panicles.

nudiflòra. Hybrid between *S. amœna* and *S. chamædryfolia* var. *ulmifolia:* lvs. nearly glabrous: fls. pinkish-white, in pubescent corymbs.

obovàta: *S. hypericifolia* var.

opulifòlia: *Physocarpus opulifolius.*

palmàta: *Filipendula palmata.*

paniculàta: listed name, sometimes given to hort. forms of *S. alba.*

pectinàta: *Luetkea pectinata.*

pentapétala: probably *Filipendula Ulmaria.*

pikoviénsis (*S. Nicoudiertii*). Hybrid between *S. crenata* and *S. media:* lvs. nearly glabrous: fls. white, in glabrous umbels.

pruinòsa: *S. brachybotrys.*

prunifòlia. Bridal Wreath. To 6 ft.: lvs. glabrous or pubescent beneath: fls. white, in few-fld. sessile umbels. Apr.–May. Korea, China. Var. **plèna** has lvs. shining above and double fls.

pubéscens. To 6 ft.: lvs. gray-tomentose beneath: fls. white, in many-fld. glabrous umbels. May. China.

pùmila: *S. Bumalda.*

pyramidàta. Hybrid between *S. lucida* and *S. Menziesii:* to 3 ft.: lvs. glabrous: fls. white or pinkish, in dense pyramidal panicles.

Reevesiàna: *S. cantoniensis.*

revirèscens. Hybrid between *S. amœna* and *S. japonica:* to 3 ft.: lvs. yellow-tomentose on veins: fls. rose, in loose tomentose corymbs.

richménsis: listed as a plant 3–5 ft. high with deep pink fls. in feathery plumes, and appears to be one of the *S. Billiardii* group.

richmonénsis: hort. name.

ròsea: *S. splendens.*

Rósthornii. To 6 ft.: lvs. pubescent on veins beneath: fls. white, in loose pubescent corymbs. June. China.

rotundifòlia: *S. canescens.*

rupéstris: *S. Blumei.*

salicifòlia. To 6 ft.: lvs. pale and glabrous beneath: fls. pink, in pyramidal pubescent panicles. June–July. S. Eu. to Japan. Var. **álba** is listed as having white fls.

sanssouciàna (*S. Nobleana*). Hybrid between *S. Douglasii* and *S. japonica:* to 5 ft.: lvs. pale and pubescent beneath: fls. rose, in dense pyramidal pubescent panicles. July–Aug.

Sargentiàna. To 6 ft.: lvs. pubescent beneath and slightly so above: fls. creamy-white, in pubescent corymbs 1½ in. across. June. China.

Schinabéckii. Hybrid between *S. chamædryfolia* and *S. trilobata:* lvs. glabrous: fls. white, in umbels.

semperflòrens. Hybrid between *S. japonica* and *S. salicifolia:* lvs. nearly glabrous: fls. rose, in much branched pubescent panicles.

sorbifòlia: *Sorbaria sorbifolia.*

spléndens (*S. rosea*). To 4 ft.: lvs. glabrous, ovate to elliptic-oblong: fls. rose, in slightly pubescent corymbs. June. Ore., Calif.; probably not hardy in N. E.

Stèvenii. To 2 ft., outer bark of twigs puberulent and ultimately exfoliating: lvs. elliptic to ovate, to 1¾ in. long, crenate along terminal third, ends usually rounded: fls. white, to ¼ in. across, in flat-topped infl. to 2 in. diam. Alaska and N. W. Territory.

supérba. Hybrid between *S. albiflora* and *S. corymbosa:* lvs. nearly glabrous: fls. pink, in terminal corymbs. June–July.

syringæflòra. Hybrid between *S. albiflora* and *S. salicifolia:* lvs. nearly glabrous beneath: fls. pink, in pyramidal pubescent panicles.

Thúnbergii. To 5 ft., twiggy: lvs. linear-lanceolate, glabrous: fls. white, in few-fld. sessile umbels. Apr.–May. Japan, China.

tomentòsa. Hardhack. Steeplebush. To 4 ft.: lvs. yellow-tomentose beneath: fls. rose or purple, in dense narrow tomentose panicles. July–Sept. N. S. to Ga. and Kans. Var. **álba** has white fls.

trichocárpa. Korean Bridal Wreath. To 6 ft.: lvs. glabrous: fls. white, in pubescent umbels. June. Korea.

trilobàta. To 4 ft.: lvs. pale and glabrous beneath, slightly 3–5-lobed: fls. white, in many-fld. umbels. May–June. Asia.—Sometimes cult. under the name *S. Blumei.*

Ulmària: *Filipendula Ulmaria.*

ulmifòlia: *S. chamædryfolia* var.

Vanhoùttei. Hybrid between *S. cantoniensis* and *S. trilobata:* to 6 ft.: lvs. bluish-green and glabrous beneath: fls. white, in many-fld. umbels. May–June.

Vanicékii: hort. name.

Veìtchii. To 12 ft.: lvs. pubescent beneath: fls. white, in dense pubescent corymbs. June–July. China.

venústa: *Filipendula rubra* var. *venusta.*

virginiàna. To 4 ft.: lvs. pubescent only on veins beneath: fls. white, in pubescent corymbs. June. Va. to N. C. and Tenn.

Wallùfii: *S. Bumalda* var.

Wilsonii. To 8 ft.: lvs. pubescent on both sides: fls. white, in dense glabrous corymbs. June. China.

SPIRÁNTHES (*Ibidium*). Ladies-Tresses. *Orchidaceæ.* Usually terrestrial orchids, of wide distribution, with slender sts. bearing lvs. mostly toward base and small fls. in more or less twisted terminal spikes; sepals free or united with petals; lip usually entire, and spurless. Grown in shady locations out-of-doors; see *Orchids.*

brevifòlia: *S. longilabris.*

cérnua. Nodding L. To 22 in. high: lvs. linear to linear-lanceolate, to 10 in. long: spike compact, to 6¾ in. long; fls. white, more or less nodding, to nearly ½ in. long. July–Dec. N. S. to Fla. and Minn. to New Mex.

grácilis. Slender L. To 30 in. high: lvs. basal, fugacious, to 2½ in. long and nearly 1 in. wide: spike spiral or one-sided, to about 10¼ in. long; fls. white with green lip, about ¼ in. long. June–Sept. (Apr.–May in S.). N. S. to Fla., Man. to Tex.

latifòlia: *S. lucida.*

longilàbris (*S. brevifolia*). To 24 in. high: lvs. linear to lanceolate, to about 4 in. long: spike to 5½ in. long; fls. white, to nearly ½ in. long. Oct.–Dec., May. N. C. to Fla. and Tex.

lùcida (*S. latifolia. S. plantaginea,* in part). Wide-leaved L. To 14 in. high: lvs. lanceolate, to 5 in. long: fls. white with pale yellow lip, ¼ in. long, in dense spikes to 4½ in. long. Que. to Va. and Wis.

pícta: *Sarcoglottis picta.*

plantagínea: *S. lucida.*

Romanzoffiàna. Hooded L. To 22 in. high: lvs. linear to oblanceolate, to 10¼ in. long: spike dense, three-ranked, to 4¾ in. long; fls. white to creamy-white, to almost ½ in. long. Newf. to N. Y., west to Alaska and Calif.

SPIREA: *Spiræa.* **Blue:** *caryopteris incana.* **False-:** *Sorbaria.* **Rock-:** *Holodiscus discolor.*

SPIRODELA: see *Lemma.*

SPIRONÈMA. *Commelinaceæ.* Mexican per. herb sometimes grown under glass or in the open in warm regions. **S. fràgrans.** Sts. fleshy, hanging: lvs. oblong-lanceolate, sheathing at base, parallel-veined: fls. white, fragrant, in clusters in terminal panicles.—Makes a good basket-plant. Sometimes cult. as *Tradescantia dracænoides.*

SPLEENWORT: *Asplenium.*

SPÓNDIAS. *Anacardiaceæ.* Trees grown for the edible fr., and sometimes for ornament, with compound lvs., small polygamous fls. borne in racemes or panicles, 8–10 stamens, 4–5-celled ovary, and fleshy drupaceous fr.; about 12 species distributed in the tropics.

In regions free from frost almost any soil is suitable, although good loams give best results. Propagated by cuttings and *S. cytherea* by shield-budding.

axillàris: *S. Mombin.*

cytherèa (*S. dulcis*). Vi-Apple. Otaheite-Apple. Ambarella. Tree to 60 ft.: lvs. of 11–23 oval to oblong entire or slightly toothed lfts. to 3½ in. long: fls. whitish, in large terminal panicles: fr. orange-yellow, oval or obovoid, with large seed. Society Isls.

dúlcis: *S. cytherea.*

lùtea: *S. Mombin.*

Mómbin (*S. lutea. S. axillaris*). Yellow Mombin. Hog-Plum. Tree to 60 ft.: lvs. of 7–17 ovate-lanceolate nearly entire lfts. to 4 in. long: fls. yellowish-white, in large terminal panicles: fr. yellow, ovoid, with large seed. Cosmopolitan in tropics.

purpùrea. Purple or Red Mombin. Spanish-Plum. Tree to 30 ft.: lvs. of 7–23 oblong entire or slightly toothed lfts. to 1½ in. long: fls. purple or greenish, in small axillary panicles: fr. yellow to deep red, obovoid, with large stone. Trop. Amer.

Solándri: *Pleiogynium Solandri.*

SPORANGIUM: a spore-case; a sac bearing spores.

SPORE: a simple reproductive body, usually composed of a single detached cell, and containing no embryo; term employed particularly (in systematic botany) in the pteridophytes and lower orders.

SPRÀGUEA. *Portulacaceæ.* Per. herbs of W. N. Amer., with mostly basal fleshy lvs. and fls. in umbels composed of scorpioid spikes borne on scape-like peduncles; suitable for the rock-garden.

múlticeps. Pussy-Paws. Similar to *S. umbellata* but smaller, to 6 in. high, the rose-purple fls. in dense heads. Wash. to Wyo.

umbellàta (*Calyptridium umbellatum*). To 1 ft.: lvs. spatulate: fls. white or pinkish. Mts., B. C. to Calif.

SPREADING: standing outward, or horizontally away from the axis.

SPREKÈLIA. *Amaryllidaceæ.* Mexican bulbous herb grown in the greenhouse and out-of-doors in warm climates; it is half-hardy. **S. formosíssima** (*Amaryllis formosissima*). Jacobean- or St.-James-Lily. To 1 ft.: lvs. linear, with fls.: fls. bright crimson, to 4 in. long, the 3 upper segms. erect and narrow, the 3 lower ones rolled into horizontal cylinder for part of their length; spring and summer. For cult. see *Amaryllis.*

SPRING BEAUTY: *Claytonia.* **Gold:** *Lomatium utriculatum.*

SPRUCE: *Picea.* **Bigcone-:** *Pseudotsuga macrocarpa.* **Hemlock-:** *Tsuga.*

SPUR: a tubular or sac-like projection from a flower, as of a petal or sepal; it usually secretes nectar.

SPURGE: *Euphorbia, Pachysandra.*

SPURRY: *Spergula sativa.*

SPYRÍDIUM. *Rhamnaceæ.* Australian shrubs with alternate simple lvs. and fls. mostly in small sessile heads surrounded by imbricated dry brown bracts; intro. in Calif.

globulòsum. Tall shrub: lvs. ovate to oblong, to 1½ in. long, leathery, white-tomentose beneath: heads almost globular, many in dense corymbs.

SQUASH. Word of American Indian origin, applied popularly to various kinds of edible fruits of the genus Cucurbita (which see). In the interest of clarity its application is sometimes limited to *Cucurbita maxima,* comprising the autumn and winter squashes such as Hubbard, Bay State, Mammoth or Chile, Warren, Essex, and the true turbans, although not so restricted by the aborigines. See *Pumpkin;* also *Eggplant* for Guinea squash.

SQUAW-BERRY: *Mitchella repens.* **-Root:** *Carum Gairdneri.*

SQUILL: *Scilla.*

SQUIRREL-CORN: *Dicentra canadensis.*

STÀCHYS. Betony. Woundwort. *Labiatæ.* Widely distributed herbs or rarely shrubs with purplish, scarlet, pale yellow or white, 2-lipped fls. arranged in 2–many-fld. whorls, either axillary or in terminal spikes. A few species are grown for ornament in borders and one (*S. Sieboldii*) has been cult. somewhat for the edible subterranean tubers.

Alopecùros (*Betonica Alopecuros*). To 1½ ft., ascending, villous throughout: lvs. ovate to ovate-lanceolate, blade to 3½ in. long, petiole 1–8 in. long, margins crenate-serrate: fls. yellow, in dense whorls of 20–30 forming spikes to 4 in. long and 1 in. diam. Mts. of E. France, Italy and S. Cent. Eu.

alpìna. Per. to 3½ ft.: lvs. cordate-ovate: fls. dark purple-red. S. Eu.

ánnua. Branching ann. 1 ft. or less high: lvs. ovate to lanceolate, to 1½ in. long: fls. white, with yellowish under lip and throat spotted purple, about ½ in. long. Eu.

Betónica: *S. officinalis.*

ciliàta. Per. to 6 ft., slightly hairy: lvs. ovate to oblong, to 6 in. long, coarsely toothed: fls. red-purple, to 1 in. long. in spikes to 8 in. long. B. C. to Ore.

coccínea. Per. to 2 ft., pubescent: lvs. ovate-lanceolate, to 2 in. long: fls. scarlet, 1 in. long. Tex., Ariz.

córsica. Procumbent ann., pubescent: lvs. ovate, ½ in. long, very obtuse: fls. pinkish-white, to ¾ in. long. Medit. region.

floridàna. Per. with tuberous slender rootstocks, to 18 in., slender: lvs. oblong, to 1 in. or more, mostly cordate or rounded at base, crenate: fls. light lilac, in separated whorls. Fla.

germánica. White-woolly per. to 4 ft.: lvs. ovate-lanceolate to lanceolate, to 5 in. long, cordate at base: fls. rose-purple to white, small. Eu., Asia.

grandiflòra (*S. rosea. Betonica rosea, spicata* and *grandiflora*). Hardy per. to 3 ft., pubescent: lvs. broad-ovate, the lower very long-petioled: fls. violet, 1 in. or more long. Eu., Asia Minor. Var. **robústa,** fls. rosy-pink, in spikes 3 in. long. Var. **supérba,** fls. intense mauve or purple-violet, or white in the form known as *Betonica superba alba.* Var. **variegàta** is listed.

ibérica. Per. to 15 in., pilose: lvs. oblong to oblong-linear, obtusely serrate toward acute apex: fls. rose-pink to purple, corolla longer than calyx, in whorls of 6–10. Asia Minor.

lanàta. Lambs-Ears. Hardy per. to 1½ ft., densely soft-white-woolly: lvs. oblong: fls. purple, small. Caucasus to Persia.—Valuable as a bedding plant.

lavandulæfòlia. Dwarf subshrub with ascending or procumbent branches: lvs. oblong-lanceolate, entire, gray-pubescent: fls. rose-purple. Asia Minor.

officinàlis (*S. Betonica. Betonica officinalis*). Hardy per. to 3 ft.: lvs. ovate-oblong to oblong-lanceolate: fls. purple, ½ in. long, in dense whorls forming an oblong spike. Eu., Asia Minor.—*S. Betonica alba, albiflora* and *grandiflora* are trade forms.

ròsea: *S. grandiflora.*

scárdica. Sts. erect or ascending: lvs. oblong-lanceolate: fls. cream-colored suffused with rose, anthers purple, scarcely longer than calyx. Greece.

sericea. Tall herbaceous per., silky-hairy: lvs. ovate or oblong, cordate, green above, white beneath: fls. pink spotted with purple, about ½ in. long. Himalayas and N. Asia.

Sièboldii (*S. tuberifera*). Chorogi. Chinese or Japanese Artichoke. Knotroot. Crosnes du Japan. Erect, hairy, to 1½ ft., with slender knotty white tubers produced in great numbers just under the surface of the soil, edible: lvs. ovate to ovate-lanceolate: fls. small, white or light red. China, Japan.—Once intro. to this country for its edible tubers, but perhaps not now grown.

sylvática. Per. to 2 ft.: lvs. ovate-cordate, to 4 in. long: fls. purple with lip white-spotted, ½ in. long. Eu., N. Asia.

tmòlea. Per. to 1 ft.: lvs. lanceolate or oblong-lanceolate, to 3 in. long: fls. yellow. Mt. Tmolus region, Asia Minor.

tuberífera: *S. Sieboldii.*

STACHYTARPHÈTA. *Verbenaceæ.* Herbs or shrubs of warm regions, with opposite or alternate toothed lvs. and white, blue, purple or red fls. borne in spikes. The name Stachytarpheta is conserved by the International Rules as against *Valerianoides.*

índica: *S. jamaicensis.*

jamaicénsis (*S. indica*). Ann. to 4 ft. or subshrubby: lvs. oblong or oval, to 3 in. long: fls. blue, ¼ in. across, in spikes to 1½ ft. long. Widely dispersed in tropics.

STACHYÙRUS. The only genus of *Stachyuraceæ.* Asian shrubs or trees with alternate toothed lvs., yellowish fls. in drooping axillary racemes in early spring before the lvs., and berry-like frs.

chinénsis. Very similar to *S. præcox* but with more acuminate lvs., spreading fls., longer style, and smaller frs. China.

prǽcox. Shrub to 12 ft.: lvs. ovate or ovate-lanceolate, to 5½ in. long: fls. bell-shaped, ⅓ in. long, in racemes to 3 in. long: fr. greenish-yellow, ⅓ in. across. Japan.

STAFF-TREE FAMILY: *Celastraceæ.*

STAGGER-BUSH: *Lyonia mariana.*

STAGGERWEED: *Delphinium tricorne.*

STALK: the stem of any organ, as the petiole, peduncle, pedicel, filament, stipe.

STAMEN: the pollen-bearing or male organ.

STAMINATE: having stamens and no good pistils; male.

STAMINODE, STAMINODIUM: a sterile stamen or a structure resembling such and borne in the staminal part of the flower; in some flowers (as in Canna) staminodia are petal-like and showy.

STANDARD: the upper and broad more or less erect petal of a papilionaceous or pea-like flower.

STANHÒPEA. *Orchidaceæ.* Epiphytic orchids native in trop. Amer., having pseudobulbs with 1 large plicate lf. and large fragrant odd fls. borne on 2–10-fld. lateral scapes which go through the potting material and appear at bottom of the orchid-basket; sepals and petals reflexed; lip saccate at base, commonly with 2 lateral horns in center, the front lobe simple or 3-lobed at apex. For cult. see *Orchids.*

Àmesiana: *S. Lowii.*

Bucéphalus. Lvs. to about 20 in. long: fls. in 4–7-fld. drooping racemes, tawny-orange spotted with crimson; sepals and petals reflexed; lip with 2 curved horns. Aug. Mex., Ecuador.

devoniénsis. Lvs. to about 11 in. long and 3 in. wide: infl. 2–3-fld.; fls. 4 in. across; sepals and petals pale yellow spotted with brown-red; lip white spotted with purple, dark purple at base. July–Aug. Mex.

ecornùta. Pseudobulbs ovoid, to 2 in. tall: lf. elliptical, to 20 in. long: infl. 2–3-fld., short; fls. about 3½ in. across; sepals and petals ivory-white; lip yellow deepening to orange at base within. May–Sept., Dec.–Mar. Cent. Amer.

insígnis. Lvs. elliptic-lanceolate: scape commonly 2-fld., to 8 in. long; fls. about 5 in. across, yellowish-white spotted with purple. Oct., Jan. Brazil, Peru.

langleyénsis: listed name.

Lòwii (*S. Amesiana*). Sepals and petals creamy-buff, latter thickly spotted with brown; lip ivory-white with bands of dull maroon. Colombia.

oculàta. Lvs. elliptic-lanceolate, to 21 in. long: scape 4–8-fld., to 14 in. long; fls. about 5 in. across; sepals and petals yellowish or whitish with numerous red-purple oculate spots; lip orange at base with 2 lateral dark purple spots, horns white, anterior part whitish often purple-spotted. Apr.–Oct. Mex. to Honduras.

Reichenbachiàna. Infl. 2-fld. sepals and petals white turning to ochre-yellow; lip rosy at base. Colombia.

tigrìna. Infl. 2–4-fld.; fls. to 7 in. across; sepals and petals dark red blotched with yellow; lip with basal part orange-yellow blotched on sides with maroon-purple, the middle and anterior parts whitish spotted with purple. May–July. Mex., Guatemala, Colombia, Venezuela.

Wárdii. Infl. robust, to about 15 in. long, to 7-fld.; sepals and petals golden-yellow; lip with basal cavity orange with 2 maroon-purple blotches or wholly maroon, anterior part pale yellow spotted with red. Apr., Aug.–Jan. Cent. Amer., Venezuela, Colombia. Var. **aùrea** has deep orange-yellow fls. with 2 purple blotches on base of lip.

STÁNLEYA. *Cruciferæ.* Glaucous and glabrous per. herbs of W. N. Amer., sometimes grown for ornament in regions like those to which they are native: lvs. lobed, entire or divided: fls. yellow, in terminal racemes, the petals and sepals very narrow: fr. an elongated pod or silique.

bipinnàta. To 2 ft., glabrous: lvs. mostly pinnatifid, segms. oblong to linear and sometimes lobed: fls. yellow, to ¾ in. across or less: pods to 2 in. long, strongly torulose and tortuose. Kans. to Wyo. and Colo.

glaùca. To 2 ft.: lvs. glabrous, pinnatifid into linear-lanceolate or oblong lobes, upper entire: fls. lemon-yellow, petals ½ in. long: pods arcuate, not tortuose. N. D. to Wyo. and Colo.

pinnàta. To 5 ft.: lvs. somewhat pubescent, pinnately divided into oblong or lanceolate segms., upper ones entire: fls. golden-yellow, to 1 in. across, in long terminal spike-like racemes: pods arcuate, not tortuose. S. D. to New Mex. and Calif.

STANLEYELLA: *Thelypodium Wrightii.*

STAPÈLIA. Carrion-Flower. *Asclepiadaceæ.* Leafless plants more or less cactus-like, with thick fleshy 4-angled sts., large grotesque wheel- or bell-shaped fls. barred with dull colors and usually with offensive odor, and spindle-shaped frs.; African.

Stapelias are grown in greenhouses in open porous sandy soil which is well drained. They should remain dormant in winter. Propagated by cuttings. Many kinds are known to collectors of succulents.

álbo-castànea (*S. Caroli-Schmidtii*). Tufted, sts. to 3 in.: fls. fleshy, nearly white, spotted purplish-brown, 1½ in. across, several at base of sts.

anguínea: *S. variegata* var. *picta.*

Árnotii. Sts. to 8 in.: fls. bright purple, lower part of corolla covered with pale purple hairs, upper with long white hairs, 4 in. across, 2–3 near base of sts.

Astèrias. Starfish-Flower. Sts. to 10 in.: fls. dark purple-brown with transverse yellow lines, lobes star-like and spreading, margins with purple hairs, to 4 in. across, 1–5 near base of sts.

atropurpùrea: *S. variegata* var.

Bàyfieldii. Sts. to 8 in.: fls. purple-red, marked with yellow lines at base, to 2¾ in. across, 3–5 near base of sts.

bélla. Erect to 7 in., sts. branching, to ¾ in. square, minute teeth on angles: fls. deep purplish-red becoming brownish toward tips, to 2 in. across, not glossy. Believed to be a garden hybrid of *S. revoluta* and *S. deflexa.*

bícolor. Garden form with fls. 2½ in. across, dark brown with few yellow spots, ciliate with brown hairs: sts. as in *S. variegata.*

Bufònis: *S. variegata* var. *clypeata.*

cantabrigénsis. Hybrid resembling *S. grandiflora,* but differing in sts. less compressed, corolla-lobes with much shorter pubescence, and outer corona-lobes linear and awn-tipped, shorter than inner ones.

Càroli-Schmídtii: *S. albo-castanea.*

ciliàta: *Diplocyatha ciliata.*

clavicoròna. To 1 ft.: fls. midway up st., light yellowish with transverse purple lines, becoming greenish, 2½ in. across, corona-lobes dark purple, the inner ones 2-horned and club-shaped.

comparábilis. Sts. to 8 in., about ½ in. square, angles not prominent, toothed: fls. dull purple sometimes with yellowish narrow transverse lines, to 5 in. across, pubescent. Probably of hybrid origin.

conspurcàta: *S. variegata* var.

Coòperi: *Stultitia Cooperi.*

Corderòyi: *Duvalia Corderoyi.*

defléxa. Sts. to 7 in.: fls. purple-red, often with transverse greenish or yellowish lines, to 3½ in. across, corolla-lobes strongly reflexed, 3–6 near base of sts.

depréssa: *S. hirsuta* var.

Desmetiàna. Sts. to 1 ft.: fls. purple with darker tips and yellowish transverse lines near base, covered with pale purple hairs, to 6½ in. across, 3–10 together on short stalk near base of sts.

Dínteri. Sts. to 5 in.: fls. greenish-yellow densely red-brown spotted, corolla margined reddish-brown, to 1¼ in. across.

díscolor. Fls. dark purple-brown, 2½ in. across. Hybrid, of which one parent is *S. variegata.*

divérgens. Hybrid, one parent being *S. variegata:* corolla 2 in. across, pale yellow or yellowish-green, lower ⅔'s of lobes lined with brownish-crimson, spotted toward tips, ciliate.

Engleriàna. Sts. decumbent to ascending, to 1 ft. long: fls. to 1¼ in. across, dark purple-brown, sometimes with yellow lines, base of tube whitish and spotted, lobes strongly recurved.

flaviróstris. Sts. to 7 in.: fls. dark purple-brown marked at base with transverse yellow or pale purple lines, to 6½ in. across, usually solitary near base of sts.

flavopurpùrea. Sts. to 4 in.: fls. dull yellow, to 1½ in. across, margins of lobes much recurved, outer corona purple, yellowish at base, inner corona whitish. Var. **Fléckii** (*S. Fleckii*), fls. greenish-yellow to yellow or reddish-orange.

Fléckii: *S. flavopurpurea* var.

Gettléffii. Sts. to 10 in.: fls. greenish-yellow with transverse yellowish lines, disk covered with pale purple hairs, margins ciliate, 6½ in. across, 1–3 near base of sts.

gigantèa. Sts. to 9 in. long: fls. brown-purple and hairy with under color of buff and lines of brown-purple, 11 in. across, 1–2 together at base or middle of sts., in summer. Trop. and S. Afr.

glabricaùlis. Sts. to 8 in., loosely branched, angles compressed: fls. pinkish to reddish-purple, to 3½ in. across, lobes long-ciliate, not recurved; inner corona-lobes dark brown.—Sometimes confused with *S. tsomoensis* which differs in slightly smaller fls. and sts. minutely pubescent.

glabriflòra. Sts. to 9 in.: fls. reddish-purple with darker tips, marked transversely with yellowish-white lines, glabrous, to 4½ in. across, corolla-lobes recurved, 1–2 at middle or lower part of sts.

grandiflòra. Sts. to 1 ft.: fls. dark purple-brown, without markings, with purple or whitish hairs, to 6 in. across, 1–3 at base of sts.

grándis: listed name.

Hanburyàna. Sts. to 6 in.: fls. pale greenish-yellow marked and edged with purple-brown, to 2½ in. across. Hybrid.

hirsùta. Sts. to 1 ft.: fls. dark purple-brown with transverse lines of cream or purple, ciliate with pale purple or whitish hairs, to 5 in. across, corolla-lobes recurved, 1–3 near base of sts. Var. **depréssa** (*S. depressa*), fl.-buds with 5 depressions at tip.

híspida: a form of *S. variegata* with few rather large spots.

incomparábilis. Sts. erect to 6 in.: fls. purple to purple-red, to 3½ in. across, occasionally with yellow transverse lines, long-ciliate.

kwebénsis. Sts. to 6 in. tall: fls. chocolate-colored to dull yellow, to 1⅓ in. across, lobes transversely rugose, acuminate. Var. **longipedicellàta** (*S. longipedicellata*) has long pedicels lifting the fls. above the st. tops.

Leendértziæ. Sts. decumbent to erect, to 4 in. tall: fls. bell-shaped, brownish- to blackish-purple, tube to 3 in. deep and 4 in. across, lobes about 2½ in. long, acuminate, non-ciliate.

longipedicellàta: *S. kwebensis* var.

lóngipes. Sts. to 8 in., obscurely 4-angled, slightly toothed: fls. white, outer half of corolla-lobes becoming intense purple-black, to 3½ in. across, ciliate with magenta hairs, pedicels to 8 in. long, decumbent.

lucílla: listed name of unknown botanical standing.

lunàta. Hybrid, of which *S. variegata* is a parent: fls. dark purplish-brown, apex of each lobe with yellow crescent-shaped marking, somewhat yellow-spotted, minutely ciliate.

Maccabeàna. Sts. to 1 ft., velvety-puberulous: fls. pale green tinged purple, to 6 in. across, minutely ciliate.

maculòsa. Sts. erect to 4 in., glabrous: fls. pale greenish-yellow, to 4 in. across, annulus tinted purplish-red, densely ciliate, lobes recurved. Probably of hybrid origin.

maculosoìdes. Sts. to 3 in.: fls. dark violet with paler spots and transverse lines, to nearly 3 in. across, ciliate. Probably a hort. hybrid.

Margarìta. Sts. to 2¼ in., soft-pubescent: fls. cream-colored blending to pale purple, covered with cushion of pink hairs extending half length of lobes, to 4½ in. across.

mérmilis: listed name.

multiflòra. A hort. hybrid, of which *S. variegata* is a parent.

nóbilis. Sts. to 5 in.: fls. with corolla-lobes to 4 in. long, reflexed, reddish-purple on back, yellow on face, marked with crimson lines and covered with purple hairs, 1-5 near base or middle of sts.

Nopenáckyi: listed name.

normàlis: *S. variegata.*

olivàcea. Sts. to 6 in., obtusely angled: fls. olive-green with brown transverse ridges to dull brownish-red, to 1¾ in. across, lobes recurved, ciliate.

pachyrrhìza. Sts. to 3 in., with very thick roots: fls. brownish-red outside, inside yellow finely spotted with red or all dark red, to 3 in. across, clustered at base of sts.

parvipunctàta. Sts. to 5 in., obtusely angled: fls. cream-colored to pale greenish-yellow, minutely dotted, purplish-brown dots becoming larger toward lobe tips, to 1½ in. across, lobes ovate.

Pégleræ. Sts. to 6 in.: fls. dark purple-brown, glabrous except ciliate margins, 2½ in. across, 3-4 together.

pícta: *S. variegata* var.

Píllansii. Sts. to 7 in. tall, soft-pubescent, obtusely angled: fls. glossy purplish-brown, not marked, to 6 in. across, lobes attenuate-acuminate, to nearly 2½ in. long, ciliate. Var. **attenuàta,** fls. to 8 in. across, lobes long-attenuate and somewhat twisted.

planiflòra: *S. variegata* var.

pórtæ-taurìnæ. Sts. to 8 in., pubescent: fls. pale yellow with brown warts and transverse ridges, to 1¼ in. across, lobe margins recurved, not ciliate.

pulchélla. Sts. to 4 in.: fls. sulfur-yellow dotted with purple-brown, glabrous and not ciliate, to 2¼ in. across, usually 3 at base of sts.

púlchra: *S. verrucosa* var.

pulvinàta. Sts. erect, to 4 in., soft-pubescent: fls. dark purple-brown with transverse yellow lines on lower ⅔'s of lobes, cushion of long soft purple hairs covering central disk, lobes long-white-ciliate.

purpùrea. Fls. dark violet-brown with yellow spots, 2¼ in. across. Hybrid, one parent being *S. variegata.*

radiàta. Of hybrid origin, with light yellow fls. spotted purple-brown; one parent is *S. variegata.*

recurvàta: catalogue name.

ruféscens of gardens is a form of *S. hirsuta.*

rugòsa: *S. variegata* var.

Salmiàna. Fls. light yellow spotted purple-brown, to 3¼ in. across. Hybrid; one parent is *S. variegata.*

Schínzii. Sts. to 3 in.: fls. dark brown, glabrous except the margins ciliate with purple hairs, to 8 in. across, the lobes very long-pointed, 1–2 at base of sts.

scutellàta. Hybrid, one parent being *S. variegata:* fls. to 3 in. across, light yellow with purplish-brown transverse spots and wavy lines, somewhat confluent.

tomentòsa: *S. tsomoensis.*

trisúlca: *S. variegata* var.

tsomoénsis (*S. tomentosa*). Sts. to 6 in.: fls. lilac-purple, transverse ridges yellowish, to 3 in. across, disk and lobe margins covered with appressed dark purple hairs, lobes ovate-lanceolate, recurved.

urànus. Hybrid, one parent being *S. mutabilis:* fls. dark purplish-brown with bright yellow annulus.

variábilis: hort. name.

variegàta (*S. normalis*). Sts. to 6 in. long: fls. greenish-yellow with dark purple-brown spots, 3 in. across, 1–5 together at base of sts. Var. **atràta,** fls. dull purplish-brown with large darker spots and some yellow markings, to 3¼ in. across. Var. **atropurpùrea** (*S. atropurpurea*), ground color blackish-purple. Var. **bícolor** of hort. is *S. bicolor.* Var. **clypeàta** (*S. Bufonis*), spotted and lined with purple-brown. Var. **conspurcàta** (*S. conspurcata*), fls. 2 in. across, spots running together. Var. **pícta** (*S. picta, S. anguinea*), fls. 2 in. across, spotted crimson-brown on pale yellow ground. Var. **planiflòra** has corolla-disk flat on the back when expanded. Var. **rugòsa** (*S. rugosa*), with small spots and transverse lines of purple-brown. Var. **trisúlca** (*S. trisulca*), fls. much spotted and lined at base, bud flat-topped.

verrucòsa. Sts. to 3 in. long: fls. pale yellow spotted with blood-red, inner face very rough with tubercles, to 2½ in. across, 1–3 near base of sts. Var. **púlchra** (*S. pulchra*), fls. pale yellow spotted purple to purple-brown.

vétula. Sts. to 6 in., minutely pubescent: fls. purplish-black without markings, to 2¾ in. across, lobes ovate-acuminate, to 1¼ in. long, margins not ciliate, outer corona reddish-yellow.

STAPHYLÈA. Bladder-Nut. *Staphyleaceæ.* Ornamental shrubs or small trees bearing opposite compound lvs., bisexual white fls. in terminal panicles, and bladder-like frs.; grown for ornament, the following species hardy in the N. (unless noted) and blooming in early summer.

Bladder-nuts prefer partial shade and moist rich soil. Propagated by seeds sown when ripe or stratified till spring, by suckers, layers and cuttings; greenwood cuttings taken from forced plants will root readily.

Bolánderi. Much like *S. trifolia* but lfts. broader and glabrous, fr. somewhat larger. Calif.

Bumálda. To 8 ft.: lfts. 3: fls. about ⅓ in. long, in erect panicles to 3 in.: fr. to 1 in. long. Japan.

cólchica. To 12 ft.: lfts. 5 or sometimes 3: fls. to ¾ in. long, in erect or nodding panicles to 3 in. long: fr. to 4 in. long. Caucasus. Var. **Coulombièri** is more vigorous, with larger lvs. and fr.

emòdi. Related to *S. trifolia*, not hardy N., with larger finely serrulate lfts. that are less pubescent underneath, and larger fls. and frs. Himalayas.

holocárpa. To 25 ft. or more: lfts. 3: fr. ellipsoid or pyriform, to 2 in. long. China. Var. **ròsea** has pink fls. and lvs. white-tomentose beneath when young.

pinnàta. European B. To 15 ft.: lfts. 5–7: fls. ½ in. long, in nodding panicles to 5 in. long: fr. to 1½ in. long. Eu., W. Asia.

trifòlia. American B. To 15 ft.: lfts. 3, pubescent underneath: fls. about ⅓ in. long, in nodding panicles to 2 in. long: fr. to 3 in. long. E. U. S.

STAPHYLEACEÆ. Bladder-Nut Family. Five widely distributed genera of trees and shrubs with compound lvs., bisexual regular fls. having 5 sepals, petals and stamens, usually 3-celled ovary, and capsular fr. sometimes much inflated. Staphylea is much planted in N. Amer. for ornament, and Euscaphis more rarely.

STAR-APPLE: *Chrysophyllum Cainito.* **-Glory:** *Quamoclit.* **-Grass:** *Aletris, Hypoxis.* **Mexican:** *Milla biflora.* **-of-Bethlehem:** *Ornithogalum umbellatum.*

STARFISH-FLOWER: *Stapelia Asterias.*

STARFLOWER: *Trientalis.* **Spring:** *Brodiæa uniflora.*

STARWORT: *Aster.*

STÁTICE. *Plumbaginaceæ.* A generic name used originally for the thrifts (*Armeria*) and later for the sea-lavenders (*Limonium*). Recent legislation on the part of the Committee of the International Botanical Congress ruled the name Statice as a *nomen ambiguum* (*i.e.* of uncertain and confusing application) and conserved for it the two generic names given above. The synonymy for the plants in cult. belonging to these two genera follows:

alpìna: *Armeria maritima* var.

arbòrea: *Limonium fruticans.*

arboréscens: *L. arborescens.*

árctica: see *A. arctica.*

Armèria: *A. maritima* var. *elongata*, but much material so named in trade is var. *purpurea.*

auriculæfòlia: *L. binervosum.*

bellidifòlia: *L. bellidifolium.*

binervòsa: *L. binervosum.*

Bonduéllii: *L. Bonduellii.*

brassicæfòlia: *L. brassicæfolium.*

bupleuroìdes: *A. plantaginea* var.

cæspitòsa: *A. juniperifolia.*

califórnica: *L. californicum.*

canéscens: *A. canescens.*

cáspia: *Limonium bellidifolium.*

cephalòtes: *A. pseud-armeria.*

dianthoìdes: *A. plantaginea* var. *leucantha.*

Dícksonii: listed name, probably of form of *L. sinuatum.*

dumòsa: a form of Limonium.

elegantíssima: *L. latifolium* var.

elongàta: *A. maritima* var.

exímia: *L. eximium.*

fasciculàta: *A. pungens.*

filicaùlis: *A. filicaulis.*

formòsa: see *A. formosa.*

frùticans: *L. fruticans.*

globulariæfòlia: *L. globulariæfolium.*

Gmélinii: *L. Gmelinii.*

Gougetiàna: *L. Gougetianum.*

Hálleri: *A. maritima.*

imbricàta: *L. imbricatum.*

incàna: *L. tataricum* var. *angustifolium.*

júncea: *A. juncea.*

latifòlia: *L. latifolium* or *A. pseud-armeria.*

Laucheàna: color form of typical *A. maritima.*

leucocéphala: *A. leucocephala.*

Limònium: *L. vulgare.*

macrophýlla: probably *L. macrophyllum*, but possibly *A. macrophylla.*

macróptera: *L. macropterum.*

majellénsis: *A. canescens* var. *brachyphylla.*

marítima: *A. maritima.*

mauritánica: see *A. mauritanica.*

mínima: listed name of form of Limonium.

montàna: *A. maritima* var. *alpina.*

Perèzii: *L. Perezii.*

perfoliàta: *L. perfoliatum.*

plantagínea: *A. plantaginea.*

Preaùxii: *L. Preauxii.*

pseùd-armèria: *A. pseud-armeria.*

púngens: *A. pungens.*

purpùrea: *A. maritima* var.

reticulàta: *L. reticulatum.*

rupícola: *L. rupicolum.*

sareptàna: *L. tomentellum.*

setàcea: *A. juncea.*

sibírica: *A. maritima* var.

sinénsis: *L. sinense.*

sinuàta: *L. sinuatum.*

spathulàta: *L. Sieberi.*

spicàta: *L. spicatum.*

spléndens: see *A. splendens.*

stenophýlla: *A. plantaginea* var. *longibracteata.*

supérba: *L. superbum.*

Suworòwii: *L. Suworowii.*

tartárica: *L. tataricum.*

tomentélla: *L. tomentellum.*

undulàta: *A. canescens* var. *leucantha.*

virgàta: *L. oleifolium.*

vulgàris: probably *A. maritima* var. *purpurea,* but possibly *L. vulgare.*

Welwítschii: *A. Welwitschii.*

STAUNTÒNIA. *Lardizabalaceæ.* Evergreen woody climbers native in China and Japan, with digitately compound lvs., unisexual fls. in axillary racemes, and fr. a berry.

They thrive in moist shady locations in soil rich in humus, and hardy in southern United States. Propagated by cuttings of half-ripened wood under glass.

coriàcea: a listed name.

hexaphýlla. To 40 ft.: lvs. of 3–7 ovate lfts. to 4 in. long: fls. white tinged violet, fragrant, about ¾ in. long. Japan.

STEEPLEBUSH: *Spiræa tomentosa.*

STEIRONÈMA. Loosestrife. *Primulaceæ.* Per. herbs with yellow fls. borne singly or in axillary clusters, the corolla wheel-shaped. Cult. as for *Lysimachia.*

ciliàtum (*Lysimachia ciliata*). To 4 ft.: lvs. opposite, ovate-lanceolate, to 6 in. long: fls. to 1 in. across. U. S.; nat. in Eu.

lanceolàtum. To 2 ft.: lvs. oval to spatulate, upper lvs. linear, to 4 in. long: fls. about ½ in. across. Ont. to Mo., south to Ga. and Miss.

pùmilum (*S. ciliatum* var. *occidentale*). To 1½ ft.: lvs. ovate or ovate-lanceolate, to 3 in. long: fls. bright yellow, 1 in. across. Wash., Ore. to Minn.

STELLÀRIA. *Caryophyllaceæ.* Annuals and perennials usually diffuse and tufted, with simple opposite lvs. and white fls. in terminal leafy or naked cymes, rarely axillary or solitary; scattered over the world but mostly in temp. regions.

alpéstris of hort. is *Silene alpestris.*

gramínea (*Alsine graminea*). Per. to 2 ft., from creeping rootstocks: lvs. lanceolate, to 1 in. long: fls. ¼ in. across. Eu., Asia; nat. in E. U. S. Var. **aùrea,** lower with pale yellow lvs.

Holóstea (*Alsine Holostea*). Easter Bells. Per., erect from a creeping rootstock, to 2 ft. high, glabrous or somewhat downy: lvs. lanceolate, to 3 in. long, ciliate on midvein and margins: fls. to ¾ in. across. May–June. Eu., N. Asia; escaped in E. U. S.

lǽta: *S. longipes.*

lóngipes (*S. læta*). Ann., erect or ascending, tufted: lvs. lanceolate to linear, to 1½ in. long, somewhat stiff, ascending: fls. to ½ in. across, usually solitary or few, on erect pedicles. Lab. to Que., west to Alaska, Colo. and Calif.

mèdia. Common Chickweed. Ann. to 12 in., sts. weak, decumbent or ascending: lvs. ovate-oblong, to 2½ in. long: fls. to ½ in. across, in terminal leafy cymes. Eu.; nat. in all temp. regions as a common weed.

pinifòlia: probably *Arenaria pinifolia.*

pùbera (*Alsine pubera*). To 1 ft.: lvs. ovate or elliptic, to 5 in. long: fls. ⅓ in. long. N. J. to Fla. and Ala.

STEM: the main axis of a plant; leaf-bearing and flower-bearing as distinguished from the root-bearing axis.

STEMMADÈNIA. *Apocynaceæ.* New World shrubs or trees planted for ornament in trop. and subtrop. regions, having opposite non-glandular lvs. and showy salverform or infundibuliform fls. in cymes; fr. a several-seeded leathery follicle. Differing from Tabernæmontana in the calyx-lobes and bracts large and conspicuously foliaceous or petaloid.

bélla: *S. Galeottiana.*

Galeottiàna (*S. bella*). Shrub to 10 ft. or more: lvs. ovate to obovate-elliptic, to 6 in. long, glabrous: fls. cream-colored, corolla infundibuliform, the throat tubular, to 2 in. long, the tube broader and about ½ in. long, lobes obovate, to 1 in. long, strongly imbricated and spreading: fr. about 1 in. long. Cent. Amer.

STEMMODONTIA: *Wedelia trilobata.*

STENACTIS: *Erigeron speciosus.*

STENÁNDRIUM. *Acanthaceæ.* Herbs native of trop. Amer. and grown as foliage plants in the greenhouse: lvs. basal, entire: fls. small, in spikes: fr. a caps.

Líndenii. Lvs. broad-elliptic, dark green above veined with white or yellow, purplish beneath: fls. yellow, in spikes to 3 in. long. Peru.

STENÁNTHIUM. *Liliaceæ.* Tall herbs with a somewhat bulbous base and long linear lvs. borne mostly at base of st., small polygamous greenish or purplish fls. in terminal diffuse racemes or panicles, the perianth-segms. united at base; occasionally planted in the border or wild-garden.

angustifòlium: *S. gramineum.*

gramíneum (*S. angustifolium*). To 4 ft.: lvs. grass-like, to 1 ft. long and ¼ in. wide: fls. whitish, to ½ in. across, in panicles to 2 ft. long. S. U. S.

occidentàle. To 2 ft.: lvs. to 10 in. long, linear-lanceolate: fls. brownish-purple, to ¾ in. long, on slender pedicels of simple or branched raceme. Rocky banks, Ore. to Ida. and B. C.

robústum. Feather-Fleece. To 5 ft.: lvs. to 1 ft. long and ¾ in. wide: fls. greenish or white, to ⅜ in. across, in usually compound panicles to 2 ft. and more long. Pa. to S. C. and Mo.

STENOCÁCTUS (*Echinofossulocactus*). *Cactaceæ.* A genus of Mexican cacti differing from Echinocactus in having the axils of the scales of ovary and fr. naked and not woolly nor hairy: the fr. dehisces by a lateral split and not by means of a terminal pore. Cult. as for *Echinocactus.*

acroacánthus. Solitary, subglobose; ribs 27, areoles white-woolly, becoming naked; spines 7, to 1¼ in. long, the 4 lower ones to ½ in. long. Mex.

albàtus (*Echinocactus albatus*). Solitary or rarely cespitose, depressed-globose to cylindrical, to 5 in. diam., spiny and white-woolly on top; ribs very numerous, narrow, acute, undulate; radials about 10, to ½ in. long, bristly; centrals 4, to 1¾ in. long, stouter: fls. white, to ¾ in. long. Mex.

anfractuòsus (*Echinocactus anfractuosus*). Simple, 4–5 in. tall and half as thick, dull green; ribs many; radial spines 7 and central solitary, curved: fls. purple, segms. white-margined. Mex.

árrigens (*Echinocactus arrigens, sphærocephalus, xiphacanthus* and *ensifer*). Solitary, globose, blue-green; ribs 30–40 or more, acute, undulate; spines alike, usually 5–7, to ¾ in. long, yellowish, curved: fls. white, inner segms. with red midrib, to 1 in. across. Mex.

bícolor: possibly *Thelocactus bicolor.*

cárneus: listed name.

coptonogònus (*Echinocactus coptonogonus*). Perhaps cespitose, globular or somewhat depressed, to 4 in. high; ribs 10–14; spines 3–5 and stout: fls. about 1 in. long and broader when open, purple, segms. white-margined. Mex.

crispàtus (*Echinocactus crispatus*). Obovoid and somewhat depressed at apex, 5 in. or more high; ribs about 25; spines 10 or 11 and rigid: fls. rather small, purple or white with purple stripes. Mex.

densispìnus: listed name.

durangénsis: see *Echinomastus durangensis.*

esperanzénsis: listed name.

flavispìnus: probably synonymous with *Ferocactus latispinus.*

flexispìnus: see *S. crispatus.*

Gásseri: see *S. Lloydii.*

gladiàtus (*Echinocactus gladiatus*). Ovoid or oblong, to 5 in. high and 4 in. across; ribs 14–22 and prominent; spines 10 and to 2 in. long. Mex.

grandicórnis. Solitary, ovoid, to 5 in. high, spiny on top; ribs about 35, blue-green, undulate, acute; spines yellowish to gray, radials 8, lower ones to ½ in. long, others shorter, centrals 3, to 2 in. long, very stout, upper one straight, others curved: fls. white within, inner segms. with brown midrib, to 1¼ in. long. Mex.

grisacánthus: listed name.

hastàtus. Solitary, depressed-globose; ribs about 35, acute, wavy, areoles white-woolly; spines yellowish, radials 5–6, stout, central 1, to 1¾ in. long: fls. yellow. Mex.

heteracánthus (*Echinocactus heteracanthus. E. tetraxiphus*). Globose or short-cylindric, light green, closely covered with spines; ribs 30–34; radials 11–13; centrals 4: fls. greenish-yellow. Mex.

lamellòsus. Solitary, globose to cylindrical, to 5 in. tall and 3¼ in. diam., blue-green; ribs about 35, acute, wavy; spines white, tipped brown, radials 5, to ¾ in. long, flat, central 1, to 1¾ in. long: fls. carmine-red within, to 1¾ in. long. Mex.

láncifer. More or less ovoid, flattened on top; ribs 25–55, very thin, wavy; spines 8, white, often tipped brown: fls. rose-pink, large. Mex.

latispìnus: see *Ferocactus latispinus.*

Llóydii. Solitary, globose, to 6 in. diam., spiny on sides and top; ribs 25–55, compressed, wavy; radials 10–15, to ⅝ in. long, white; centrals 3, curved upwards with uppermost one to nearly 4 in. long, tan-colored: fls. pale rose-pink, small. Mex.

longispìnus: listed name of no botanical standing.

multicostàtus (*Echinocactus multicostatus*). Simple, mostly globose and sometimes depressed, 2–4 in. diam.; ribs 100 or more; spines usually 6–9: fls. 1 in. long, white with broad purple stripe. Mex.

obvallàtus. Similar to *S. arrigens*, differing in spines 7-9, red becoming brown: fls. pale pink with purplish-red stripe and more widely expanded, stamens white not pink and stigmas 9-lobed not 6–7. Mex.

Ochoterènaus. Usually solitary, globose, to 3 in. high and 4 in. diam.; ribs about 30, thin, wavy; radial spines usually 22–30, about ½ in. long, radiating, recurved, white; centrals 4, flat, uppermost one to 2½ in. long, tan-colored: fls. white to very pale rose-pink. Mex.

pentacánthus. Solitary, depressed-globose, to 3 in. diam.; ribs 30–40, thin, close together, wavy; spines 5, to 2 in. long, ringed, the lower two only to ½ in. long: fls. pale yellow, to ¾ in. long, inner segms. striped purplish. Mex.

phyllacánthus (*Echinocactus phyllacanthus*). Depressed-globose, to 4 in. diam., dark green; ribs 30-45, compressed, undulate; spines usually 7–10, upper ones to 3 in. long, erect, flattened, often ringed, lower ones shorter, spreading, slenderer: fls. white to pale yellow, to ⅝ in. long, inner segms. with narrow red stripe. Mex.

polylòphus: listed name.

rectispìnus: see *Ferocactus rectispinus.*

robústus: see *Ferocactus robustus.*

sphacelàtus: listed name, possibly *Mammillaria sphacelata.*

tricuspidàtus. Globose to subcylindrical, to 3½ in. diam.; ribs 30–55; radial spines 4, gray to brown with black tip, flattened; central 1, to 1½ in. long: fls. yellowish-green, to ⅝ in. long. Mex.

Vaupeliànus (*Echinocactus Vaupelianus*). Solitary, depressed-globose to hemispherical, to 2⅓ in. high and 3½ in. diam., woolly and spiny on top; ribs 30–40, to ⅓ in. high, much compressed, wavy; radial spines 12–25, to ⅝ in. long, spreading, white; centrals 1–2, to 2¾ in. long, brownish-red to nearly black: fls. pale yellow, to ¾ in. long. Mex.

violaciflòrus (*Echinocactus violaciflorus*). Solitary, globose to subcylindrical, to 4 in. diam. and 5 in. high; ribs about 35, compressed, wavy; spines 7, upper one to 1½ in. long and flattened to ¼ in. wide, ringed: fls. white, to 1 in. long, inner segms. with violet stripe. Mex.

zacatecasénsis. Solitary, depressed-globose, to 2⅓ in. high and 3⅓ in. diam., somewhat woolly on top; ribs 50–60, compressed, wavy; radial spines 9–12, to ½ in. long, white; centrals 3, to 1½ in. long, flattened, one erect: fls. pink, to 1½ in. long. Mex.

STENOCÁRPUS. *Proteaceæ.* Trees with alternate or scattered lvs., bisexual red or yellow fls. in umbels, and fr. a leathery follicle; native in Australia and New Caledonia. Grown out-of-doors in S. Calif.

Cúnninghamii. Lvs. oblong-lanceolate, to 4 in. long: fls. yellowish, differing from *S. salignus* only in the glabrous ovary. N. Australia.—The plant grown in S. Calif. and figured in Bot. Mag. as *S. Cunninghamii* is *S. sinuatus.*

salígnus. Lvs. ovate-lanceolate, to 4 in. long: fls. yellowish, ½ in. long, in 10–30-fld. umbels. Queensland, New S. Wales.

sinuàtus. Lvs. oblong-lanceolate or pinnately cut into 1–4 pairs of oblong lobes, to 1 ft. long: fls. bright red, 1 in. long, in 12–20-fld. umbels. Queensland, New S. Wales.

STENOCHLÆNA. *Polypodiaceæ.* Trop. climbing epiphytic ferns with 1-pinnate fronds, the fertile with contracted pinnæ covered with sori beneath; sometimes grown in greenhouses on tree-fern sts. and other supports. See *Ferns.*

palústris. Fronds leathery, shining, to 4 ft. long, segms. of sterile fronds to 10 in. long and 1½ in. wide, toothed toward tip. India, S. China, Australia.

STENODRÀBA. *Cruciferæ.* A S. American genus of less than 10 species, differing from Draba chiefly in the larger and nearly linear frs.

andìna: *S. colchaguensis.*

colchaguénsis (*S. andina. Draba andina*). Tufted per. to 3 in. high, sts. short, ascending and numerous: basal lvs. in rosette, oblong-elliptic to obovate, to ¾ in. long, apex obtuse and usually 1-3-toothed, fleshy, remotely ciliate; st.-lvs. narrower, entire, to ⅙ in. long: fls. white, often obscurely blue-spotted, in compact racemes: pods to ⅛ in. long, usually without persistent style. Chile.

STENOGLÓTTIS. *Orchidaceæ.* Terrestrial orchids of Afr. with basal lvs. and small fls. in racemes, the petals smaller than the sepals, lip 3- or more-cleft. Grown in temperate greenhouse; see *Orchids* for cult.

longifòlia. Lvs. oblong-lanceolate, to 7½ in. long: infl. to 24 in. high, racemes many-fld.; fls. light purple, lip 5–7-cleft. Late summer and autumn.

STENOLÒBIUM. *Bignoniaceæ.* Erect shrubs Fla. to Mex. and S. Amer., with opposite simple or compound lvs., prominent showy fls. in racemes or panicles, corolla bell-shaped or funnelform and tube contracted at base and hairy inside toward bottom, stamens curved in two pairs, fr. a long narrow pod-like caps. bearing thin-winged seeds. One species is abundantly planted Fla. to S. Calif. and in tropics; cult. as for Tecoma and similar plants.

stáns (*Bignonia* and *Tecoma stans*). YELLOW-BELLS. To 20 ft. or more, sometimes tree-like: lvs. pinnate, of 5–13 lanceolate to oval lfts. that are to 4 in. long, acute or acuminate, serrate, glabrous: fls. bright yellow, to 2 in. long: fr. to 8 in. long. Fla. to S. Amer. Var. **angustàta,** lfts. narrow and cut-toothed. Var. **sambucifòlia** is listed as having elder-like lvs. Var. **velùtina** (*Tecoma velutina, T. mollis*), lfts. pubescent underneath.

STENOSPERMÀTION. *Araceæ.* Shrubs climbing by roots from the nodes, native in the Andes of S. Amer.: lvs. with long-sheathed petioles: spathes boat-shaped, white, soon deciduous; spadix white; fls. bisexual. One species sometimes grown in greenhouses.

popayanénse. Sts. to 3 ft. long: lvs. oblong or oblong-lanceolate, to 1 ft. long and 2½ in. wide, leathery: spathe 4 in. long; spadix 2¼ in. long. Colombia, Ecuador.

STENOTÁPHRUM. *Gramineæ.* Per. creeping grasses, one of which is used for lawns in the S.: lvs. narrow: spikelets sunken in the flattened rachis of the spike; native in tropics and subtropics. See *Grasses, Lawns.*

americànum: *S. secundatum.*

secundàtum (*S. americanum*). ST.-AUGUSTINE-GRASS. Stoloniferous, sts. to 1 ft. high, with flattened sts.: lvs. to 6 in. long and ⅛ in. wide: spikes stiff, to 5 in. long. S. C. to Tex., trop. Amer. Var. **variegàtum** has white striped lvs.

STEPHANÁNDRA. *Rosaceæ.* Deciduous shrubs of Asia with alternate toothed or lobed lvs., small white or greenish fls. in terminal panicles or corymbs, and fr. only partly dehiscent.

The following are hardy in the North although requiring protection in severe winters. Propagated by seeds, by cuttings of green wood under glass, by division, and sometimes by root-cuttings.

chinénsis. Sts. flexuous: lvs. ovate-lanceolate, to 2½ in.

long, acute doubly-serrate, remotely or not at all incired: fls. white, in compound racemes. E. China.

flexuòsa: *S. incisa.*

incìsa (*S. flexuosa*). To 8 ft., with long drooping branches: lvs. to 2½ in. long, deeply lobed sometimes half way to midrib: stamens 10. Japan, Korea.

Tanákæ. To 6 ft.: lvs. to 4 in. long, shallowly 3-lobed: stamens 15–20. Japan.—Lvs. becoming bright yellow to scarlet in autumn.

STEPHANOCEREUS: *Cephalocereus leucostele.*

STEPHANOMÈRIA. *Compositæ.* Ann. and per. chicory-like herbs of W. N. Amer. with lvs. reduced on the flowering branches and rose or pink heads of ligulate fls. borne in panicles and opening only in early morning; pappus of plumose bristles. One species occasionally transferred to the garden.

cichoriàcea. Per. to 5 ft., with woody root: lvs. oblong to lanceolate, to 8 in. long: heads ¾ in. across, sessile on the naked branches. Calif.

STEPHANOPHYSUM: *Ruellia.*

STEPHANÒTIS. *Asclepiadaceæ.* Woody vines of Madagascar and Malaya, with opposite leathery lvs., large funnel- or salver-shaped fls. in axillary clusters, and thick milkweed-like frs.; grown under glass or out-of-doors in the S., in loamy soil in a temperature of about 65°. Propagated by cuttings of half-matured wood over bottom heat.

floribúnda. Madagascar-Jasmine. To 15 ft. and more, twining: lvs. elliptic, thick, to 4 in. long, with abrupt short apex and broad or subcordate base: fls. white, waxy, fragrant, 1–2 in. long. Madagascar.

STERCÙLIA. *Sterculiaceæ.* Trees of warm countries with alternate entire or palmately lobed and divided lvs., unisexual or polygamous fls. without petals usually in axillary panicles, and fr. of 5 woody carpels; planted for shade and ornament in trop. climates. Propagated by seeds and cuttings of ripened wood.

acerifòlia: *Brachychiton acerifolium.*

alàta: *Pterygota alata.*

apétala (*S. carthaginensis*). To 45 ft.: lvs. thick, 5-lobed, to 1 ft. broad, pubescent or tomentose underneath: fls. yellow spotted with pink or purple, rusty-tomentose: fr. to 4 in. long. Trop. Amer.

Bídwilli: *Brachychiton Bidwilli.*

carthaginénsis: *S. apetala.*

coccínea: a confused name, the plant in the trade may be *Pterygota alata.*

díscolor: *Brachychiton discolor.*

diversifòlia: *Brachychiton populneum.*

fœ́tida. To 60 ft.: lvs. divided into 5–9 lanceolate lfts. to 6 in. long: fls. red or purplish, with offensive odor: fr. red, to 4 in. long. Tropics of Old World.

Grégori: *Brachychiton populneum* var. *occidentalis.*

lùrida: *Brachychiton luridum.*

occidentàlis: *Brachychiton populneum* var.

platanifòlia: *Firmiana simplex.*

rupéstris: *Brachychiton rupestris.*

STERCULIÀCEÆ. Sterculia Family. Herbs, shrubs and trees, mainly trop., on both sides of the world, differing from Malvaceæ in technical characters: genera about 50, furnishing ornamental subjects and the cocoa, chocolate and cola-nut of commerce. The family is characterized by alternate lvs., regular mostly bisexual fls. having 5 sepals and petals or petals lacking, 5 or more stamens, superior 2–5-celled ovary, and fr. a caps. or follicle which sometimes separates into leaf-like carpels. The genera herein treated are: Brachychiton, Cola, Dombeya, Firmiana, Fremontia, Mahernia, Pterospermum, Pterygota, Sterculia, Theobroma, Thomasia, Waltheria.

STERNBÉRGIA. *Amaryllidaceæ.* Small bulbous herbs with narrow basal lvs. and bright yellow funnel-shaped fls., solitary or 2 terminating the short scape.

The following species is hardy and succeeds in a dry sunny position in rather heavy soil. Bulbs should be planted about 6 inches deep.

lùtea (*Amaryllis lutea*). Lvs. to 1 ft. long and ¾ in. wide: fls. 1½ in. long, the tube very short, in autumn. S. Eu., Asia Minor. Var. **màjor**, fls. much larger than type.

STETSÒNIA. *Cactaceæ.* Tall much branched cactus native in the deserts of Argentina. **S. Corỳne** (*Cereus Coryne*). To 25 ft. with short trunk to 16 in. diam.; ribs 8–9; spines 7–9 and to 2 in. long: fls. solitary in upper areoles, funnelform, white, to 6 in. long.

STEVENSÒNIA. *Palmaceæ.* Monœcious somewhat armed tree from the Seychelles Isls., with pinnate-ribbed lvs. not parted or cut to the rachis or midrib: related to Verschaffeltia but differs in absence of brace roots, lvs. with long sharp teeth or secondary segms., smaller drupe-like fr., seed not grooved, 2 spathes, and technical characters: spadices in axils of lower lvs., much branched, drooping; spathes 2, the outer one bristly; fls. in 3's, spiral on the branches, middle one pistillate; stamens 15–20, joined at base: fr. flattened on one side, about ⅓ in. long; albumen strongly ruminate. Probably tender in the U. S. **S. Borsigiàna** (*S. grandifolia. Phœnicophorium sechellarum*). To 40 or 50 ft., st. spiny in young plants but becoming spineless, the lf.-sheaths and petioles spiny when young: lvs. obovate or oblong, cuneate at base, blade several ft. long, shallowly bifid at apex, deeply cut along the sides mostly one-third or less to rachis, the parts or segms. cut, strongly ribbed, more deeply cut on old trees: fls. golden-yellow.

STÈVIA. *Compositæ.* Herbs, sometimes woody at base, Tex. to Ariz. and to S. Amer., with mostly opposite lvs. and small narrow often brightly colored few-fld. heads, purple to white, in terminal clusters. Little grown for ornament.

Eupatòria. Per.: lvs. lanceolate-oblong, to ¾ in. long, entire to finely serrulate, punctate, acute: fls. white inside, purplish on reverse, about ⅛ in. across, many in fastigiate corymbs. Mex.

ivæfòlia. Per. with stout roots and somewhat woody base, to 18 in. or more, erect: lower lvs. broad-spatulate, about 1 in. long, finely serrate; upper lvs. narrow-oblong to linear: fls. dark rose. Mex. south.—Probably a form of *S. serrata* which is not in cult., the *Stevia serrata* of florists being *Piqueria trinervia.*

purpùrea. Lvs. very narrow, the lower ones hardly spatulate: fls. purple. Mex.

serràta: see under *S. ivæfolia.*

STEWÁRTIA (sometimes but not by Linnæus spelled *Stuartia*). *Theaceæ* or *Ternstroemiaceæ.* Asian and N. American trees and shrubs with alternate simple toothed lvs., showy white fls. solitary in the axils, and capsular fr.

Stewartias are planted for ornament and are fairly hardy North. A mixture of peat and loam soil is best. Propagated by seeds, layers, and cuttings under glass in late summer.

koreàna. Tree to 50 ft.: lvs. elliptical, to 4 in. long, usually pubescent beneath, margins somewhat serrulate: fls. terminal or nearly so. Korea.

Malacodéndron (*S. virginica*). Shrub to 12 ft.: fls. to 4 in. across, with purple stamens; styles united. Va. to Fla. and La.; not hardy in northern states.

monadélpha. Tree to 80 ft.: fls. 1½ in. across, with violet anthers; bracts beneath calyx large and leaf-like; styles united. Japan.

ovàta (*Malachodendron pentagynum. S. pentagyna*). Shrub to 15 ft.: fls. to 3 in. across, having white stamens with orange anthers; styles distinct. Ky. to Ga. Var. **grandiflòra** has fls. to 4 in. across with purple stamens.

pentágyna: *S. ovata.*

Pseùdo-Caméllia (*S. japonica* var. *grandiflora*). Shrub or tree to 50 ft., branchlets glabrous: lvs. to 3 in. long, acuminate, entire, glabrous beneath: fls. to 2½ in. across, having white stamens with orange anthers; bracts small; styles united. Japan.

serràta. Shrub or tree to 40 ft., differing from *S. Pseudo-Camellia* in its pilose branchlets, somewhat longer serrulate lvs., and slightly smaller fls. Cent. China.

sinénsis. Shrub or tree to 30 ft.: fls. 2 in. across, with whitish stamens; bracts longer than calyx; styles united. China.

virgínica: *S. Malacodendron.*

STICK-TIGHTS: *Bidens.*

STIGMA: the part of the pistil that receives the pollen, commonly at the tip of the style and variously enlarged.

STIGMAPHÝLLON (*Stigmatophyllon*). *Malpighiaceæ.* Usually twining woody vines from trop. Amer., with opposite simple lvs., yellow fls. in umbel-like corymbs, and fr. of 1–3 samaras; grown out-of-doors in warm regions, also sometimes in the greenhouse where they are propagated by cuttings in heat.

ciliàtum. Slender twiner: lvs. glabrous, the margins ciliate: clusters with 3–6 showy fls. St. Thomas (W. Indies), S. Amer.

littoràle. Robust, with tuberous roots: lvs. glabrous above, pubescent beneath: clusters many-fld. Brazil.

STILBOCÁRPA. *Araliaceæ.* Large herbs of New Zeal. and adjacent isls., sometimes grown under glass or in the open in warm climates: lvs. large, simple: fls. unisexual, in compound umbels forming large globose heads.

Lỳallii. To 4 ft.: lvs. orbicular-reniform, lobed and toothed, to 1½ ft. across, glabrous above, bristly-hairy beneath: fls. reddish-purple, in heads to 1 ft. across: fr. black and shining.

polàris. Differs from *S. Lyallii* in lvs. bristly on both surfaces, yellowish fls. with purplish center, and fr. hollowed at apex.

STILLÍNGIA. *Euphorbiaceæ.* Shrubs or herbs with alternate simple lvs., monœcious fls. without petals borne in terminal spikes, and capsular frs.; the following is grown for medicinal purposes.

sebífera: *Sapium sebiferum.*

sylvática. Queens Delight. Per. to 3 ft.: lvs. lanceolate to oblong, to 4 in. long, toothed: fls. yellow, the spikes to 3 in. long. Va. to Fla. and Tex.

STINK BELLS: *Fritillaria agrestis.*

STÌPA (*Lasiagrostis*). Spear-Grass. Feather-Grass. *Gramineæ.* Per. grasses with mostly convolute lvs. and small awned spikelets borne in panicles; widely distributed and grown for ornament and *S. tenacissima* for fiber. See *Grasses.*

argéntea. To 1½ ft.: panicles to 4 in. long, with plumose silvery awns to 2 in. long. Argentina.

bulbòsa: listed name.

elegantíssima. To 3 ft.: panicles to 8 in. long, open, with awns to 1¼ in. long and plumose pedicels. Australia.

pennàta. Tufted, to 3 ft.: panicles dense, with plumose awns to 1 ft. long. Eu., Asia.

spléndens. To 6 ft.: panicles to 1 ft. long, with awns to ½ in. long, the glumes pearly and shining. W. Asia.

tenacíssima. Esparto-Grass. To 3 ft.: panicles short, with plumose awns to 2 in. long. Spain, N. Afr.

STIPE: the stalk of a pistil or other small organ; also the petiole of a fern leaf.

STIPULE: a basal appendage of a leaf, usually on the petiole or at its insertion; the three parts of a complete leaf are blade, petiole, stipules (usually 2). *Stipel* is the stipule of a leaflet.

STIZOLÒBIUM. Velvet Bean. *Leguminosæ.* Extensive twiners with lvs. of 3 large lfts., papilionaceous fls. in long racemes, and mostly thick hairy or velvety pods; grown for forage far S. and also for ornament; ann. or grown as such. Some authors prefer to place the species in Mucuna.

Velvet beans are adapted only to warm regions and will not stand frost. They should be planted with some supporting crop, such as corn. Propagated by seeds.

Deeringiànum (*Mucuna Deeringiana*). Florida Velvet B. Fls. dark purple: pods to 3 in. long, covered with dense black pubescence; seeds nearly globular, whitish spotted with brown and black. Probably S. Asia or Malaya.

Hássjoo. Yokohama Bean. Fls. dark purple: pods to 4½ in. long, with white pubescence; seeds somewhat flattened, ash-colored. Probably Japan.

níveum. Lyon Bean. Fls. white: pods to 5 in. long, with white pubescence; seeds flattish, ash-colored. Probably S. Asia and Philippines.

prurìtum. Cowage. Cowitch. Fls. dark brownish-purple: pods to 4 in. long, bristly-hairy; seeds oblong, spotted. Tropics.

STOCK (*Mathiola* and *Malcomia*). Three unlike plants comprise the stocks of gardeners. The evening stock, grown for its very fragrant lilac or light purple small flowers that open toward night, is a straggling branchy annual with very narrow leaves, native in southeastern Europe, named *Mathiola bicornis* from the two conspicuous horns on the end of the mature pods; flowers sessile. The Virginian stock, annual, grown for its abundant small not fragrant flowers in lilac, red and white, is *Malcomia maritima* which see; pod not horned; flowers short-stalked.

The third kind is the common or Brampton stock of the florists and flower-gardens; it is biennial or perennial, *Mathiola incana*, with an annual race known as ten weeks stock, var. *annua;* there are intermediate races; it is native in southern Europe. It is a sturdy erect felty plant, 1–2½ feet high, with colors in cultivation running from white to pink, red, purple, terra-cotta, yellowish, very fragrant, usually double. There are dwarf compact races. It is grown for summer and autumn bloom in the open, and also under glass; a standard garden flower for beds, borders, bouquets and floral decorations.

The annual or ten weeks stock is grown for summer and autumn flowers from seeds started in late winter or very early spring or sometimes later for autumn use. Transplant as needed to maintain continuous growth and to produce stocky plants, letting them stand 8–10 inches apart. They make good house subjects in pots, from seeds sown in summer. Usually handled as a half-hardy subject.

The intermediate stock requires a longer season; sown at the same time as the ten weeks, it succeeds that kind in bloom. The intermediate kinds are hardier and may be expected to bloom up to cold weather. For spring bloom, the hardy biennial strains are employed, the seeds being sown the spring or summer before and the plants carried over winter in a cool house or frame; or they may be lifted in autumn and potted for winter bloom. Special colors are sometimes perpetuated by cutting propagation. Stocks are often grown by florists in beds under glass, for spring sale. For this purpose, seeds may be started in late autumn and early winter. See *Mathiola.*

STOKÈSIA. Stokes Aster. *Compositæ.* Per. herb native from S. C. to La. and planted in the garden. It thrives in well-drained sandy loam, but requires protection N. Propagated by seeds and division. **S. lævis** (*S. cyanea*). Sts. woolly or floccose above: lvs. oblong-lanceolate, to 8 in. long, spiny-toothed toward base: heads to 4 in. across, blue or purplish-blue, the marginal fls. enlarged; pappus of scales. July–Oct. Vars. **álba,** white, **cærùlea,** blue, **élegans, lilácina,** lilac, **lùtea,** creamy-yellow, and **ròsea,** pink, are listed.

STOLON: a shoot that bends to the ground and takes root; more commonly, a horizontal stem at or below surface of the ground that gives rise to a new plant at its tip.

STOMÀTIUM. *Aizoaceæ.* Stemless succulents: lvs. united at base, with teeth on edges: fls. sessile or short-stalked; petals linear; stigmas 5–6. A large group split off from Mesembryanthemum.

agnìnum: *Agnirictus agninus.*

alboròseum. Branches with 4–6 spatulate lvs. to 1 in. long and ¼ in. wide, punctate: fls. white or rose, ½ in. across, fragrant.

diffórme. Densely tufted: lvs. of two kinds, to 1 in. long and ½ in. wide, white-punctate: fls. yellow tipped with red, fragrant.

Dúthieæ. Tufted: lvs. unequal, ½ in. long and ⅓ in. wide, glaucous suffused with rose, with prominent tubercles: fls. yellow.

Fúlleri. Plant about 1 in. high, branches crowded: lvs. to ¾ in. long and ½ in. wide, punctate.

Géoffreyi. Branches with 6–8 crowded lvs. to ¾ in. long and ½ in. wide: fls. reddish or yellowish.

Jàmesii. Branches to 5 in. long, sometimes rooting: lvs. orbicular or spatulate, to ½ in. long, glaucous, punctate: fls. yellow, fragrant.

Meỳeri. Densely tufted: lvs. 1 in. long and ¼ in. wide, punctate: fls. white, rose outside, fragrant.

murìnum (*M. murinum*). Much branched: lvs. to 1 in. long and ⅓ in. wide, with white pellucid dots: fls. solitary, yellow, fragrant, 1 in. across.

mustellìnum (*M. mustellinum*). Much branched with prostrate branches: lvs. rhomboid, to 1 in. long and ½ in. wide, with large pellucid dots: fls. solitary, yellow, fragrant.

níveum. Lvs. to 1 in. long and ¼–½ in. wide, glaucous with prominent white spots: fls. snow-white, very fragrant.

Rónaldii. Lvs. erect or incurved, to ½ in. long and ⅕ in. wide, punctate: fls. with hair-like petals about ½ in. long.

suavèolens (*M. suaveolens*). Lvs. very fleshy, ¾ in. long and ½ in. wide, somewhat recurved, spotted: fls. yellow.

suricatìnum. Branches with 4–6 truncate lvs. 1 in. long and ¼ in. wide, slightly punctate: fls. lemon-yellow, slightly reddish outside.

STOMOISIA: see *Utricularia.*

STONECROP: *Sedum.*

STONEFACE: *Lithops.*

STONE-FRUITS: *Prunus.*

STONE-ROOT: *Collinsonia.*

STORAX: *Styrax.*

STORKSBILL: *Pelargonium.*

STRANVAÈSIA. *Rosaceæ.* Evergreen trees and shrubs of Asia with alternate simple lvs., white fls. in terminal clusters, and fr. a small red or orange pome; grown in S. U. S. Propagated by seeds or cuttings of half ripe wood under glass.

Davidiàna. To 20 ft. or more: lvs. oblong, to 4 in. long, entire: fls. ⅓ in. across, the corymbs to 4 in. wide. China. Var. **salicifòlia** (*S. salicifolia*) has narrow lanceolate lvs. Var. **undulàta** (*S. undulata*) has lvs. wavy at margins.—Stands in D. C.

glaucéscens: *S. Nussia.*

Nússia (*S. glaucescens*). Small tree: lvs. obovate, to 5 in. long, finely toothed: fls. ½ in. across, in corymbs to 5 in. wide. Himalayas.

salicifòlia: *S. Davidiana* var.

undulàta: *S. Davidiana* var.

STRATIÒTES. WATER-SOLDIER. *Hydrocharitaceæ.* European per. aquatic herb, sometimes planted in ponds. **S. aloìdes.** Sts. very short: lvs. submerged, linear-lanceolate, fleshy, edged with pointed spiny teeth: fls. unisexual, white, on peduncles rising above water.—Propagated by side shoots from base of lvs.

STRAWBERRY (*Fragaria*, probably mostly derived from *F. chiloensis*). Perennial herbs, grown for the large red fruit, which is structurally an enlarged fleshy receptacle with many seeds imbedded in it: these "seeds," however, are the true fruits in a botanical sense, or achenes, the seed being inside the thin dry ovary wall. See *Fragaria.*

In some varieties the stamens are not sufficiently developed to insure pollination; they are often listed as "pistillate" or imperfect although the denomination is not strictly correct. Varieties with such imperfect flowers should be planted not more than two rows together, the rows next them being strong pollen-bearers. Although perennial, strawberries do not bear good crops indefinitely. Usually they may be fruited two or three times, but on fertile land and with extra good care the first crop (the year after setting) may be very heavy and the patch may then be plowed or spaded up. To maintain a continuous good supply a new patch should be set not less than every other year.

In some of its varieties the strawberry can be grown throughout the United States, in most parts of Canada and in parts of Alaska. It thus has a wider distribution than any other temperate-zone fruit. Most varieties reach their best development on sandy soils, although some, such as Aroma and Gandy, are best suited to the heavier silt and clay loams. A good humus supply is of advantage, and good drainage is essential.

Propagation is by new plants formed on runners which, with most varieties, are produced abundantly in the growing season. In the nursery, plantations are set for the production of plants alone, the blossoms being removed. In the home garden, new plantings can be set with young plants from the old bed. Commercial growers usually set nursery-grown plants. The time of setting strawberry plants varies in different climates. In the northern states early spring is the usual time. In the South, fall planting is of advantage, being governed by the time of the desired fruiting season. The plants are set so that the crowns are just level with the surface of the ground, and the soil is well firmed about the roots.

As to the methods of culture, so much depends on the size of the plot, the purpose for which the fruit is wanted, and the amount of care one is willing to give, that no set rule can be stated. In most commercial plantings the matted row system of culture is used. The plants are set 15–30 inches apart in rows spaced at 3½–5-foot intervals. All the runner plants are allowed to grow but are confined in a strip 15–24 inches wide. With some varieties, *e.g.* the Dorsett, and when fancy fruit is desired, some type of spaced row is used. Here the new runner plants, before rooting, are placed in a definite pattern, either in a single row with plants spaced 7–10 inches apart, or in three rows, one on either side of the row of plants originally set. When all spaces are filled, the other runner plants are destroyed. In home plantings where fancy berries are wanted, and particularly with everbearing varieties, strawberries may be grown in hills spaced 12–18 inches apart in rows 2–3 feet apart. In this system of culture all runner plants are removed. When so treated the crowns branch, producing very large plants which bear abundant fancy fruit.

Clean culture is necessary from the time the plants are set until they are mulched in autumn. The needed organic matter can be best supplied by heavy applications of manure with the crop, whatever it may be, the year preceding the setting of strawberries, or by turning under clover sod the previous year. On poorer lands a complete fertilizer with high nitrogen content applied when the plants are set may be profitable.

In the northern states the winter treatment of a strawberry bed should consist in covering the plants, in late autumn before hard freezes, with straw or hay. Salt marsh hay, if obtainable, is excellent, as few weed seeds are introduced. Cover the ground and the plants to the depth of 2 or 3 inches when straw has settled. As soon as growth begins in spring, rake the mulch off, allowing it to lie between the rows and lightly around the base of the plants to keep the berries clean.

Strawberries for shipment are picked with the stems attached, when well colored but still firm. The usual practice is to pick directly into the quart or pint berry boxes that will be used for shipment. For local or home use the berries are allowed to ripen on the plants. Berries should be cooled to 50° F. as soon as possible after picking and shipped in iced cars. Yields vary with variety and care. Three thousand quarts to the acre is a good average, although twice or three times that yield is possible.

Varieties should be chosen with reference to soil and climate. Varieties are named in order of ripening.

Hardy varieties for planting in cold regions: Howard 17, Dunlap, Pocomoke, Crescent, Dakota.

Varieties for the northern states and Atlantic coast: Howard 17, Clermont, Dorsett, Fairfax, Catskill, Glen Mary, Big Joe, Chesapeake, Gandy, Late Stevens.

Varieties for Florida and the Gulf states: Klondike, Missionary, Aroma, Blakemore, Southland.

Varieties grown on the Pacific coast: Clark, Dollar, Magoon, Marshall, Oregon, Wilson, Nick Ohmer.

Everbearing varieties: Progressive, Gem, Green Mountain, Mastodon.

The hautbois, alpine, and perpetual strawberries are forms of *Fragaria moschata* and *F. vesca* of Europe and are seldom grown in North America, being sometimes seen in gardens of amateurs.

Although many pests and diseases may cause serious damage, it is usually possible to grow strawberries for home use without spraying, particularly if the rotation is short. The commercial grower should spray to meet his special problems. It is important from the standpoint of disease and pest control to keep the plants vigorous by good cultural practice. Leaf-spot is generally the most troublesome disease. It is kept in check by bordeaux or other fungicides applied before blossoming and twice after harvest.

STRAWBERRY, BARREN-: *Waldsteinia fragarioides.* **-Bush:** *Euonymus americanus* and *obovatus.* **Indian-:** *Duchesnea.* **Mock-:** *Duchesnea.* **Tree:** *Arbutus Unedo.*

STRAWFLOWER: *Helichrysum bracteatum.*

STRELÍTZIA. Bird-of-Paradise Flower. *Musaceæ.* Per. herbs of S. Afr. sometimes with woody trunks, banana-like lvs. and irregular bisexual fls. borne in rigid boat-like bracts, 2 of the 3 petals united to form an arrow-shaped body or "tongue."

Several species are suitable for warm climates or under glass in tubs with a night temperature of 50°; plants make clumps. Propagated by suckers and division.

augústa. To 18 ft., with trunk: lvs. to 4 ft. long and 2 ft. wide, with deeply wing-channelled petiole: fls. white, the purplish bracts to 15 in. long.

Nícolai. Resembling *S. augusta* but much larger and tree-like and fls. with blue tongue.

parvifòlia. Trunkless: lvs. to 9 in. long and 3 in. wide: fls. bright orange with blue tongue, bracts green edged with red, to 6 in. long.

Regìnæ. To 3 ft., trunkless: lvs. to 1½ ft. long and 6 in. wide: fls. yellow with dark blue tongue, the purplish bracts to 8 in. long.

STREPTANTHÈRA. *Iridaceæ.* S. African cormous herbs of the Ixia relationship, with lvs. in fan-shaped basal rosettes and 2–3 fls. in a spike, perianth wheel-shaped with short tube.

cùprea. Lvs. to 4 in. long and ⅓ in. across: fls. copper-yellow with purple throat edged black and yellow spot in center, 1 in. long, on peduncles shorter than lvs.

STREPTANTHUS: *Caulanthus inflatus.*

STREPTOCÁRPUS. Cape-Primrose. *Gesneriaceæ.* Low herbs native in S. Afr. and Madagascar, with basal lvs., purple or blue scapose fls. with long tube and 2-lipped corolla-limb, and capsular frs.

Cape-primroses thrive in a cool greenhouse and are of easy cultivation. Seeds sown in February–March should produce blooming plants the following autumn or winter. Propagated also by leaf-cuttings and division.

achimeniflòrus. Lvs. elliptic, to 8 in. long, several, bright green and fleshy: fls. bright blue to pink or white, about 2 in. across, usually solitary, lobes deeply cleft and toothed.—A garden hybrid, one parent believed to be *S. polyanthus.*

Dúnnii. Lvs. solitary, to 3 ft. long, soft-pubescent, margins irregularly and coarsely toothed, bullate above: fls. rose or reddish, 1½ in. long, in great abundance on scapes 1 ft. or more high.

hýbridus. Under this name may be represented any of a dozen Latin-named and innumerable vernacular-named hybrids of the species.

kewénsis. Hybrid between *S. Rexii* and *S. Dunnii:* lvs. 2–3, oblong, large, dark green: fls. mauve-purple with striped throat, 2 in. long and 1½ in. wide.

Réxii. Lvs. several, to 8 in. long: fls. blue or mauve, 1½ in. long, usually only 1–2 on scapes to 1 ft. high.

Wéndlandii. Lvs. solitary, 2 ft. and more long, purple beneath: fls. violet-blue, 1 in. long and 1½ in. across, on scapes to 2½ ft. high.

STRÉPTOPUS. Twisted-Stalk. *Liliaceæ.* Per. herbs with creeping rootstocks, alternate sessile or clasping lvs., and small rose or whitish nodding axillary fls., the perianth-segms. distinct; of easy cult. in the wild-garden.

amplexicaùlis: *S. amplexifolius.*

amplexifòlius. To 3 ft.: lvs. to 5 in. long and 2 in. wide, glaucous beneath, clasping at base: fls. greenish-white, ½ in. long, 2 together: berries red, ellipsoid, to ⅝ in. long. N. Amer.

cúrvipes. To 1 ft.: lvs. ovate to lanceolate, to 3½ in. long, sessile: fls. rose-pink, campanulate, to ½ in. long, lobes mottled within, not recurved: berries red, globose, nearly ½ in. diam. W. Canada.

ròseus. To 2½ ft.: lvs. to 4 in. long and 1½ in. wide, sessile, not clasping: fls. purple or rose, ½ in. long, usually solitary, lobes recurved: berries red. E. U. S.

streptopoìdes. To 1½ ft.: lvs. ovate-lanceolate, broadly obtuse at base, sessile: fls. deep red, solitary, pendent, axillary, corolla rotate, lobes yellowish-green toward tip: berries bright red, globose. Var. **atrocárpus** has black berries. Japan.

STREPTOSÒLEN. *Solanaceæ.* Rough-pubescent evergreen shrub to 6 ft. high, native in

Colombia and Ecuador. **S. Jàmesonii** (*Browallia Jamesonii*). Lvs. oval, to 1½ in. long, entire: fls. orange-red, with tube to 1¼ in. long, and spreading 5-lobed limb, borne in clusters at the end of flexuose branches: fr. a leathery caps.—A popular greenhouse plant and grown out-of-doors in S. U. S. Propagated by cuttings.

STRICT: straight and upright, little if any branched, often rigid.

STRINGYBARK: *Eucalyptus.*

STROBILÁNTHES. *Acanthaceæ.* Herbs or shrubs from trop. Asia: lvs. opposite: fls. tubular, constricted at base and swollen above, unequally 5-lobed, in spikes or panicles or solitary. Grown for fls. and foliage.

The following are grown under glass and require high temperatures and abundant moisture. Care must be taken or the plants may become weedy. Propagated by cuttings.

anisophýllus. Differs from *S. isophyllus* chiefly in the broader lvs. and those of each pair being unequal in size. India.

Dyeriànus. Shrub: lvs. ovate-lanceolate, to 8 in. long, toothed, purple beneath, iridescent above: fls. violet, 1½ in. long, in spikes. Burma.

isophýllus. Shrub to 3 ft.: lvs. willow-like, to 4 in. long, toothed: fls. pinkish or blue and white, 1 in. long, in axillary clusters. India.—See *Ruellia malacosperma.*

STROBUS: *Pinus Strobus.*

STROMÁNTHE. *Marantaceæ.* Per. herbs of S. Amer. with thick rootstocks, leafy sts. and fls. with colored bracts in racemes or panicles; foliage plants adapted to a warm greenhouse. For cult. see *Calathea.*

Porteàna. To 6 ft.: lvs. to 1 ft. long and 6 in. broad, bright green above transversely barred with silvery-white, purple beneath: fls. blood-red. Brazil.

STROMBOCÁCTUS. *Cactaceæ.* Small low depressed nearly spineless cacti differing from Echinocactus in short imbricated scale-like tubercles which are not arranged on ribs; scales on fl.-tube with papery margins. See *Cacti.*

discifórmis (*Echinocactus disciformis* and *turbiniformis. Mammillaria disciformis*). Top-shaped or somewhat globose, to about 2 in. across; young tubercles with 1–4 white needle-like spines to ⅝ in. long, but old one nude: fls. from center of plant, white, red outside, about ¾ in. long. Cent. Mex.

macrochèle. Solitary, depressed-globose, to 1½ in. diam., gray-green, somewhat subterranean with flattened top nearly level with ground; ribs tubercled; spines 3–5, to 1½ in. long, hooked, yellowish to gray: fls. white, to ¾ in. across. Mex.

pseudomacrochèle: a little-known Mexican cactus.

Schmiedeckiànus. Solitary to cespitose, depressed-globose; ribs 10–12, spiral, tubercles 4-angled; spines 1–4, to 1 in. long, stout, white to gray with black tip, those on top of plant curved conspicuously inward: fls. pale rose-pink, midrib of segms. violet. Mex.

STROMBOCARPA: *Prosopis.*

STROPHÁNTHUS. *Apocynaceæ.* Shrubs somewhat allied to Nerium (oleander), often climbing, native in Afr. and trop. Asia, one somewhat planted in S. Calif.: lvs. opposite or whorled: fls. usually showy, in terminal corymbs.

speciòsus. Branches trailing or clambering: lvs. in whorls of 3–4, oblong-lanceolate, to 3½ in. long, leathery: fls. cream, yellow or orange spotted with red, having linear tails to 1½ in. long. S. Afr.

STROPHOLIRION CALIFORNICUM: *Brodiæa volubilis.*

STROPHOSTỲLES. *Leguminosæ.* Herbaceous vines allied to Phaseolus and Vigna, with lvs. of 3 lfts. and pinkish or white fls. in heads at tips of long axillary peduncles.

umbellàta. Per. with trailing sts. to 5 ft. long: lfts. ovate to lanceolate, usually entire: fls. pink fading yellowish, ½ in. long: pods linear, to 2 in. long. L. I. to Fla. and Tex.

STRUTHIOPTERIS: see *Blechnum* and *Pteretis.*

STRYCHNINE: *Strychnos Nux-vomica.*

STRÝCHNOS. *Loganiaceæ.* Shrubs and trees of trop. regions, with opposite lvs., white to yellowish small fls. in cymes, the corolla 4–5-cleft, stamens 5, and fr. somewhat berry-like but perhaps with a hard shell; grown as drug plants and one for curiosity and the edible fr.

Núx-vómica. Strychnine. Tree to 40 ft.: lvs. ovate, to 3½ in. long: fls. in terminal cymes 2 in. across: berry 1½ in. across, with many seeds yielding the poison strychnia. India.

spinòsa. Natal-Orange. Shrub to 10 ft., with spines ½ in. or more long: lvs. nearly orbicular to obovate, to 2 in. long, 5-nerved from near the base: fls. in terminal compound cymes: berry 4 in. across, becoming yellow, the seeds embedded in sweet edible pulp. Trop. and S. Afr.

STUARTIA: *Stewartia.*

STULTÍTIA. *Asclepiadaceæ.* A small genus of S. African succulents closely allied to Stapelia and Caralluma, having the habit of the former and the corona of the latter but differing from both in the corolla with a broad cushioned annulus.

Coòperi (*Stapelia Cooperi*). Sts. erect or ascending to 2½ in., with spreading acute teeth to ¼ in. long and having minute tooth on each side at middle, angles obtuse: fls. purplish with yellow rugosities to dull yellow with purple-brown lines, the annulus purplish-pink, corolla to 1½ in. across, flat with spreading or recurving lobes: fr. fusiform, to 3½ in. long.

STYLE: more or less elongated and often slender part of the pistil between the ovary and stigma.

STYLIDIÀCEÆ. Stylidium Family. Six genera of herbs or rarely small shrubs of the southern hemisphere, with simple lvs., bisexual or unisexual fls. having 3–7-lobed calyx, 5–10-lobed or -parted corolla, 2–3 stamens, inferior 2–3-celled ovary, and fr. a 1–3-celled caps. Fostera and Stylidium are treated here.

STYLÍDIUM. *Stylidiaceæ.* Herbs or subshrubs with basal or tufted lvs. and irregular fls. in racemes, panicles or cymes; rarely grown in Calif.; mostly Australian.

graminifòlium. Per. to 2 ft.: lvs. all basal, linear, to 10 in. long, acute: fls. yellowish, glandular-pilose outside: caps. ovoid-oblong.

reduplicàtum. Scapes 1–1½ ft. high: lvs. radical, linear, to 1 ft. long: fls. yellowish-white or pale pink, in a short loose raceme.

STYLOMA: *Eupritchardia.*

STYLOMÈCON. *Papaveraceæ.* One ann. herb native in W. N. Amer. **S. heterophýlla** (*Meconopsis heterophylla*). Flaming-Poppy. Wind-Poppy. Sts. erect, leafy, to 2 ft., glabrous or only sparsely pubescent: lvs. irregularly pinnately divided, rarely sessile, somewhat fleshy: fls. brick-red with purple center, to 2 in. across, solitary on slender peduncles, ovary somewhat flattened at apex: fr. an obovate caps. which dehisces by means of 8 operculate lids.—Requires shade and good drainage.

STYLÓPHORUM. *Papaveraceæ.* Per. herb with yellow juice, pinnately cut lvs. and yellow or red fls. solitary or clustered; sometimes transplanted from the wild and of easy cult. in rich soil in partial shade.

diphýllum. Celandine-Poppy. To 1½ ft.: fls. deep yellow, to 2 in. across, in 2–4-fld. clusters, Mar.–May: caps. to 1 in. long. Pa. to Wis. and Mo.

STYLOPHYLLUM: see *Echeveria.*

STÝPÁNDRA. *Liliaceæ.* Per. herbs of the asphodel tribe, native in Australia, with fibrous roots and blue fls. in loose terminal cymes, of 6 spreading perianth-segms.

glaùca (*S. grandiflora*). To 3 ft., with leafy sts.: lvs. linear or lanceolate, to 4 in. or more long: fls. ½ in. long.

grandiflòra: *S. glauca.*

STYRACÀCEÆ. Storax Family. Trees and shrubs of wide distribution in Old and New World, containing 6 genera: lvs. alternate, simple: fls. regular and bisexual, having 4–5-lobed calyx, 4–8 petals united at base, 4–16 stamens, superior or partly inferior ovary: fr. a drupe or dry and dehiscent, sometimes winged. Genera grown for ornament are Alniphyllum, Halesia, Pterostyrax, Rehderodendron, Styrax.

STÝRAX. Storax. *Styracaceæ.* Woody plants with showy white fls. in racemes followed by small drupaceous but sometimes dry frs. Many species in trop. and warm temp. parts of world.

Storaxes succeed in light porous soil. Few of the species are hardy North without winter protection. Propagated by seeds, layers, with difficulty by cuttings, and by grafting on other species or on *Halesia carolina.*

americàna. To 10 ft.: lvs. oval or oblong, to 3 in. long, pubescent: racemes few-fld.: fr. ⅓ in. long. Va. to Fla. and La.; stands in N. Y.

califórnica (*S. officinalis* var. *californica*). To 8 ft.: lvs. ovate, to 2½ in. long, pubescent beneath: fls. to 1 in. long, in few-fld. racemes. Calif., where it is sometimes planted.

calvéscens. Shrub or small tree: lvs. oblong to obovate, to 3¼ in. long, densely tomentose when young: fls. about ⅜ in. long, in about 10-fld. racemes, calyx gray-tomentose. Hupeh, China.

grandiflòra: *S. grandifolia.*

grandifòlia (*S. grandiflora*). To 12 ft.: lvs. oval or obovate, to 7 in. long, gray-pubescent beneath: fls. fragrant, in many-fld. racemes to 5 in. long: fr. ½ in. across. Va. to Fla.; not hardy N.

japónica. To 30 ft.: lvs. oval or obovate, to 3 in. long, becoming glabrous: fls. fragrant, drooping, long-stalked, in few-fld. racemes: fr. ½ in. long. Japan, China; hardy N.

Obássia. To 30 ft.: lvs. nearly orbicular to oval, to 10 in. long, pubescent beneath: fls. fragrant, in many-fld. racemes to 8 in. long: fr. ¾ in. Japan; hardy N.

officinàlis. To 20 ft.: lvs. oval or ovate, to 2½ in. long, pubescent beneath: fls. ¾ in. long, in few-fld. racemes. Eu., Asia Minor; not hardy N. Var. **califórnica** is *S. californica.*

philadelphoìdes. To 7 ft.: lvs. narrowly oblong, to 3¼ in. long, sparsely hairy when young: fls. to ¾ in. long, in 4–6-fld. racemes, calyx covered with yellow hairs. E. China.

platanifòlia. To 12 ft.: lvs. nearly orbicular, with wavy or slightly lobed margins, to 4 in. across, glabrous: fr. ⅓ in. long. Tex.

Wilsonii. To 10 ft., much branched: lvs. rhombic-ovate or oval, to 1 in. long, pubescent beneath: racemes few-fld.: fr. ⅓ in. long. China; not hardy N.

SUBTEND: to stand below and close to, as a bract underneath a flower, particularly when the bract is prominent or persistent; the flower is in the axil of the bract.

SUCCÌSA. *Dipsaceæ.* Herbs very similar to Cephalaria and Scabiosa and differing chiefly in having the scales of the receptacle about as long as fls.; native in S. Eu. and sometimes grown in the flower-garden.

austràlis (*Scabiosa australis*). Per. to 3 ft.: lvs. oblanceolate to lanceolate, to 1 ft. long: fls. pale blue, in hemispherical heads to ¾ in. across. Eu.; nat. in N. E. U. S.

praténsis (*Scabiosa Succisa*). Per. to 3 ft.: lvs. oblong, entire: fls. violet-blue, rarely white, in long-stalked heads to 1½ in. across. Eu.

SUCCORY: *Cichorium Intybus.*

SUCCULENTS. A succulent plant, or a succulent, is strictly one that is full of sap (Latin *succus*, juice, sap); but in horticultural usage it is a thick fleshy plant, and such plants are commonly juicy or sappy.

What particular plants are to be included in the succulents is determined only by custom. For the most part, succulent plants are native in regions that are arid or semi-arid for at least part of the year, and the succulence has relation to water storage. It is in the study of habitats, therefore, that the gardener obtains the initial clue to the cultivation and handling of succulents.

The succulents are of many genera in many natural families. The regions they inhabit have widely different temperature characteristics. Some of the succulents, as a few sedums, are indigenous in regions of severe winter cold, with temperatures far below zero F. Mostly, however, they are natives in mild temperate and in tropical climates. They abound in the genus Mesembryanthemum (which see for culture) and segregates, in Crassulaceæ, African members of Euphorbia, in many asclepiads as Stapelia and its relatives, Liliaceæ, Amaryllidaceæ, Kleinia and a few other composites, Bromeliaceæ, Portulacaceæ. In a broader sense, cacti may be included although specialists do not so classify them. In the following remarks both succulents and cacti are in mind.

Succulents and associates are prized for oddity. They are given to condensed and often to grotesque forms. Many of them have a slow-growing more or less durable body, changing little from year to year. Often the flowers are brilliant and large. All these characteristics make them interesting to fanciers. Succulents, as a class, are special horticultural subjects, prized by collectors and enthusiasts; they are therefore notable and worth the particular care they may require.

As a class these plants are not difficult to grow. Most of them need a full sun exposure; also a porous gritty soil that relieves itself of superfluous water and yet sufficiently compact and retentive to hold the moisture the plant requires. Good drainage is essential. Much fresh organic material is to be avoided in the soil. Sand, pulverized brick or rock may be added to soil to give it the proper porosity and warmth. The trouble in growing succulents is mostly in trying to raise them in moist cloudy climates to which the major part of them are not adapted; it is then that particular attention is required to make sure that they do not rot at the root from soggy and sour soil. These succulents may thrive with a minimum of attention in a region naturally adapted to them, as in central and southern California. Yet many kinds are naturally at home in humid climates, as some of the sedums, kalanchoës, rochea and other Crassulaceæ. In their growing season the succulents require plenty of moisture, as is the case where most of them grow naturally; usually there is a semi-dormant period corresponding to the dry or the cold season of their native places, and at this time they may easily be injured by thoughtless soaking. On the other hand, it is a mistake to suppose that succulents, more than other plants, can withstand desiccation of the roots for any length of time. In North America the leading succulents will always be cacti; one has but to observe the conditions under which they grow to apprehend the proper treatment. See *Cacti.*

The softer non-woody kinds (to which the term succulents is sometimes restricted), as cotyledons, gasterias, and stapelias, are readily grown in pots in a sunny greenhouse or conservatory, the essentials being the gritty or porous soil that disposes of excess moisture, care in watering to suit the needs of the plant, and patience to allow them to come slowly and naturally to their full stature. The gardener soon learns when to keep them "slow" and when to repot and stimulate new growth. All succulents in pots make interesting subjects in the open in summer; they are not turned out of the pots but are plunged to the rims. Sometimes the roots of succulents are ruined by nematodes which are nearly or quite microscopic worms. The preventive is sterilized soil. In cold countries soil may be thoroughly frozen before employed in potting.

As succulents do not belong to one class or type of plant, so there is no single method of propagating them. Many of them make natural offsets, and multiplication is then very simple. Seeds commonly grow readily; care must be taken to prevent damping-off of the seedlings, from too wet soil; sterilized earth or clean sand or other sterile medium is advisable. In the cacti, one kind may be grafted on another with ease.

Because succulents are such striking subjects, there is the temptation to make either permanent or summer plantings where they are quite out of harmony. A miscellaneous mess of succulents in the front yard may be anything but desirable or attractive; and yet the same plants placed at one side or in the rear with relationship to banks, boundaries and buildings, and properly harmonized among themselves, may be worthy of all admiration. Some of the low and tufted kinds lend themselves well to rock-gardening. The imitation of an arid or desert landscape is worth while in a dry or desert country when area is sufficient and surroundings are in keeping: this kind of landscaping is capable of distinct artistic development.

The kinds of plants known as succulents are so many and so peculiar, and the records of them have been so imperfect in herbaria, that the amateur finds a special satisfaction in making living collections and in trying to understand them. In regions like California and the Southwest succulent gardening is likely to become an important enterprise, and it will add many plants to the North American cultivated flora. Some of them now grown by fanciers are yet unknown to general horticultural literature. The interest in succulents is represented by the Cactus and Succulent Society of America, which publishes a journal in Los Angeles.

SUFFRUTICOSE: pertaining to a low and somewhat woody plant; diminutively shrubby or fruticose; woody at base.

SUGAR-APPLE: *Annona squamosa.* **-Bush:** *Rhus ovata.* **-Cane:** *Saccharum officinarum.*

SUGARBERRY: *Celtis lævigata.*

SUKSDÓRFIA. *Saxifragaceæ.* Glandular-pubescent saxifrage-like herb, the rootstock bearing bulbels. **S. violàcea.** To 1 ft.: basal lvs. kidney-shaped, 5–7-lobed, to 1 in. across: fls. pink, ¼ in. long, in few-fld. panicles. Wet rocks, Mont. to Wash. and Ore. *S. ranunculifolia* is *Hemieva.*

SULCATE: grooved or furrowed lengthwise.

SULPHUR PLANT: *Eriogonum subalpinum.*

SUMAC: *Rhus.*

SUMMER SWEET: *Clethra alnifolia.*

SUNBERRY: *Solanum nigrum.*

SUNDEW: *Drosera.*

SUNDROP: *Œnothera.*

SUNFLOWER: *Helianthus.* **Desert:** *Geræa canescens.*

SUPPLE-JACK: *Berchemia scandens.*

SURINAM-CHERRY: *Eugenia uniflora.*

SUTERA: *Chænostoma.*

SUTHERLÁNDIA. *Leguminosæ.* S. African shrub grown in the greenhouse and out-of-doors in the S. **S. frutéscens.** To 3 ft., grayish-pubescent: lvs. pinnate, the lfts. numerous and small: fls. scarlet, to 1 in. long, in short axillary racemes: pods bladder-like, to 2 in. long.—Propagated by seeds and cuttings.

SUTTÒNIA. *Myrsinaceæ.* Shrubs or small trees with alternate entire lvs., small bisexual or diœcious fls., and fr. a small 1-seeded berry; the genus is separated from Myrsine chiefly because the petals are distinct or nearly so. Somewhat planted in Calif.

austràlis (*Myrsine Urvillei*). Tree to 20 ft.: lvs. oblong, to 2 in. long, wavy-margined: fls. whitish, unisexual, clustered on the branches: fr. black. New Zeal.

salícina (*Myrsine salicina*). Tree to 30 ft.: lvs. linear-oblong, to 7 in. long: fls. bisexual, clustered on the branches: fr. red. New Zeal.

SUTURE: a line or mark of splitting open; a groove marking a natural division or union; the groove lengthwise a plum or similar fruit.

SVIDA: *Cornus.*

SWAINSÒNA. *Leguminosæ.* Herbs or subshrubs of Australia, with pinnate lvs., papilionaceous fls. in axillary long-stalked racemes, and swollen pods; an old greenhouse plant, and planted out-of-doors in warm regions. Propagated by cuttings when seeds are not available.

álba: *S. galegifolia* var. *albiflora.*

coronillæfòlia: regarded as a violet-fld. form of *S. galegifolia.*

galegifòlia. Shrub to 4 ft.: fls. deep red, not fragrant: pods to 2 in. long. Var. **albiflòra** (var. *alba*) has white fls., var. **ròsea** pink fls., and var. **violàcea** rose-violet fls.

grandiflòra: *S. Greyana.*

Greyàna (*S. grandiflora*). Subshrub to 3 ft.: fls. pink: pods to 2 in. long.

SWALLOW-WORT, BLACK: *Cynanchum nigrum.*

SWARTZIA: *Solandra.*

SWEERTIA: *Swertia.*

SWEETBELLS: *Leucothoë racemosa.*

SWEETBRIER: *Rosa Eglanteria.*

SWEET CICELY: *Myrrhis odorata.* **-Potato Vine, Wild:** *Ipomœa pandurata.* **-scented Shrub:** *Calycanthus.* **-Shrub:** *Calycanthus.* **Spire:** *Itea virginica.* **Sultan:** *Centaurea moschata.* **William:** *Dianthus barbatus.* **William, Wild:** *Phlox divaricata.*

SWEET HERBS are plants of fragrant memories. They are mostly aromatic and sweet-smelling subjects, variously employed in flavoring and seasoning and as domestic remedies. They are prevailingly of the mint and parsley families (Labiatæ, Umbelliferæ). Of the mints, the herbage is mostly the desired product; in the umbellifers, the seeds are wanted.

The sweet herbs do not constitute a single cultural group, except that they are usually only incidents to the kitchen-garden and an area 2 or 4 feet square generally yields a sufficient supply for the family. Three classes may be specified. (1) Some of them are annual and are therefore grown each year from seeds sown usually directly in the garden, as anise, coriander, saffron, summer savory, sweet basil. (2) Others are biennials and only short-lived perennials, as caraway, clary, dill, fennel, sweet marjoram. (3) The larger number are perennial, persisting for many years; they are grown from seeds or division: balm, catnip, costmary, horehound, hyssop, lavender, lovage, marjoram, pennyroyal, peppermint, rosemary, sage, tansy, tarragon, thyme, winter savory, wormwood.

SWEETLEAF: *Symplocos.*

SWEET PEA (*Lathyrus odoratus*). One hardy tendril-climbing annual, much prized for its delightfully fragrant pea-like flowers, now available in many colors and shapes of flower and in different stature of plant. The plant is grown in the open garden for summer bloom, and also under glass for winter bloom from seeds sown in September and later.

Sweet peas require deep mellow soil, early planting, heavy mulching or other means of maintaining moisture. Sow the seeds as soon as the ground is fit to work in the spring, making a drill 5 or 6 inches deep. Sow thickly and cover with 1 or 2 inches of soil. When the plants have made 2 or 3 inches' growth above the soil, fill the drill nearly full, leaving a slight depression in which water may be caught. To have the ground ready in early spring, it is a good plan to trench it in the fall. The top then dries out quickly in spring and is left in good physical condition. In the middle and southern states, the seed may be planted in autumn, particularly in lighter soils. It is easy to get soils too rich in nitrogen for sweet peas; in such case, they run to vine at the expense of bloom.

If the finest flowers are wanted, do not let the plants stand less than 8–12 inches apart; provide ample support. Do not plant on the hot side of a wall or building. A succession of sowings may be made at intervals through May and June, and a fair fall crop obtained if care is taken to water and mulch; but the best results will be secured with the very early planting. After the ground is well soaked, a good mulch will hold the moisture. Do not water frequently, but thoroughly when needed. Frequent syringing with clear water will keep off the red-spider that often destroys the foliage, and attention to picking the seed-pods will lengthen the season of bloom. Provide running room, as a wire-mesh fence, and plant away from trees and bushes that have first call on moisture and fertility.

Under glass the sweet pea thrives in a cool or intermediate temperature, without particular requirements. Bloom should be obtained in winter in three months or less from the seed, depending somewhat on the proportion of sunlight and cloudiness. The seeds may be sown in rows across the bench or bed, and the vines provided with perpendicular cords or wires on which to climb.

SWEET POTATO (*Ipomœa Batatas*). A root tuber much grown in North America for food. It requires warm "quick" light but fertile land of good tilth. As a commercial crop it is largely grown in New Jersey and southward, but a home supply can be raised much farther north on warm sandy lands.

The sweet potato is grown from sprouts planted in rows, sometimes on ridges or hills, not by planting the tubers, as with the common or Irish potato. One method of obtaining these sprouts is as follows: In early spring, tubers are planted in a partially spent hotbed by using the whole tuber (or if a large one, by cutting it in two through the long way), covering the tubers with 2 inches of sand or light soil. The sash should be put on the frames and only enough ventilation given to keep the potatoes from decaying. In ten or twelve days the young sprouts begin to appear, and the bed should be watered if dry. The sprouts when pulled from the tuber will be found to have rootlets at the lower end and along the stems. These sprouts should be about 6 to 10 inches long by the time the ground is warm enough to plant them out. If two or three crops are taken, one bushel of tubers should yield 3,000 to 4,000 sprouts. The ridges, if employed, should be prepared by turning two furrows together and leveling off the top about 6 inches above the level. On this ridge the plants are set, placing them well into the leaves, and about 12 to 18 inches apart in the rows, the rows being 4 to 6 feet apart.

Subsequent cultivation of sweet potatoes consists in tilling the soil between the rows until the vines interfere with further cultivation. When the tips of the vines have been touched by frost the crop may be harvested, the tubers left to dry a few hours, and then stored in a dry warm place. To keep sweet potatoes, store in layers in barrels or boxes in dry sand, and keep them in a dry room. For commercial purposes, specially constructed storage houses are built. See that all bruised or chilled potatoes are thrown out. About 100 bushels to an acre is an average yield of sweet potatoes, but three or four times this quantity is possible. Certain kinds of sweet potatoes are known as yams, but the true yam is quite a different tuber, produced by plants of the genus Dioscorea.

There are serious diseases and insects of sweet potatoes, most of which are best controlled by careful seed selection, rotation of crops, sanitary methods of propagation whereby the plants do not become infected, and the roguing of fields for diseased plants.

SWEETSOP: *Annona squamosa.*

SWÉRTIA (also spelled *Sweertia*). *Gentianaceæ.* Mostly S. Asian herbs, closely allied to the N. American genus Frasera, distinguished by the style short or almost seemingly absent. Hardy members may be grown in the border or rockery while others are kept under glass.

albicaùlis: *Frasera nitida* var.

multicaùlis. Per. to 8 in., much branched: lvs. narrowly spatulate-oblong, to 2 in. long: corolla 5-parted, lobes to ½ in. long with glandular pit at base whose margin is minutely fimbriated. Himalayas.

Párryi: *Frasera Parryi.*

perénnis. Hardy per. to 1 ft.: basal lvs. oblong-elliptic, long-petioled, st.-lvs. ovate-oblong: corolla usually 5-parted, blue to white, lobes with 2 basal pits. Alpine regions of Eu., Asia, and Utah, Colo. northward.

radiàta: *Frasera speciosa.*

speciòsa. To 5 ft.: basal lvs. long-petioled, st.-lvs. elliptic, acuminate, about 5 in. long: corolla-lobes about ¾ in. long, fls. white with dark blue irregular blotches, in cymes forming a narrow panicle. W. Himalayas.

SWIETÈNIA. Mahogany. *Meliaceæ.* Evergreen trees of trop. Amer. with dark red wood which furnishes the mahogany of commerce, opposite or alternate pinnate lvs., small fls. in panicles, and fr. a very large woody caps. that splits from the base into usually 5 parts, the seeds winged at apex.

Mahógani. Evergreen, to 75 ft.: lvs. to 1 ft. long, of 4–10 entire lfts.: fls. white: frs. to 4 in. long, the winged seeds 2 in. and more long. S. Fla. and W. Indies.—Sometimes planted for a shade and street tree.

SWINGLÈA (*Chætospermum*). Tabog. *Rutaceæ.* Small spine-bearing tree in Luzon, Philippines, grown as a possible stock for citrus fruits and for general interest: lvs. evergreen, 3-foliolate: stamens 10: seeds hairy. **C. glutinòsa,** with a large oval terminal lft. and 2 smaller lateral ones: fls. solitary or in clusters, on slender pedicels: fr. oblong, 2–3 in. long, thick-rinded and ribbed.

SYÁGRUS. *Palmaceæ.* Mostly tree-like monœcious feather-palms of S. Amer., unarmed except perhaps on the edges of petiole, most of them in Brazil, formerly included in Cocos, distinguished from that genus and other segregates chiefly by technical characters of the fr. and seed. It agrees with Arecastrum in having the spathe deeply plicate-sulcate or grooved on the outside and in the non-ruminate albumen of the seed, but some of the species of it are small or dwarf palms much more delicate in foliage and infl. and the nutlet is prominently 3-striped, sterile cell a membranous vestige rather than a narrow area in the bony endocarp. It differs from Butia in the spathe, nutlet 1-seeded, and in the mostly naked trunk (at least below) and softer greener foliage. Except *S. Weddelliana* little known in our territory. See *Palm* for cult.

amàra: *Rhyticocos amara.*

insígnis (*Cocos insignis. Glaziova insignis*). Slender, tree-like, trunk 3–8 ft., foliage spreading-recurved: lvs. to 6 ft.; petiole and sheath unarmed but bearing dark brown wool or scurf; pinnæ not aggregate, central larger ones broad-lanceolate, narrowed at base and apex, green and somewhat paler underneath: fr. about ¾ in. long, greenish with pink at apex and abrupt short point; fruiting perianth short cup-like. Rio de Janeiro.

macrocárpa (*Cocos macrocarpa. C. Procopiana*). Trunk to 15 ft. or more, ringed and cleft: lvs. 6–10 ft., petiole white-tomentose and not spiny; pinnæ green, in clusters of 4: fr. oblong and 1-seeded, large, 3½ in. long and 1¾ in. thick, greenish-yellow, with fibrous exterior; fruiting perianth somewhat cup-like with long points. Brazil.

petræ̀a (*Cocos petræa. C. rupestris*). Small stemless palm, the caudex mostly subterranean, in several varieties: lvs. erect-spreading; petiole unarmed, white- or rusty-tomentose; pinnæ linear (very narrow, but in var. *platyphylla* somewhat broader), opposite and alternate and the lower ones 2 or 3 together: fr. oblong, about ¾ in. long, with a short point, brown, 5 or 6 or less on the spadix; fruiting perianth cup-like with sharp points. Brazil.

Weddelliàna (*Cocos Weddelliana. Glaziova Martiana*). Tree-like with slender trunk to 6 or 7 ft. and foliage nearly or quite reaching the ground: lvs. slender and graceful; pinnæ linear, singly placed, long-pointed, green, paler underneath: fr. globose-oblong, about ½–⅝ in. long, with abrupt short point; fruiting perianth small, not cup-like. Rio de Janeiro.—Much used in the juvenile state as a pot-plant, the pinnæ then 3–6 in. long and ¼ in. or less broad; foliage gracefully drooping.

SYCAMORE: *Ficus Sycamorus:* see also *Platanus.*

SYMMETRICAL: said of a flower that has the same number of parts in each series or circle, as 5 stamens, 5 petals.

SYMPHORICÁRPOS. *Caprifoliaceæ.* Deciduous shrubs with opposite simple lvs., white or pink bell-shaped or tubular fls. usually borne in clusters or spikes, and fr. a 2-seeded white or colored berry; grown for the ornamental frs. as well as the foliage and attractive habit.

These shrubs are variously hardy in the North with the exception of *S. microphyllus,* and are not particular as to soil. Propagated by seeds, cuttings, suckers and division.

acùtus: *S. mollis* var.

álbus (*S. racemosus*). Snowberry. Waxberry. To 3 ft.: lvs. oval, to 2 in. long, pubescent beneath, sometimes lobed on young shoots: fls. pinkish, bell-shaped, ¼ in. long, June–Sept.: fr. snow-white. N. Amer. Var. **lævigàtus,** to 6 ft., lvs. to 3 in. long, glabrous. Var. **ovàtus** (*S. ovatus*) has lvs. broadly ovate, bluish-green, base nearly truncate. Var. **pauciflòrus,** low, lvs. gray-pubescent beneath, fls. few.

Chenaûltii. Hybrid between *S. microphyllus* and *S. orbiculatus:* lvs. pubescent beneath: fr. red spotted whitish.

conglomeràtus: *S. orbiculatus.*

fruticòsus: listed name.

glomeràtus: *S. orbiculatus.*

microphýllus (*S. montanus*). To 10 ft.: lvs. ovate, to 2½ in. long, bluish and pubescent beneath: fls. pinkish, tubular, ½ in. long, Aug.–Sept.: fr. pink. Mex.

móllis. Procumbent or diffuse: lvs. nearly orbicular to oval, to 2½ in. long, pubescent on both sides: fls. pinkish or white, bell-shaped, ⅙ in. long, June–July: fr. white. B. C. to Calif. Var. **acùtus** (*S. acutus*) is less pubescent. Var. **frúctu-ròseus** is listed with pink fr.

montànus: *S. microphyllus.*

occidentàlis. Wolfberry. To 5 ft.: lvs. oval or ovate, to 3 in. long, grayish and pubescent beneath: fls. pinkish, bell-shaped, ¼ in. long, stamens and style exserted, June–July: fr. white. Mich. to Kans. and B. C. Var. **Heỳeri** has lvs. thinner, more obscurely veined and shorter stamens. Colo.

orbiculàtus (*S. vulgaris. S. parviflorus. S. conglomeratus. S. glomeratus*). Indian Currant. Coral-Berry. To 7 ft.: lvs. oval or ovate, to 2½ in. long, glaucous and usually pubescent beneath: fls. white, bell-shaped, ⅙ in. long, June: fr. purplish-red. N. J. to Ga. and Tex. Var. **variegàtus** has lvs. variegated with yellow. A white-fruited form is var. **leucocárpus.**

oreóphilus. To 5 ft.: lvs. oval, to 3 in. long, gray-pubescent beneath or becoming glabrous: fls. pinkish, tubular, ½ in. long, June–July: fr. white or pinkish. Ore. to Ariz.

ovàtus: *S. albus* var.

parviflòrus: *S. orbiculatus.*

racemòsus: *S. albus.*

rotundifòlius. To 3½ ft.: lvs. suborbicular to ovate, to 1 in. long, pubescent, grayish beneath: fls. pink, tubular-funnelform, to ⅓ in. long, in dense clusters: fr. white, ellipsoidal, about ½ in. long. Wash. to New Mex.—Perhaps not hardy N.

sinénsis. To 4½ ft.: lvs. elliptic to obtusely rhombic, to 1 in. long, cuneate, glaucescent beneath: fls. pinkish, solitary, campanulate, to ¼ in. long: fr. bluish-black, ovoid, to ⅓ in. long. Cent. China.

utahénsis. To 3 ft.: lvs. broad-ovate, to 1¾ in. long: fls. pink, oblong-campanulate, ⅓ in. long: fr. white. Utah to Colo.

vaccinioìdes. Low, much branched: lvs. oval, to ¾ in. long, glaucous beneath: fls. pinkish, campanulate, ⅓ in. long: fr. white. Wash. to Wyo. Var. **decúmbens** is decumbent.

vulgàris: *S. orbiculatus.*

SYMPHYÁNDRA. *Campanulaceæ.* A few species in S. E. Eu. and W. Asia of bien. and per. herbs resembling Campanula but differing in having the anthers united into a tube around the style; stigmas 3: caps. 3-celled, dehiscing by lateral or basal pores: fls. white or violet, usually nodding or hanging, more or less bell-shaped. Cult. as for *Campanula.*

armèna. Per., 1 ft. or less tall, erect or lopping: lvs. cordate-ovate and long-petioled, dentate, the upper ones minute and nearly sessile: fls. nodding, narrowly bell-shaped, about ¾ in. long, pubescent, blue or violet. Caucasus.

Hófmannii. To 2 ft., hairy: lvs. obovate, to 7 in. long, toothed: fls. white, to 1½ in. long and broad, drooping, in leafy terminal panicles, calyx without appendages. Bosnia.

péndula. To 1 ft., hairy: lvs. cordate-ovate to oblong, coarsely toothed, the lower long-stalked: fls. yellowish-white, 1¼ in. long, in racemes, the calyx with short appendages. Caucasus.

Wánneri. To 6 in., hairy: lvs. oblong-lanceolate, sharp-toothed or somewhat cut: fls. blue-violet, 1¼ in. long, nodding, in a branched thyrse, calyx without appendages. S. E. Eu.

SÝMPHYTUM. Comfrey. *Boraginaceæ.* Coarse per. herbs of the Old World, with alternate or subopposite and large basal simple lvs. and blue, purplish or yellowish fls. in coiled racemes or forked cymes; corolla tubular, expanded above, the throat crested.

Comfreys are sometimes planted in the border. Of easy cultivation. Propagated by seeds, division and root-cuttings.

aspérrimum: *S. asperum.*

ásperum (*S. asperrimum*). Prickly C. Per. to 5 ft.: lvs. ovate, petioled, covered with prickly hairs: fls. rose changing to blue, about ½ in. long. Russia to Persia.—Sometimes used as forage. Vars. **variegàtum** and **aùreo-variegàtum** have lvs. variegated and margined with yellow.

officinàle. Common C. Per. to 3 ft.: lvs. oblong-ovate to oblong-lanceolate, decurrent at base, covered with prickly hairs: fls. yellowish, purple, rose or white, about ½ in. long. Eu., Asia; escaped in N. Amer. Var. **variegàtum** has lvs. margined with white; ornamental.

taùricum. Per. to 2½ ft.: lvs. ovate-lanceolate: fls. pure white, to ¾ in. long, calyx very small. Cent. and S. E. Eu.

SYMPLOCÀCEÆ. Symplocos or Sweetleaf Family. Trees or shrubs, sometimes evergreen, with alternate simple lvs., mostly bisexual regular fls. having 5-lobed calyx, 5–10-lobed corolla, 15 or many stamens, inferior ovary, and drupaceous fr. Allied to Ebenaceæ and Styracaceæ. There is only one genus, Symplocos.

SYMPLOCÁRPUS (*Spathyema*). *Araceæ.* One strong-smelling per. herb native in swamps and wet soil in E. N. Amer., and sometimes transplanted from the wild for the great lf.-clumps; spathes appearing before the lvs. and also ornamental but the odor disagreeable. **S. fœtidus.** Skunk-Cabbage. Lvs. to 3 ft. long and 1 ft. wide, entire, the petioles 1 ft. or more long.

SÝMPLOCOS. Sweetleaf. *Symplocaceæ.* Characters as for the family: of wide distribution, a few grown for ornament.

Only *S. paniculata* is hardy North. Propagated by seeds which are slow to germinate, by layers, and by cuttings of young wood under glass.

cratægoìdes: *S. paniculata.*

paniculàta (*S. cratægoides*). To 40 ft., deciduous: lvs. obovate, to 3 in. long, finely toothed: fls. white, fragrant, ⅓ in. across, in panicles to 3 in. long: fr. blue. Himalayan region, China, Japan.

tinctòria. To 30 ft., partially evergreen: lvs. oval, to 6 in. long, scarcely toothed: fls. yellowish, fragrant, ⅖ in. across, in dense clusters: fr. orange or brown. Del. to Fla. and La.

SYNADÈNIUM. *Euphorbiaceæ.* African shrubs with thick fleshy branches, milky juice, alternate simple lvs., fls. in cyathia (see *Euphorbiaceæ*), and capsular frs.; sometimes planted for ornament in the tropics and warm regions. For cult. see *Succulents.*

Grántii. African Milk-Bush. To 12 ft.: lvs. narrow-obovate, to 4 in. long, fleshy: fls. red. Trop. Afr.

SYNCÁRPIA. *Myrtaceæ.* Evergreen trees in Australia, with opposite simple lvs., white fls. in globose heads and capsular frs. inclosed in the calyx; grown in S. U. S. for a shade tree and the wood is used for building purposes.

glomulífera (*S. laurifolia*). Turpentine Tree. To 200 ft.: lvs. broadly ovate, to 3 in. long, very thick and tomentose beneath.

laurifòlia: *S. glomulifera.*

SYNDESMON: *Anemonella.*

SÝNECHÁNTHUS. *Palmaceæ.* Palms differing from Chamædorea in being monœcious in each spadix and the fls. not spirally arranged, spadices always among the lvs., stamens either 3 or 6, and in technical characters of fls.: low unarmed gregarious feather-palms, 3 or 4 species in Cent. Amer. and Colombia; suitable for growing under glass, and also under lath or in protected woods in S. Fla. For cult. see *Palm.*

fibròsa. St. to 4 ft., strongly ringed: lvs. pinnate, to 4 ft. long, ascending and spreading; pinnæ 30–40, more or less pendulous, 1–1½ ft. long, pointed: fr. oblong, orange-red. Cent. Amer.

SYNGÒNIUM. *Araceæ.* Trop. American climbing or creeping vines having milky juice; lvs. long-petioled, sagittate or becoming palmately lobed; spathe pale green to yellowish and longer than spadix. Propagated by cuttings. Not hardy to frosts.

podophýllum. Creeping: lvs. becoming 5–6-palmately lobed, to 6 in. long, on petioles to 20 in. long: spathe white within and greenish outside, to 1½ in. long. Mex. More commonly cult. is var. **albolineàtum** having lvs. with whitish primary midribs and lateral veins.

SYNNÒTIA. *Iridaceæ.* A small genus of S. African cormous herbs allied to Gladiolus and Sparaxis, differing from the former in the membranous and lacerated spathe-valves and from the latter in the irregular corolla. Propagated by seed or by cormlet offsets and cult. as for Gladiolus, succeeding best in a light sandy soil.

bícolor. To 1½ ft.: lvs. usually 6, ensiform, in basal rosette, to 6 in. long: fls. yellow tinged violet, tube to ½ in. long, segms. about 1 in. long, the upper one erect and broadly oblong with others reflexed and much narrower, spike lax, simple or branched, 2–6-fld.

Metelerkámpiæ. To 10 in.: lvs. broadly linear, in basal rosette, to 4 in. long, acute or obtuse: fls. deep violet, tube filiform, to 1½ in. long, segms. about ½ in. long, spike lax, branched, 9–12-fld.

SYNTHERISMA: *Digitaria.*

SÝNTHYRIS. *Scrophulariaceæ.* Per. herbs native in N. Amer. and Eu., with basal long-stalked lvs. and small oblong to wheel-shaped 4-lobed fls. in close racemes or spikes; sometimes grown in the border.

alpìna (*Besseya alpina*). To 6 in.: lvs. ovate or elliptic, to 2 in. long, wavy-toothed, glabrous: fls. purplish-blue, ⅓ in. long. Mts., Colo., Wyo.

Cánbyi. To 8 in.: lvs. deeply pinnately 7-cleft, to 1 in. long, glabrous, blade cordate-ovate, scarcely longer than wide, irregularly dentate: fls. blue-violet, to ⅓ in. long, in dense spike-like racemes to 2½ in. long: caps. ⅕ in. long, finely pubescent. June–July. Mont.

cordàta: a form of *S. reniformis* having more strongly heart-shaped lvs. and by most authors not considered distinct from that species.

cymopteroìdes. Erect to 6 in., white-tomentose usually becoming glabrate: lvs. finely bipinnatifid, to 2 in. long and 1¾ in. wide, ultimate segms. linear-attenuate: fls. violet-blue, to ¼ in. long: caps. to ⅓ in. long, becoming glabrous. May–July. S. W. Mont. to Cent. Ida.—Forms with pubescent foliage are known.

dissécta. To 8 in.: lvs. oval, 2–3-pinnatifid, to 4 in. long, petioled, quite hairy: fls. blue or purple, fading with age, to ⅜ in. long, on villous scape. Mts., Mont. to Wyo.

empetrifòlia: listed name of unknown botanical standing.

Héndersonii. To 3 in., white-tomentose becoming glabrate: lvs. coarsely bipinnatifid, to 2 in. long and ⅝ in. wide, ultimate segms. ovate-acuminate: fls. sky-blue, to ¼ in. long. July. Ida.

lanuginòsa: *S. pinnatifida* var.

màjor (*S. reniformis* var. *major*). To 8 in.: lvs. reniform, to 3 in. across, lobed, glabrous, shining: fls. purple, ¼ in. long. Wash., Ore., Ida.

petiolàta: listed name.

pinnatífida. To 6 in.: lvs. to 4 in. long, 2–3-pinnate into linear segms., pubescent: fls. whitish or pink, ⅙ in. long. Mts., Utah, Ida. Var. **lanuginòsa,** lvs. white-tomentose, palmately 3–7-parted. Olympic Mts., Wash.

plantagínea (*Besseya plantaginea*). To 1 ft.: lvs. oblong, to 6 in. long, toothed, pubescent: fls. purple or pink. Wyo. to New Mex.

renifórmis. To 9 in.: lvs. orbicular-reniform, to 2 in. across, deeply toothed, glabrous: fls. blue or purple, ¼ in. long. Wash. to Calif. Var. **màjor** is *S. major.*

Ritteriàna (*Besseya Ritteriana*). To 1 ft.: lvs. elliptic or oblong, to 4 in. long, toothed, pubescent: fls. white or yellowish, ¼ in. long. Mts., Colo.

rotundifòlia. To 5 in.: lvs. ovate-cordate, to 2 in. long, toothed, rough: fls. white, ⅙ in. long. Ore. to Calif. Var. **Sweètseri,** taller with long more deeply cut lvs. and bluer fls.

rùbra. To 8 in., white-woolly and tinged reddish: basal lvs. orbicular to lanceolate, blade to 2 in. long, cauline lvs. lanceolate, to 1 in. long: corolla absent. B. C. to E. Ore. and Neb.

schizántha. To 1 ft.: lvs. reniform-orbicular, cut-toothed: fls. blue, sepals and petals cut into narrow lobes. Mts., Wash.

stellàta, stellulàta: listed names.

Sweètseri: *S. rotundifolia* var.

SYRÍNGA. Lilac. *Oleaceæ.* Deciduous shrubs or small trees of Eu. and Asia, with opposite mostly simple lvs., small white, lilac or purple tubular fls. in showy panicles or thyrses in spring and early summer, often very fragrant, and fr. a leathery caps. As a vernacular name, Syringa is sometimes applied to the mock-orange or Philadelphus.

Lilacs are amongst the most popular ornamental shrubs and most of them are hardy North. They thrive in fertile rather moist soil, although growing readily on most lands. Transplanting is easily effected in fall or spring. Propagated by seeds stratified and sown in spring, by cuttings of green wood, ripe wood and roots, by layers and suckers, and varieties by grafting or budding on other lilacs or on privet.

Lilacs may also be forced for winter bloom under glass. Plants should be potted in early spring and plunged outdoors in summer, giving ample water. Three to five weeks are required to bring the plants into bloom, under a temperature from 60–80°. For white blossoms the plants must be forced in darkened rooms.

Adamiàna: *S. tomentella.*

affìnis: *S. oblata* var. *alba.*

amœna: *S. vulgaris* var.

amurénsis (*S. sibirica*). To 12 ft.: lvs. ovate, to 5 in. long, glabrous: fls. yellowish-white, in loose panicles to 6 in. long, with very short corolla-tube and exserted stamens. Manchuria, China. Var. **japónica** (*S. japonica*) grows to 30 ft., with lvs. broad-ovate to ovate-oblong and pubescent beneath, the fls. in panicles to 12 in. long. Japan.

Bretschneìderi: *S. villosa.*

chinénsis (*S. rothomagensis. S. varina*). Hybrid between *S. persica* and *S. vulgaris:* to 15 ft.: lvs. ovate-lanceolate, to 3 in. long, glabrous: fls. lilac or purple. Var. **álba** has white fls.; **dùplex,** double purplish-lilac; **meténsis,** rosy-lilac; **Saugeàna** (var. *rubra*), lilac-red.

dilatàta: *S. oblata* var.

emòdi. Himalayan L. To 15 ft.: lvs. oval or oblong, to 8 in. long, glabrous, glaucous beneath: fls. lilac or whitish, in dense terminal panicles to 6 in. long, with corolla-tube ⅓ in. long. W. Asia; not hardy far N.

exímia: *S. Josikæa* var.

formosíssima: *S. Wolfii.*

Giráldii: *S. oblata* var.

Hénryi. Hybrid between *S. villosa* and *S. Josikæa:* lvs. pubescent on midrib beneath: fls. pale violet-purple, in panicles to 10 in. long. Var. **exímia** is *S. Josikæa* var.

hyacinthiflòra. Hybrid between *S. oblata* and *S. vulgaris:* lvs. broad-ovate. Var. **plèna** with double fls. is the form cult.

japónica: *S. amurensis* var.

Josikæ̀a. Hungarian L. To 12 ft.: lvs. oval, to 5 in. long, shining above, glaucous and nearly glabrous beneath: fls. lilac, in terminal panicles to 7 in. long, with corolla-tube ½ in. long. Hungary. Var. **exímia,** large panicles of rose-red fls.

Juliànæ. To 6 ft.: lvs. ovate, to 2½ in. long, pubescent on both sides: fls. lilac, fragrant, in lateral panicles to 4 in. long, with corolla-tube ⅓ in. long, anthers purple or bluish. China.

Koehneàna: *S. velutina.*

Komaròwii (*S. Sargentiana*). To 15 ft.: lvs. ovate-oblong to oblong-lanceolate, to 6 in. long, pubescent beneath: fls. lilac, in nodding terminal panicles to 6 in. long. China.

lavelliénsis: a listed name of no botanical standing; the plant under this name in the trade is probably the garden form of *S. vulgaris* known as DeLouvain.

Lemòinei: hort. name applied indiscriminately to a group of vernacular-named garden hybrids and color forms.

macrostàchya: *S. vulgaris* var.

marleyénsis is *S. vulgaris* var. *purpurea.*

Maximowíczii. Garden hybrid, having blue-purple fls.

Meỳeri. Small shrub: lvs. oval, to 1½ in. long, pubescent on veins beneath: fls. purple-lilac, in dense lateral panicles to 3 in. long, with corolla-tube ½ in. long. China.

micrántha: *S. velutina.*

microphýlla. Small shrub: lvs. ovate, to 1½ in. long, pubescent beneath: fls. lilac, in lateral panicles to 3 in. long, with corolla-tube ⅓ in. long. China.

nígricans: hort. form of *S. vulgaris.*

oblàta. To 12 ft.: lvs. ovate or reniform, cordate at base, to 4 in. long, glabrous: fls. lilac, in dense lateral panicles to 5 in. long, with corolla-tube ½ in. long. China. Var. **álba** (var. *affinis, S. affinis*) has smaller lvs. and white fls. Var. **dilatàta** (*S. dilatata*) has long-acuminate lvs. Var. **Giráldii** (*S. Giraldii*) has lvs. often pubescent beneath and panicles 6 in. long.

Palibiniàna: *S. velutina.*

pekinénsis (*S. amurensis* var. *pekinensis*). To 15 ft.: lvs. ovate or ovate-lanceolate, to 4 in. long, glabrous: fls. yellowish-white, in panicles to 6 in. long, with short corolla-tube. China. Var. **péndula** has drooping branches.

pérsica. Persian L. To 6 ft.: lvs. lanceolate, to 2½ in. long, glabrous: fls. lilac or whitish, fragrant, in loose lateral panicles to 3 in. long, with corolla-tube ⅓ in. long. Persia to China. Var. **álba** has white fls. Var. **laciniàta** has pinnately lobed or cut lvs. Var. **rùbra,** fls. red.

pinetòrum. Differs from *S. Julianæ* in lvs. not exceeding 1½ in. long and pilose beneath only on veins; anthers yellow. S. W. China.

pinnatifòlia. To 10 ft.: lvs. of 7–11 ovate or ovate-lanceolate lfts. to 1 in. long: fls. white or pale lilac, in lateral panicles to 3 in. long, with corolla-tube ⅓ in. long. China.

Préstoniæ. Hybrids, *S. reflexa* × *S. villosa:* lvs. resembling those of *S. villosa:* fls. pale pink to pinkish-lilac. Very hardy. Produced in Canada.

pubéscens. To 6 ft.: lvs. broad-ovate, to 3 in. long, pubescent beneath: fls. pale lilac, fragrant, in dense lateral panicles to 5 in. long, with corolla-tube ½ in. long. China.

refléxa. To 12 ft.: lvs. oblong, to 6 in. long, pubescent beneath: fls. pinkish, white inside, in terminal drooping panicles to 7 in. long, with corolla-tube ⅓ in. long. China.

rothomagénsis: *S. chinensis.*

Sargentiàna: *S. Komarowii.*

Saugeàna: *S. chinensis* var.

sibírica: *S. amurensis.*

Sweginzòwii. To 10 ft.: lvs. oblong or ovate, to 4 in. long, pubescent on veins beneath: fls. lilac, fragrant, in terminal panicles to 8 in. long, with corolla-tube ⅓ in. long. China. Var. **supérba** is similar.

Thúnbergii: hort. name.

tomentélla (*S. Adamiana. S. Wilsonii*). To 10 ft.: lvs. oval to oblong-lanceolate, to 4 in. long, pubescent beneath: fls. lilac or whitish, in loose terminal panicles to 7 in. long, with corolla-tube ⅓ in. long. China.

varìna: *S. chinensis.*

velùtina (*S. Koehneana. S. micrantha. S. Palibiniana*). To 10 ft.: lvs. oval or ovate-oblong, to 4 in. long, pubescent both sides: fls. lilac, in pubescent panicles to 5 in. long, with corolla-tube ⅓ in. long. China, Korea.

villòsa (*S. Bretschneideri*). To 10 ft.: lvs. oval to oblong, to 7 in. long, pubescent on veins beneath: fls. lilac or pinkish-white, in terminal panicles to 1 ft. long, with corolla-tube ½ in. long. China.

vulgàris. Common L. To 20 ft.: lvs. ovate, to 5 in. long, glabrous: fls. lilac or white, fragrant, in lateral panicles to 10 in. long, with corolla-tube ⅓ in. long. S. E. Eu. Latin-named forms of *S. vulgaris* in the trade are: **álba,** fls. white; **amœna,** large clusters of fls. pink outside and violet within; **cærùlea,** blue; **gigantèa,** large spikes of dark bluish-purple fls.; **Lemòinei,** fls. double; **macrostàchya,** fls. pale pink, in long pyramidal clusters; **marleyénsis,** the same as var. *purpurea*; **nígricans,** foliage and fls. dark; **plèna,** double blue; **purpùrea,** purplish-red; **ròsea grandiflòra,** fls. rosy-lilac, double, early; **spectábilis,** clusters large, lilac; **violàcea,** violet-lilac; **virginàlis** or **álba virginàlis,** fls. white.

Wìlsonii: *S. tomentella.*

Wólfii (*S. formosissima*). To 20 ft.: lvs. oval-oblong, to 6 in. long, pubescent on veins beneath: fls. lilac, fragrant, in terminal panicles to 1 ft. long, with corolla-tube ½ in. long. Manchuria, Korea. Var. **hirsùta** is more densely pilose on twigs, lvs. and infl.

yunnanénsis. To 10 ft.: lvs. oval to oval-lanceolate, to 3 in. long, glaucous beneath: fls. pink, in terminal panicles to 6 in. long, with corolla-tube ¼ in. long. China. Var. **ròsea** is listed as having slightly darker fls. than type.

SYRMATIUM: *Lotus eriophorus.*

SYZÝGIUM. *Myrtaceæ.* Old World trop. trees and shrubs, differing from Eugenia in the united petals, usually truncate calyx and no staminal disk: fls. small: frs. small 1-seeded berries. For cult. see *Eugenia.*

Cùminii (*Eugenia Cuminii* and *Jambolana. S. Jambolana*). Jambolan-Plum. Tree to 80 ft.: lvs. oblong to oval, to 8 in. long, acuminate and sometimes emarginate on same tree with others: fls. white, about ⅓ in. across, in branching cymes: fr. purplish-red, to 2 in. diam., edible. E. Indies, Burma.

Jambolàna: *S. Cuminii.*

oblanceolàtum. Tree to 35 ft., twigs 4-angled and often narrowly winged: lvs. oblanceolate to obovate, to 1 ft. long, acuminate, leathery, lateral veins usually 16–25: fls. in terminal or upper axillary cymose panicles to 3 in. long. Philippines.—Some of the material in the trade is *S. polycephaloides*, distinguished in part by its shorter abruptly acuminate lvs. with fewer lateral veins and fls. on branches below the lvs.

operculàtum (*Eugenia operculata*). Tree to 50 ft.: lvs. elliptic to broadly ovate, to 8 in. long: fls. small, white, 3 together: fr. purplish-black, edible. Himalayas.—Some of the material cult. under this name is *S. Cuminii.*

polycephaloìdes. Tree to 70 ft., twigs 4-angled or slightly winged: lvs. oblanceolate to elliptic, to 8 in. long, very abruptly acuminate, lateral veins 14–18: fls. in cymes to 4 in. long, on branches below the lvs., usually in 3's. Philippines.

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TABEBÙIA. *Bignoniaceæ.* Evergreen trees or shrubs of trop. Amer., with simple or digitately compound lvs., funnelform 5-lobed fls. in showy terminal racemes or panicles, and linear capsular frs.; 1 or 2 species sometimes grown in S. U. S. where they thrive in rich soil. Propagated by cuttings and air-layers, as well as by seeds.

argéntea (*Tecoma argentea*). To 25 ft.: lvs. of 5–7 oblong lfts. to 6 in. long, densely silvery-scaly on both sides: fls. yellow, 2½ in. long: frs. gray lined with black, to 4 in. long. Paraguay.

pállida (*T. pentaphylla*). To 50 ft. or more, somewhat scaly: lfts. mostly 3–5, elliptic to narrow-obovate, to 6 in. long, entire: fls. white with colored veins, or pink or rose, nearly 3 in. long, with or preceding the lvs. W. Indies, Cent. and N. S. Amer.—Sometimes called "white-cedar;" planted in S. Fla.

pentaphýlla: *T. pallida.*

serratifòlia (*Bignonia* and *Tecoma serratifolia*). Tree to 30 ft. or more: lvs. of 4–5 oblong-ovate lfts. to 5 in. long, toothed at tips: fls. yellow, 2½ in. long. W. Indies.

TABERNÆMONTÀNA. *Apocynaceæ.* Trees and shrubs of trop. regions planted for ornament: lvs. opposite: fls. salver-shaped, in terminal cymes, white or yellow: fr. of 2 follicles or berries. Propagated by cuttings.

citrifòlia. To 6 ft.: lvs. oblong, to 5 in. long: fls. white, to 1 in. across, fragrant. W. Indies, Mex.

coronària: *Ervatamia coronaria.*

grandiflòra. To 6 ft.: lvs. oblong-ovate, to 5 in. long: fls. yellow, 1½ in. across, fragrant. Venezuela, Guiana.

grandifòlia: apparently a form of *Ervatamia coronaria.*

TABOG: *Swinglea.*

TACAMAHAC: *Populus Tacamahaca.*

TÁCCA. *Taccaceæ.* Odd per. herbs of warm countries, with large basal lvs. and brown or greenish fls. in dense umbels terminating the scape, subtended by leaf-like or colored bracts, bearing conspicuous long thread-like sterile pedicels mixed with the fls.

Taccas are suitable for greenhouse cultivation. They require rich open well-drained soil and should be rested in winter. Propagated by division of the roots.

Chantrièri. Devil-Flower. Lvs. oval, 1½ ft. long and 10 in. wide, shining, the petioles reddish-brown and 2½ ft. long: fls. brownish-purple, 1¾ in. across. Malaya.

cristàta. Lvs. oblong, to 2 ft. long and 6 in. wide, dark purplish-green, shining above: fls. brownish-purple, 1½ in. across. Malaya.

pinnatífida. Tubers 1 in. through, often grown in the tropics for arrowroot: lvs. to 4 ft. across, 3-parted and the segms. pinnatifid: fls. greenish and purplish, ¾ in. across. Trop. Asia, Afr., Australia.

TACCÀCEÆ. Tacca Family. Two trop. monocotyledonous herbaceous genera, mostly of the eastern hemisphere, with characters of Tacca which see. Allied to Dioscoreaceæ.

TACSONIA: *Passiflora.*

TÆNÍDIA. *Umbelliferæ.* Per. herb native from Que. to Miss., sometimes transferred from the wild. **T. integérrima.** To 3 ft.: lvs. 2–3-ternately compound into ovate to lanceolate entire segms. to 1 in. long: fls. yellow, in compound umbels: frs. oval, ⅙ in. long.

TAGÈTES. Marigold. *Compositæ.* Strong-scented mostly ann. herbs with usually opposite lvs. finely dissected, and solitary or clustered heads of yellow, orange or red ray- and disk-fls.; pappus of scales or bristles; native from New Mex. to Argentina. The name Tagetes is pronounced in three syllables. Races without strong foliage odor have been developed.

Marigolds are popular as cut-flowers and are of simple cultivation. Propagated by seeds sown where plants are to stand or started early in the house.

erécta. Big or Aztec M. African M. (once supposed to be native in Afr.). Stout ann., erect, to 3 ft.: lvs. pinnate: heads solitary, to 4 in. across, yellow to orange, the rays numerous and long-clawed, sometimes 2-lipped or quilled. Mex.

lùcida. Sweet-scented M. Per., cult. as ann., to 1½ ft.: lvs. simple, oblong-lanceolate, finely toothed but not divided: heads ½ in. across, 2–3-rayed, golden or orange-yellow, in dense terminal clusters. Mex.—Not common in cult.

pátula. French M. Ann., much branched from base, to 1½ ft.: lvs. pinnate: heads solitary, to 1½ in. across, rays numerous, yellow with red markings. Mex.

signàta: *T. tenuifolia.*

tenuifòlia (*T. signata*). Ann. to 2 ft.: lvs. finely cut: heads solitary, about 1 in. across, rays few, yellow. Mex. Var. **pùmila** is dwarf, 1 ft. or less high.

TAINIA: *Ascotainia viridifusca.*

TAIWÀNIA. *Taxodiaceæ.* Tall evergreen tree from Formosa (Taiwan) and W. China, allied to Cryptomeria, suitable for cult. in Calif. and Fla. **T. cryptomerioìdes.** Young lvs. linear, ½ in. long, adult lvs. scale-like, imbricated, to ⅕ in. long: cones ½ in. long, with leathery scales.—It is a new plant to cult., the genus having been founded by Hayata as late as 1906. For cult. see *Conifers.*

TALAÙMA. *Magnoliaceæ.* Tender evergreen broad-lvd. trees from E. Asia and S. Amer., closely allied to Magnolia, differing in having indehiscent and deciduous carpels. Propagated by seeds or cuttings, but seeds shipped from Orient often lose viability before arrival here.

Hódgsonii. To 60 ft.: lvs. obovate-oblong, to 20 in. long and 9 in. wide, glabrous, leathery: petals usually 6, ivory-white and fleshy, sepals 3, purplish-blue, fls. terminal, to 6 in. across and 4 in. deep, cup-shaped with spice-like odor: fr. to 6 in. long.

TALÌNUM. Fame-Flower. *Portulacaceæ.* Per. more or less fleshy small herbs sometimes woody at base, with alternate or nearly opposite lvs., small ephemeral fls. mostly in erect terminal cymes or panicles, and capsular frs. Useful in borders and rock-gardens, and sometimes as tub plants for the foliage. Native in both hemispheres.

calýcinum. To 8 in.: lvs. to 2 in. long: fls. pink, 1 in. or more across. Ark. to Mex.

Ménziesii. Similar to *T. teretifolium*, differing in its somewhat larger habit and fls. to 1 in. across with 40 or more stamens which are much exceeded by the style. Tenn. to Ga. and Ala.

okanoganénse. Low cespitose per. to 1 in. high: lvs. deciduous, fleshy, somewhat cylindrical, to ⅜ in. long, grayish-green: fls. white, usually solitary, saucer-shaped, to ¾ in. across, on short peduncles to 1½ in. long, stamens yellow. Wash.—Fls. short-lived but produced in succession for several weeks. Requires drainage and withstands drought conditions.

paniculàtum. To 2 ft. or more: lvs. elliptic or obovate, to 3 in. long: fls. red to yellowish, in a panicle to 10 in. long. S. U. S. and south.—A form with white-edged lvs. is a tub or pot-plant.

parviflòrum. To 8 in.: lvs. to 2 in. long: fls. pink, about ⅓ in. across. Minn. to Tex.

parvifòlium: listed name.

pàtens. Plant erect, woody at base, to 2 ft.: lvs. opposite, ovate with cuneate base: fls. carmine, small, in cymes. W. Indies and E. S. Amer. Var. **variegàtum** has foliage and sts. marked with white or pink.—A pot-plant surviving much heat and drought. For foliage purposes flowering branches should be cut off as soon as they appear.

rugospérmum. To 10 in.: lvs. basal, linear, cylindrical, to 2 in. long: fls. pink, ½ in. across. Ind. to Minn. and Wis.

spinéscens. Sts. covered with small spines: lvs. cylindrical, ½ in. long: fls. rose. Mts., Wash.

teretifòlium. To 1 ft.: lvs. linear, cylindrical, to 2 in. long: fls. pink, ½ in. across, stamens 20 or less, equalling or exceeding the style. Pa. to Ga. and Tex.

triangulàre. Stout and fleshy, to 1½ or 2 ft.: lvs. obovate or narrower, about 3 in. long: fls. red to whitish or yellowish, in racemes. Trop. Amer., and widely spread as an ornamental and pot-herb.

Wàyæ: listed name of unknown botanical standing.

TALLOW-TREE, CHINESE: *Sapium sebiferum.* **Vegetable-:** *Sapium sebiferum.* **-Wood:** *Ximenia americana.*

TAMALA: *Persea.*

TAMARACK: *Larix laricina.*

TAMARICÀCEÆ. Tamarisk Family. Four genera of shrubs or trees from the Medit. region to Japan, having alternate mostly small and scale-like lvs., regular bisexual fls. with 4–5 sepals and petals, 8–10 stamens, superior 1-celled ovary and capsular fr. Myricaria and Tamarix are planted for ornament.

TAMARIND: *Tamarindus.* **Manila:** *Pithecellobium dulce.*

TAMARÍNDUS. *Leguminosæ.* Evergreen tree widely grown in the tropics for ornament and for the frs. which are eaten in various forms, made into drinks, and also have medicinal properties. Tamarinds thrive on deep soil with abundant rainfall or irrigation. Propagated by seeds and by shield-budding. **T. índica.** Tamarind. Tamarindo. To 80 ft., making a massive picturesque tree: lvs. pinnate, the lfts. to ¾ in. long: fls. pale yellow, 1 in. across, in few-fld. racemes: pods to 8 in. long, cinnamon-brown. Probably trop. Afr. and S. Asia.

TAMARISK: *Tamarix.* **False:** *Myricaria.*

TÁMARIX. Tamarisk. *Tamaricaceæ.* Deciduous or evergrowing trees or shrubs, Eu. and Asia, the graceful slender branches bearing small heath-like lvs. and pink or white fls. with the parts in 5's or in 4's, in prominent racemes or panicles.

Tamarisks are grown for ornament, as windbreaks and along the coast as they withstand salt spray. Propagated by seeds, hardwood cuttings, or greenwood cuttings under glass.

æstivàlis: *T. pentandra.*

africàna. To 10 ft.: fls. pinkish, nearly sessile, in racemes to 3 in. long which are lateral on last year's branches, in spring. Medit. region; hardy only far S.—The plant cult. under this name is usually *T. parviflora.*

algérica: probably *T. gallica.*

amurénsis: *T. pentandra.*

ánglica. To 10 ft.: fls. white or pinkish, in terminal panicles in early summer, petals falling from the frs. W. Eu.; for central or southern states.

aphýlla (*T. articulata*). Athel T. To 30 ft., with jointed branchlets and minute sheathing lvs. like a Casuarina: fls. pink, sessile, in terminal panicles. W. Asia.—Intro. as windbreak in desert regions of S. Calif.; the naked green twigs make it "evergreen."

articulàta: *T. aphylla.*

chinénsis. Chinese T. To 15 ft., with fine often drooping spray: fls. pink, in loose terminal panicles in summer, petals persistent on frs. China; only far S.

gállica. French T. To 30 ft.: fls. white or pinkish, in panicled racemes in early summer, petals deciduous from the frs. W. Eu. to Himalayas; probably hardy in central states. Var. **índica** has longer and slenderer racemes.

germánica: *Myricaria germanica.*

híspida. Kashgar T. To 4 ft., branchlets and lvs. pubescent: fls. pink, in dense panicled racemes in late summer. Caspian region; hardy in central or southern states. Var. **æstivàlis** is *T. pentandra.* Var. **Coòlidgei** is a compact form of *T. pentandra.* Var. **plumòsa** is listed.

índica: *T. gallica* var.

japónica: *T. juniperina.*

juniperìna (*T. japonica. T. plumosa*). To 15 ft.: fls. pinkish, in lateral racemes in spring, parts of the fl. in 5's, petals remaining on fr. China, Japan; probably not hardy N.

odessàna. To 6 ft.: fls. pink, in slender panicled racemes in summer, petals persistent on frs., bracts awl-shaped. Caspian region; hardy in New England.

parviflòra (*T. tetrandra* var. *purpurea*). To 15 ft.: fls. pink, in short lateral racemes in spring, parts of the fl. in 4's, the petals persistent on frs. S. Eu.; hardy in S. New England.

pentándra (*T. hispida æstivalis. T. amurensis*). To 15 ft.: branchlets and lvs. glabrous: fls. pink, in dense racemes forming large panicles, in late summer, petals persistent on frs., bracts broadly lanceolate. Eu., Asia; hardy in S. New England.

plumòsa: *T. juniperina.*

tetrándra. To 12 ft.: fls. pale pink or white, in lateral racemes in spring, petals deciduous from fr. Eu., Asia. Var. **purpùrea** of the trade is *T. parviflora.*

TÀMUS (*Tamnus*). *Dioscoreaceæ.* Twining tuberous-rooted diœcious perennials, one sometimes planted for ornament, with the look of Dioscorea but differing in bearing a few-seeded berry. **T. commùnis,** Black Bryony, of Great Britain and distributed on the Continent, has slender angular sts. many ft. long, long-petioled and more or less obscurely lobed pointed lvs. and fls. mostly in axillary racemes or fascicles: berry small, red.

TANACÈTUM. Tansy. *Compositæ.* Ann. and per. strong-scented herbs with alternate pinnately cut lvs. and small yellow clustered heads of disk-fls.; pappus none or a crown; native in northern hemisphere.

Tansy is grown in the garden for ornament and medicinal purposes. It thrives in all common situations and in soils not too wet. Propagated usually by dividing the old clumps; also by seed.

Balsámita: *Chrysanthemum Balsamita.*

boreàle. Per. to 3 ft., closely allied to *T. vulgare* from which it differs in achene without pappus. Caucasus.—Some of the plants so named in cult. are believed to be *T. huronense.*

capitàtum. Per. to 5 in., cespitose, woody at base: lvs. spatulate to oblanceolate, 3–5-parted or palmately lobed, upper ones linear and entire: heads small in spherical corymbose infl. Rocky Mts.

huronénse. Huron T. Per. to 3 ft., pubescent: lvs. 2-pinnate: heads to ¾ in. across, usually few. Alaska to Ore. and Me.

macrophýllum: *Chrysanthemum macrophyllum.*

vulgàre (*Chrysanthemum vulgare*). Common T. Per. to 3 ft., nearly glabrous: lvs. pinnate: heads to ½ in. across, yellow, numerous, in flat-topped cymes; achene with short 5-lobed pappus. Eu.; escaped in U. S. Var. **críspum** has finer more crisped foliage.

TANAKÆA. *Saxifragaceæ.* Monotypic genus from Japan, **T. radìcans.** Diœcious or monœcious stoloniferous hardy per. with scapes to 8 in. high: lvs. basal, oblong- to ovate-lanceolate, to 8 in. long, long-petioled, acute, doubly-serrate, base rounded to cordate: fls. minute, greenish-white and petal-less, solitary in axils of bracts, sepals 5, stamens 10.

TANGERINE: see *Citrus nobilis* var.

TANIER: *Xanthosoma.*

TANSY: *Tanacetum.*

TANYOSHO: *Pinus densiflora* var. *umbraculifera.*

TAPE-GRASS: *Vallisneria.*

TAPIOCA-PLANT: *Manihot esculenta.*

TARA: *Cæsalpinia spinosa.* **-Vine:** *Actinidia arguta.*

TARAJO: *Ilex latifolia.*

TARAKTOGÈNOS. *Flacourtiaceæ.* Malayan trees one of which yields chaulmoogra oil: lvs. alternate, entire: fls. bisexual or unisexual, in axillary few-fld. cymes, the stamens numerous: frs. globular or ovoid, hard. One species has been intro. into S. Calif. and Fla.

Kúrzii. To 50 ft.: lvs. lanceolate, to 10 in. long, shining: staminate fls. 3 in. across, with 4 sepals and 8 petals: fr. brownish-yellow, tomentose, size of orange. Burma.

TARATA: *Pittosporum eugenioides.*

TARÁXACUM. Dandelion. *Compositæ.* Per. stemless herbs with irregularly cut lvs. in a basal rosette and heads terminating hollow sts., of yellow ligulate fls.; pappus of bristles; mostly of the northern hemisphere. See *Dandelion.*

Déns-leònis: *T. officinale.*

officinàle (*T. Dens-leonis. Leontodon Taraxacum*). Common D. Lvs. to 10 in. long, pinnately cut or toothed: heads golden-yellow, 2 in. across. Eu., a weed in most parts of the world, but grown for "greens."

TARAXIA: *Œnothera subacaulis.*

TARE: *Vicia sativa.*

TAR-FLOWER: *Befaria racemosa.*

TARO: *Colocasia esculenta.*

TARRAGON: *Artemisia Dracunculus.*

TARTOGO: *Jatropha podagrica.*

TARWEED: *Madia, Cuphea petiolata.*

TASAJO: see *Opuntia.*

TASSEL-FLOWER: *Amaranthus caudatus, Brickellia grandiflora, Emilia sagittata.*

TAVARÈSIA. *Asclepiadaceæ.* Stapelia-like leafless plants with angled sts. bearing bristles on the tubercles: fls. funnel-shaped, large, borne at base of young sts.

Bárklyi. Sts. to 4 in. tall and ¾ in. thick, 10–12-angled, dark green or purplish, angles tubercled, each tubercle with 3 white bristles: fls. pale yellow, spotted purplish-red, densely papillate, to 4 in. across; corolla-tube to 2 in. deep and 1 in. wide, purplish-red. Trop. and S. Afr.

grandiflòra. Sts. to 8 in. tall and ¾ in. thick, usually 14–angled, central bristle of tubercle longer than 2 laterals: fls. as in *T. Barklyi*, but corolla-tube to 4 in. deep and 1⅜ in. across; corolla about 4½ in. across. S. W. Afr.

TAWHIWHI: *Pittosporum tenuifolium.*

TAXÀCEÆ. Yew Family. Two genera, Taxus and Torreya, of evergreen trees and shrubs with needle-like lvs.: plants usually diœcious, the staminate fls. cone-like, the pistillate of a 1–2-ovuled carpel: fr. berry- or drupe-like, consisting of a seed with a bony shell surrounded by a fleshy aril. The family was established by Lindley in 1836, but for many years was included in the Coniferæ. Until recently it has been thought to include about a dozen genera, most of which are now placed in the Podocarpaceæ or the Cephalotaxaceæ.

TAXODIÀCEÆ. Taxodium Family. About a dozen genera of resinous, coniferous, evergreen or deciduous trees having linear needle-like lvs., fls. in cones, and fr. a hard globose or subglobose woody cone. The family has, until recently, been treated as a subfamily of the Pinaceæ, but several fundamental differences warrant its recognition as a separate family. Taxodiaceæ is technically distinguished by the cones which differ from those of the Pinaceæ in scales without distinct bracts and with 2–9 seeds: lvs. arranged in spirals, solitary not fascicled. The family contains many valuable timber trees and ornamental subjects as Athrotaxis, Cryptomeria, Cunninghamia, Glyptostrobus, Sciadopitys, Sequoia, Sequoiadendron, Taiwania, Taxodium.

TAXÒDIUM. *Taxodiaceæ.* Trees with short linear deciduous or evergreen lvs., staminate fls. in catkins, and globose cones with woody scales; 3 species in E. N. Amer. and Mex. For cult. see *Conifers.*

ascéndens (*T. distichum* var. *imbricarium*). Pond Cypress. Lvs. deciduous, awl-shaped, about ½ in. long, appressed: cones 1 in. across. Va. to Fla. and Ala. Var. **nùtans** (var. *pendulum*) has drooping branchlets.

dístichum. Bald Cypress. Lvs. deciduous, linear, to ¾ in. long, spreading, light green: cones 1 in. across. Del. to Fla. and La.; hardy in northern states but remains small. Var. **fastigiàtum,** slender erect form; var. **nànum,** dwarf and shrubby; var. **péndens** (var. *pendulum*), branchlets drooping, cones to 1½ in. long; var. **pyramidàlis,** narrow pyramidal form.—It is not certain whether these hort. forms belong here or with *T. ascendens.*

mucronàtum. Montezuma Cypress. Differs from *T. distichum* in the persistent shorter lvs. and larger cones. Mex.; planted in Calif.; said to become deciduous when planted too far N.

TÁXUS. Yew. *Taxaceæ.* Evergreen trees and shrubs with linear dark green lvs. paler or yellowish beneath, inconspicuous diœcious fls., and berry-like red frs.; native in the northern hemisphere. See *Conifers* for cult.

baccàta. English Y. Tree to 60 ft.: lvs. to 1¼ in. long, gradually acuminate, pale beneath: fr. brown, in Sept.–Oct. Eu., N. Afr., W. Asia; hardy in N. Y. and parts of New England, but some of the vars. stand better than the species itself in the colder climates. There are numerous named forms, such as the following vars.: **adpréssa** (*T. brevifolia, T. tardiva*), shrub or low tree with lvs. to ½ in. long and its forms **aùrea** with yellow lvs. and **strícta** and **erécta** of columnar habit; **argéntea** is var. *variegata;* **aùrea,** lvs. yellow; **Bárronii,** shoots orange changing to copper; **chestunténsis,** branches ascending, lvs. bluish-green below; **compácta,** compact, foliage shining dark green; **dénsa,** habit dense, lvs. short, dark green; **Dovastònii,** branchlets pendulous, and its form **aùreo-variegàta** with lvs. variegated yellow; **elegantíssima,** compact form with young lvs. striped pale yellow; **epacrioìdes,** rather dwarf with light green lvs.; **erécta** (var. *pyramidalis*), upright bushy var. and its forms **aùrea** and **Crowderi;** **ericoìdes** (*T. Michelii, T. microphylla*), dwarf, with very narrow lvs.; **expánsa,** low bush with pendulous branches; **fastìgiata** is var. *stricta;* **glaùca,** lvs. bluish-green below; **grácilis péndula** is var. *pendula;* **hibérnica** is var. *stricta;* **horizontàlis,** branches spreading horizontally; **imperiàlis,** perhaps synonymous with *T. baccata;* **Jácksonii,** spreading branches pendulous at tips; **lùtea** (var. *luteo-baccata*), fr. yellow; **nàna,** of dwarf dense habit; **neidpathénsis,** unidentified hort. name; **péndula** (var. *gracilis pendula*), spreading with slender pendulous branches; **procúmbens,** prostrate much branched shrub, material offered may be var. *expansa;* **pyramidàlis** is var. *erecta;* **recurvàta,** spreading recurved branches; **repándens,** nearly prostrate with bluish-green lvs.; **semperaùrea,** low habit, lvs. keeping yellow color the second year; **strícta** (vars. *fastigiata* and *hibernica*), Irish Y., columnar with very dark green lvs., and its forms **aùrea** and **variegàta;** **tardìva** is var. *adpressa;* **variegàta** (var. *argentea*), lvs. variegated with white or whitish; **Wáshingtonii,** wide-spreading with golden-yellow lvs. Other listed names are: *Livingstonii, major, Overeindii, polycarpa.*

brevifòlia (*T. Lindleyana*). Western Y. Tree to 45 ft. or more: lvs. 1 in. or less long, abruptly pointed, dark yellowish-green: fr. Aug.–Sept. Mont. to B. C. and Calif. Var. **Núttallii** is listed as having more drooping branches. A var. **nàna** is listed.—The material commonly cult. under this name is *T. baccata* var. *adpressa* or *T. cuspidata* var. *nana.*

canadénsis. Ground-Hemlock. Straggling shrub sometimes 6 ft. high: lvs. 1 in. long, abruptly pointed, dark yellowish-green above: fr. in Aug. E. N. Amer., as far north as Newf. Var. **aùrea,** foliage slightly variegated yellow. Var. **strícta** is dwarf.

chinénsis. Chinese Y. Tree to 50 ft.: lvs. to 1¾ in. long, abruptly pointed, grayish-green below: fr. Sept.–Oct. China; hardy N.

cuspidàta (*T. Sieboldii*). Japanese Y. Tree to 50 ft.: lvs. to 1 in. long, abruptly pointed, with 2 yellow bands below: fr. Oct.–Nov. Japan, Korea, Manchuria; hardy N. and popular. Hort. forms are: **Ándersonii,** probably *T. media* var.; **aùrea,** foliage slightly variegated yellow; **auréscens,** low form with young lvs. deep yellow, requiring sheltered place; **Brownii** may be *T. media* var.; **capitàta,** synonymous with *T. cuspidata;* **columnàris,** of cylindrical habit; **dénsa,** low dense bush; **erécta** is listed; **fastigiàta,** dwarf columnar plant, lvs. yellowish; **Hícksii** is *T. media* var.; **mínima,** very dwarf with shining lvs.; **nàna** (var. *brevifolia,* var. *compacta*), shrubby form; **nìgra,** very dark green foliage; **ovàta** is listed as having wider lvs. than type; **pyramidàlis,** of pyramidal habit; **tardìva** is *T. baccata* var. *adpressa;* **Thàyeræ,** wide-spreading, with horizontal or slightly ascending plumose branches.

Dutuilérdii: listed name of unknown botanical standing.

hibérnica: *T. baccata* var. *stricta.*

Hícksii: *T. media* var.

Hunnewelliàna. Hybrid between *T. cuspidata* and *T. baccata.*

intermèdia: listed name for a "hybrid yew."

japónica: catalogue name, perhaps for *T. cuspidata.*

Lindleyàna: *T. brevifolia.*

mèdia. Hybrid between *T. cuspidata* and *T. baccata.* Vars. are: **Ándersonii,** erect, free-branching; **Brownii,** an erect conical form to 8 ft. with dense short lvs.; **Hátfieldii** is similar but lvs. more strongly 2-ranked in appearance; **Hícksii,** erect with ascending branches, bright dark green lvs.; **Kélseyi,** upright, dense, listed as fruiting heavily; **pyramidàlis,** erect loose branching, to 15 ft.; **Thàyeræ** is *T. cuspidata* var.; **Wárdii,** erect, compact, to 8 ft., lvs. dark green; **Wéllesleyi,** broad erect shrub.

Mìchelii: *T. baccata* var. *ericoides.*

microphýlla: *T. baccata* var. *ericoides.*

péndula: *T. baccata* var. *Dovastonii* and *pendula.*

Sièboldii: *T. cuspidata.*

tardìva: *T. baccata* var. *adpressa.*

TEA: *Thea.* **Crystal-:** *Ledum palustre.* **Jersey-:** *Ceanothus americanus.* **Labrador-:** *Ledum grœnlandicum.* **Mexican-:** *Ephedra, Chenopodium ambrosioides.* **Oswego-:** *Monarda didyma.* **Philippine-:** *Ehretia microphylla.* **-Tree, Australian:** *Leptospermum lævigatum.*

TEABERRY: *Gaultheria procumbens.*

TEAK: *Tectona grandis.*

TEASEL: *Dipsacus.*

TÉCOMA. *Bignoniaceæ.* Shrubs with mostly pinnate lvs. and toothed lfts., fragrant yellow or orange and tinted funnelform fls. in terminal racemes or panicles, and linear leathery capsular frs.; native from S. U. S. to Argentina.

Tecomas are grown in southern United States and will stand only a few degrees of frost. Propagated by seeds and by cuttings of green wood under glass.

argéntea: *Tabebuia argentea.*

austràlis: *Pandorea pandorana.*

capénsis: *Tecomaria capensis.*

capreolàta: see *Bignonia capreolata.*

Garrócha. Shrub to 5 ft. or more: lvs. of 7–11 oblong-ovate acuminate lfts. to 2 in. long, glabrous: fls. yellow or salmon with scarlet tube, 2 in. long and 1 in. across, gradually narrowed to base: fr. to 4 in. long. Argentina.

grandiflòra: *Campsis grandiflora.*

jasminoìdes: *Pandorea jasminoides.*

Máckenii: *Podranea Ricasoliana.*

móllis: *Stenolobium stans* var. *velutina.*

pentaphýlla: see *Tabebuia pallida.*

Príncei: *Campsis Tagliabuana.*

radìcans: *Campsis radicans.*

Regìnæ-Sàbæ: *Podranea Brycei.*

Ricasoliàna: *Podranea Ricasoliana.*

sambucifòlia: the plant cult. under this name is *Stenolobium stans* var. *angustata.*

serratifòlia: *Tabebuia serratifolia.*

Smíthii. Erect shrub: supposed hybrid between *Stenolobium stans* var. *velutina* and *Tecomaria capensis:* lvs. of 11–17 oblong or acutish lfts. to 2 in. long: fls. yellow tinged orange, to 2 in. long, gradually narrowed toward base. Raised in Australia.

stáns: *Stenolobium stans.*

Tweediàna: *Doxantha Unguis-cati.*

velùtina: *Stenolobium stans* var.

TECOMÀRIA. *Bignoniaceæ.* Evergreen shrubs in Amer. and S. Afr., partially climbing, with pinnate lvs., funnelform curved yellow to scarlet fls. in dense terminal racemes or panicles, the stamens exserted, and linear flattened frs.; one species is grown in the S. as a hedge and division plant and sometimes under glass. Propagated by seeds and cuttings under glass.

capénsis (*Tecoma capensis*). CAPE-HONEYSUCKLE. Lvs. of 7–9 ovate toothed lfts. to 2 in. long: fls. orange-red or scarlet, 2 in. long: fr. to 2 in. long. S. Afr.

TECOMÉLLA. *Bignoniaceæ.* One shrub or bush-like small tree, **T. undulàta,** planted in S. Fla., native Arabia to W. India: branches gray, spreading: lvs. thickish, glaucous, oblong, entire, nearly or quite obtuse: fls. large and open, red-orange, 2 in. or more long, deeply lobed.

TECOPHILǼA. *Hæmodoraceæ.* Two species of small tender cormous plants from Andes Mts. in Chile, one of which is cult.: lvs. linear-lanceolate, few inclosed in scarious sheath: scape arising from sheath at base of lvs., with usually solitary blue fls. having a regular campanulate perianth with 3 perfect stamens and 3 staminodes, ovary inferior and 3-celled: fr. a conical caps. Propagated by seeds and cormlet offsets.

cyanocròcus. To 6 in.: lvs. 2–3, somewhat undulate, to 5 in. long, bright green, glabrous: fls. deep blue veined or suffused white in throat, segms. to 1½ in. long, lateral ones sometimes white-margined, pedicels about ¾ in. long and often weakly arching.—Not hardy N. but perhaps may be grown in open from N. C. southward in situations where soil will be moist during blossoming in early spring, but dry throughout remainder of season.

TÉCTONA. *Verbenaceæ.* Trees, one of which furnishes the teak-wood of commerce, with large opposite or whorled simple lvs. and small white or bluish fls. in terminal panicles.

grándis. TEAK. To 150 ft.: lvs. ovate, to 1 ft. and more long, tomentose beneath: fr. globular, 1 in. across. India, Malaya.—Sometimes planted far S. and in the tropics for ornament and interest.

TEFF: *Eragrostis abyssinica.*

TELANTHERA: *Alternanthera.*

TELEGRAPH-PLANT: *Desmodium motorium.*

TELEKIA: *Buphthalmum.*

TELÈPHIUM. ORPINE. *Caryophyllaceæ.* Much branched herbs from the Medit. region, with alternate lvs. and white fls. in terminal clusters; rarely cult. in the rock-garden.

Imperàti. Per., with prostrate leafy sts. to 1 ft. long: lvs. oblong, thick, to ½ in. long: fls. July–Aug. Eu.

TELESONIX: *Boykinia Jamesii.*

TELLÌMA. *Saxifragaceæ.* Per. hairy herbs from W. N. Amer. similar to Mitella but differing in the 2-beaked caps.; suitable for the wild-garden.

affìnis: *Lithofragma affinis.*

grandiflòra. To 2 ft.: lvs. cordate-ovate, lobed, to 4 in. across: fls. greenish turning pink or red, the petals pinnately cut. Alaska to Calif.

odoràta. To 2 ft., plant coarsely pilose below and glandular-pubescent above: lvs. broadly ovate, to 3 in. long, acute, base heart-shaped, crenately toothed and sometimes lobed: fls. red, fragrant, petals pinnately cut. Wash. to S. Ore.

parviflòra: *Lithofragma parviflora.*

TELÒPEA. *Proteaceæ.* Shrubs in Australia with alternate leathery lvs., red fls. in dense terminal head-like racemes surrounded by an involucre of colored bracts, and fr. a leathery follicle; intro in Calif.

speciosíssima. WARATAH. To 8 ft.: lvs. oblong, to 10 in. long, toothed in upper part: fls. 1 in. long, in globular heads to 3 in. across, bracts to 3 in. long.

truncàta. To 8 ft., branchlets reddish-pubescent or villous: lvs. obovate, oblong-cuneate to linear, to 4 in. long, glabrous, margins mostly entire and often recurved: fls. in short dense racemes to 2½ in. diam.: follicles about 2 in. long. Tasmania.

TEMPLETÒNIA. *Leguminosæ.* Shrubs with simple lvs., papilionaceous fls. solitary or few in the axils, and flattened pods; Australian; grown under glass or out-of-doors in the S. Propagated by cuttings.

retùsa. CORAL-BUSH. Lvs. leathery, 1 in. or less long, notched or mucronate at tip: fls. red, to 1½ in. long: pod to 2 in. long.

TENDERGREEN: *Brassica perviridis.*

TENDRIL: a rotating or twisting thread-like process or extension by which a plant grasps an object and clings to it for support; morphologically it may be stem or leaf or extension of inflorescence.

TEOSINTE: *Euchlæna.*

TEPHROCACTUS: *Opuntia.*

TEPHRÒSIA (*Cracca*). *Leguminosæ.* Herbs or shrubs with pinnate lvs., red, purple or white papilionaceous fls. in racemes, and flat pods; the first species grown as a low windbreak in tropics.

cándida. Shrub to 10 ft.: lfts. 2 in. long, silky-pubescent beneath: fls. white, 1 in. long: pods to 4 in. long. India; nat. in W. Indies.

grandiflòra. Shrub to 2 ft.: lfts. cuneate-oblong, usually 10–14: fls. red, in fascicled corymbs. S. Afr.

piscatòria: *T. purpurea.*

purpùrea (*T. piscatoria*). Per. to 2 ft.: lfts. oblanceolate, to 1 in. long, usually 13–17: fls. reddish-purple, usually 6–20 in terminal and lateral racemes: pods narrow, to 2 in. long. Trop. Afr.

virginiàna. Per. to 2 ft.: lfts. to 1 in. long, silky-pubescent: fls. yellowish-purple, to ¾ in. long: pods to 2 in. long. Me. to Fla. and N. Mex.

TERETE: circular in transverse section; imperfectly cylindrical because the object may taper both ways.

TERMINÀLIA. *Combretaceæ.* Large trees, mostly in trop. Asia, with simple lvs. usually crowded toward ends of branchlets, small bisexual or polygamo-diœcious fls. in spikes or racemes, and fr. an angled or winged 1-seeded drupe or drupe-like; planted for ornament in trop. climates and edible fr.; bark sometimes yields dyes and tannin. Propagated by seed.

Arjùna. To 80 ft.: lvs. oblong, to 6 in. long: fls. green or white, in short spikes or panicles: fr. dark brown, 5-winged, to 2 in. long. India.—Planted in S. Fla. for interest.

austràlis. Small glabrous tree to 10 ft.: lvs. lance-ovate to ovate, to 2 in. or more long, entire, pointed, petioles very short: fls. few and small, in peduncled axillary slender spikes that about equal the lvs., greenish. S. Brazil.—Probably planted in our territory.

Catáppa. Tropical- or Indian-Almond. Myrobalan. To 80 ft., deciduous, with horizontal branches: lvs. obovate, to 1 ft. long, becoming rich red before they fall twice a year: fls. greenish-white, the spikes to 6 in. long: fr. greenish or reddish, flattened, the 2 angles winged, to 2 in. long, with edible oil-bearing seed. Malaya.—Widely planted in trop. countries, and in S. Fla. as a street tree.

Mùelleri. Small tree: lvs. rather narrowly obovate, to 4 in. long, obtuse or abruptly pointed, leathery, sparsely short-hairy underneath: fls. small, in axillary spikes: fr. to ¾ in. long, bluish. Queensland; planted in S. Fla.

myriocárpa. To 100 ft., the young parts rusty-tomentose: lvs. oblong, tapering-acute, to 8 in. long, short-stalked, the many parallel veins at first rusty, margins serrate: fls. pink to white, changeable, in panicles: fr. about ⅛ in. long, with broader wings, yellow. India, Burma.

Sáffordii. Tree: lvs. very broadly obovate and thick, to 5 in. long and nearly as broad, obtuse to emarginate, nearly glabrous underneath, glossy above: fls. in simple racemes: fr. oblong, about ¾ in. long. Guam; planted in S. Fla.

tomentòsa. To 100 ft.: lvs. nearly opposite, elliptic, to 8 in. long, variable, mostly thin-tomentose underneath: fls. in spikes: fr. to 2 in. long, with 5 broad wings. India.

TERNATE: in threes.

TERNSTRŒMIA. *Theaceæ.* Warm-temp. and trop. evergreen trees and shrubs of Asia, Indian Archipelago and Amer., with alternate simple lvs., solitary or clustered fls. and indehiscent berry-like frs.; grown under glass or in S. U. S.

gymnanthèra: listed name.

índica: listed name.

japónica. Tree to 20 ft.: lvs. oblong, to 3 in. long, entire: fls. pale yellow, ¾ in. across: fr. to ¾ in. Japan to India.

TERNSTRŒMIACEÆ: *Theaceæ.*

TERRARIUM. A small unheated greenhouse in which plants are kept or grown in the living room, laboratory or school. Ordinarily it is made four-sided with panes of glass about 8 × 10 inches fastened together at the corners with strong adhesive tape, a similar pane for cover, and the box set on a board or in a flat oven pan. The bottom is covered about an inch deep with coarse gravel, over which is placed an inch or two of soil; or sods from the woods containing the desired plants may be cut to size and placed in the bottom but with care for drainage. Many kinds of plants can be grown in a terrarium, the box being kept closed to control moisture. It may be set in or near a window but not directly exposed to hot sun. The box will need little watering. A terrarium is essentially a small Wardian case for more or less temporary use.

TESSARANTHIUM: *Frasera speciosa.*

TESTUDINÀRIA. *Dioscoreaceæ.* Twining vines with tuberous rootstocks above ground and herbaceous sts., alternate lvs., small diœcious fls. borne in axillary racemes, and capsular frs.; grown as a curiosity in cool greenhouse.

elephántipes. Hottentots-Bread. Elephants-Foot. Sts. to 10 ft.: root to 3 ft. diam., half above ground, eaten by natives when cooked: lvs. orbicular: fls. greenish-yellow or whitish. S. Afr.

TETRACÉNTON. *Magnoliaceæ.* One deciduous Chinese tree, hardy N. **T. sinénse.** To 100 ft.: lvs. alternate, ovate, to 5 in. long, toothed: fls. very small, yellowish, in drooping racemes to 6 in. long: fr. brown, ⅙ in. long.

TETRACLÌNIS. *Cupressaceæ.* Evergreen tree to 20 ft. tall, native in N. Afr. **T. articulàta** (*Callitris quadrivalvis*). Arar-Tree. Lvs. scale-like, minute: cones 4-sided, ½ in. across, of 4 scales.—Adapted only to the warmer parts of the country; by some authorities it is retained in the genus Callitris. For cult. see *Conifers.*

TETRAGÒNIA. *Aizoaceæ.* Herbs or subshrubs, one grown as a pot-herb, having alternate lvs. and small fls. without petals solitary or few in the axils. For cult. see *Spinach.*

crystállina. Glaucous herb: lvs. ovate, sessile: fr. without horns and with 4 seeds. Peru.

expánsa. New Zealand Spinach. Prostrate somewhat succulent ann.: lvs. ovate or triangular-ovate, to 5 in. long, petioled: fls. yellowish-green: fr. with 4 horns and 6–8 seeds. Japan, Australia, New Zeal., S. Amer.

TETRAGONOLOBUS: *Lotus.*

TETRAMICRA: *Leptotes bicolor.*

TETRANEMA: *Allophyton mexicanum.*

TETRANEURIS: *Actinea.*

TETRÁPANAX. *Araliaceæ.* Shrub or small tree native in Formosa, grown out-of-doors in warm regions, and in the Orient used for the making of rice-paper. **T. papyríferum** (*Aralia papyrifera. Fatsia papyrifera*). Lvs. ovate, to 1 ft. across, with 5–7 toothed lobes to about middle, heart-shaped at base, densely white-tomentose beneath: fls. in round umbels forming a panicle, tomentose. For propagation see *Fatsia.*

TETRAPATHÆA. *Passifloraceæ.* Woody climber native in New Zeal. **T. tetrándra** (*Passiflora tetrandra*). Lvs. alternate, oblong- or ovate-lanceolate, entire, shining: fls. unisexual, greenish with a crown of yellowish filaments, in axillary cymes or solitary: fr. orange, to 1½ in. across.

TETRASTÍGMA. *Vitaceæ.* Climbing shrubs from warm parts of Asia, with alternate palmately compound lvs., diœcious fls. in axillary cymes or umbels, and fr. a 2–4-seeded berry. The following is grown in S. Fla., making a dense attractive canopy or cover.

Hármandii. Ayo. High climbing by twining tendrils: lfts. 3–5 or sometimes 7, narrow-lanceolate, to 3 in. long, toothed: fls. in short-stalked cymes: fr. edible. Philippines.

TETRATHÈCA. *Tremandraceæ.* Heath-like shrubs of Australia, with fls. solitary in the axils and capsular frs.; sepals and petals 4; grown under glass or in the open in warm regions. A soil of fibrous peat and silver sand is desirable.

ericifòlia. To 1 ft.: lvs. mostly whorled, linear: fls. pink, to ⅓ in. long. New S. Wales.

TEÙCRIUM. GERMANDER. *Labiatæ.* Various herbs, subshrubs or shrubs, some kinds grown in the greenhouse or in the open in the extreme S., others adapted to the rock- or wild-garden in the N.: fls. rather showy, solitary in leafy axils or in 2–many-fld. whorls in raceme-like spikes or heads. Grown from seed and by division of the plants or the slender rhizomes.

argénteum: hort. name for *T. fruticans.*

Arduìnii. Per. with erect or ascending sts.: lvs. ovate, coarsely toothed, gray-pubescent beneath, rounded at base: fls. whitish, in dense ovate or oblong racemes, stamens long-exserted, calyx bilabiate. S. E. Eu.

aùreum. Per. to 1 ft., yellow- or gray-woolly: lvs. oval-oblong, wavy-toothed: fls. yellowish or whitish, in ovoid or globose heads. S. Eu.

campanulàtum. Per., sts. prostrate or slightly ascending, glabrous: lvs. ovate to rhomboid, incised-toothed to pinnatifid, segms. entire: fls. blue, calyx much shorter than corolla. S. Eu.

canadénse. AMERICAN G. Per. to 3 ft.: lvs. ovate-lanceolate to lanceolate, to 5 in. long, sharply serrulate to serrate, pubescent beneath: fls. purple to cream-color, ¾ in. long, in dense spikes 6 in. or more long. N. Amer.

Chamǽdrys (*T. pseudo-Chamædrys*). Procumbent shrub, the sts. ascending to 1 ft.: lvs. ovate, ¾ in. long, toothed, pubescent: fls. red-purple or bright rose with red and white spots, ¾ in. long, in few-fld. whorls in loose spikes. Eu. Var. **prostràtum** is listed as dwarfer than type.—Sometimes appearing incorrectly in the trade as *T. canadense.*

flàvum. Per. to 2 ft., woody at base: lvs. ovate, thick, pubescent, crenate-toothed, pale beneath: fls. yellow, in long interrupted leafy spikes. Medit. region.

frùticans. Shrub to 4 ft., white- or yellowish-woolly: lvs. ovate, to 1¼ in. long, entire and revolute: fls. blue, ¾ in. long, solitary, long-pedicelled, in terminal racemes. Eu.

hircánicum. Per. to 2 ft., erect, pubescent: lvs. ovate-cordate, to 3 in. long, obtuse, margins crenate: fls. purple or red, in dense spikes 3–8 in. long, corolla villous outside, calyx bilabiate. Caucasus, Persia.

incànum. Subshrub to 2 ft., gray-tomentose, sts. slender, erect or ascending: lvs. obovate-oblong, to ½ in. long, somewhat thickened, apex rounded, base wedge-shaped, distal margin crenate: fls. dull white, to ¾ in. long, corolla nearly twice as long as pilose and somewhat inflated calyx. Afghanistan.

Màrum. Small much branched shrub, white-tomentose: lvs. ovate, ⅓ in. long, entire, margins revolute: fls. purplish, ½ in. long, in racemes to 2 in. long. Medit. region. Var. **ròseum** has paler fls.

massiliénse. Per. to 1 ft., gray-pubescent: lvs. ovate, about ½ in. long, wavy-toothed: fls. rose, in terminal and axillary leafy spikes, calyx bilabiate. S. Eu.

montànum. Prostrate subshrub, the sts. ascending to 1 ft.: lvs. oblong to linear-lanceolate, to ¾ in. long, entire and revolute, tomentose beneath: fls. white becoming yellow, ½ in. long, in hemispherical terminal heads. S. Eu., Orient.

orientàle. Per. to 1 ft., sts. erect, softly hispidulous: lvs. to 2 in. long, pinnately divided into linear entire or cut segms.: fls. violet or blue. W. Asia.

pseùdo-Chamǽdrys: *T. Chamædrys.*

pyrenàicum. Per. to 10 in., hairy: lvs. suborbicular, coarsely toothed, ½ in. across: fls. yellow, in small terminal heads. Mts., Spain. Var. **filifórmis** is listed.

Scorodònia. Per. to 2 ft., stoloniferous, pubescent: lvs. ovate, to 2½ in. long, toothed, cordate or truncate at base: fls. yellow, ⅓ in. long, in racemes to 5 in. long, calyx bilabiate. Eu.; escaped in E. N. Amer.

THÀLIA. *Marantaceæ.* Tall aquatic or marsh herbs with basal long-petioled lvs. and fls. borne in bracts on spikes or panicles.

Plants should be grown in wet soil or shallow water. Propagated by division of the root.

dealbàta. Plant covered with white powder: scape to 10 ft. or more: lvs. to 20 in. long and 10 in. wide: fls. dull violet, small. S. C. to Fla. and Tex.—Sometimes grown about ponds.

divaricàta. Scape to 10 ft.: lvs. to 2 ft. long and 8 in. wide: fls. violet. Fla.

THALÍCTRUM. MEADOW-RUE. *Ranunculaceæ.* Per. herbs, with ternately compound or decompound lvs. and small unisexual or bisexual fls. borne in panicles or racemes, without petals and with numerous stamens; native mostly in the north temp. zone.

Thalictrums are of easy culture in well-drained loamy soil. Propagated by division of roots in early spring, and also by seeds. In most species the flowers are not striking except for the hanging stamens, but the large open panicles make an attractive mass effect. In some species, as *T. dipterocarpum*, the sepals are large and showy, and in others, as *T. aquilegifolium*, the stamens are enlarged: many of them display good violet and purple shades. The native American species are excellent in the wild-garden; the big ones frequent low ground.

adiantifòlium: this name many apply either to *T. minus* or *T. majus.*

akanénse. To 2½ ft., glabrous: lvs. long-petioled, biternate, segms. all petiolate, suborbicular to obovate, 3-lobed: fls. in terminal panicles, styles distinctly hooked. Japan.

alpìnum. To 1 ft., sts. simple and scape-like: lvs. basal, biternate, segms. obovate or orbicular, 3–5-lobed at tips, margins revolute: fls. perfect, with yellow stamens about length of greenish sepals: fr. sessile. Arctic Amer., Eu., Asia.

anemonoìdes: *Anemonella thalictroides.*

angustifòlium: *T. lucidum.*

aquilegifòlium. To 3 ft., mostly diœcious: lvs. decompound, segms. orbicular or oblong with few broad teeth at apex: staminate fls. with erect purple or pink stamens much longer than white sepals: fr. 3-winged, stalked and hanging. Eu., Asia. Color forms are **álbum, atropurpùreum, aurantìacum, ròseum.**

baicalénse. To 1½ ft.: lvs. decompound, segms. nearly orbicular, toothed at apex: fls. few, erect, with long stamens: fr. striate, flattened, very short-stalked. Siberia.

Chélidonii. Dwarf, much branched: segms. orbicular, more or less cordate, glaucous underneath: fls. large and showy, lilac or purple. Himalayas; not hardy N.

clavàtum. To 2 ft., glabrous, branched: lvs. all biternate, segms. ovate to obovate, 3–5-lobed: fls. perfect, with petal-like filaments: fr. stalked. Va. to Ga. and Ala.

Cornùtii: *T. polygamum.*

corynéllum: *T. polygamum.*

dasycárpum. To 7 ft., diœcious or polygamous: lvs. decompound, segms. oblong or obovate, 3-lobed at tips: fls. with stamens longer than purplish sepals: fr. 3–8-winged, short-stalked. N. J. to Sask. and Ariz.

Delavàyi. To 3 ft., diœcious: lvs. decompound, segms. 3–5-lobed, long-stalked: staminate fls. with purple or lilac sepals about length of stamens: fr. 3-winged, stalked. E. China.

dioìcum. To 2 ft., diœcious: lvs. decompound, segms. orbicular, 5–9-lobed: staminate fls. with stamens much longer than greenish sepals: fr. strongly ribbed, sessile. Me. to Mo.

dipterocárpum. To 2 ft. or more: lvs. decompound, segms. nearly orbicular, notched toward top, glaucous beneath: panicles narrow-pyramidal; fls. nodding, polygamous, with rose or lilac sepals about length of stamens: fr. 2-winged, unequal-sided, short-stalked. W. China. Vars. **álbum, magníficum** and **mìnus** are listed.

élegans. Per. to 1 ft.: lvs. 2–3 in. long, glaucous beneath, decompound, lfts. suborbicular, 3-fid, segms. obovate: fls. greenish-purple, very small, in sparsely branched panicles: achenes long-stalked. Subalpine Himalayas.

Féndleri. To 3 ft., diœcious: lvs. decompound, segms. roundish, toothed or lobed: staminate fls. with wnitish sepals shorter than the stamens: fr. 3-ribbed, obliquely obovate, sessile. Colo. to Calif.

flàvum. To 4 ft.: lvs. decompound, segms. obovate and 3-lobed: fls. bisexual, the pale yellow sepals shorter than the bright yellow stamens: fr. 8-ribbed, sessile. Eu.

flexuòsum: *T. minus.*

fœ́tidum. To 3 ft., glandular-pubescent, strong-smelling: lvs. decompound, segms. roundish, small, notched at apex: fls. nodding, greenish-red, the sepals shorter than yellow stamens: fr. many-ribbed, sessile. Mts. of Eu.

foliòsum: listed name.

glaùcum. To 4 ft., glaucous: lvs. decompound, segms. ovate, 3-lobed and toothed: fls. bisexual, in dense clusters in the panicle, yellow, the sepals shorter than stamens: fr. striate, sessile. S. Eu.

intermèdium: hort. name for a form with pale yellow fls.

japónicum: *Coptis brachypetala.*

keménse: *T. minus.*

kiusiànum. To 3 in., stoloniferous: lvs. 1-2-ternate into broad-ovate toothed lfts. purplish above: sepals purple, shorter than stamens: fr. ribbed, stalked. Japan.

lùcidum (*T. angustifolium*). To 4 ft.: lvs. decompound into linear or lanceolate shining segms., entire or 2-3-lobed at apex: fls. fragrant, the yellowish-white sepals shorter than stamens, in upright panicles: fr. striate, sessile. Eu.

màjus. Very similar to *T. minus* but much larger, to 4 ft., with sts. leafy to base, and branches of panicle spreading or drooping. Eu., Asia.

mìnus (*T. flexuosum. T. kemense. T. saxatile. T. ruthenicum. T. purpureum. T. persicum*). To 1½ ft.: lvs. decompound, segms. roundish, small, 3-lobed: fls. bisexual, greenish-yellow: fr. 8-ribbed, spindle-shaped, sessile. Eu., N. Afr., Asia.

occidentàle. To 3½ ft., diœcious: lvs. 3–4 times ternate into orbicular 3-lobed toothed very thin segms.: fr. flattened, 2-edged, sessile. B. C. to Calif. and Utah.

orientàle. To 6 in.: lvs. triternate, ovate, 3-lobed, pale beneath: fls. perfect, white, to ¾ in. across, few in panicles: fr. linear-oblong, to ¼ in. long, sessile. Greece, Asia Minor.

paniculàtum: a hort. name of uncertain application.

pérsicum: *T. minus.*

petaloídeum. To 1½ ft.: lvs. decompound, segms. ovate, entire or 3-lobed: fls. bisexual, in corymbs, with white sepals, pink filaments and yellow anthers: fr. striate, sessile. N. Asia.

polycárpum. To 3 ft. and more, diœcious: lvs. decompound, segms. ovate, toothed or lobed: fls. whitish or greenish, with long stamens: fr. in dense heads, slightly inflated, short-stalked. Calif. to Ore.

polýgamum (*T. Cornutii. T. corynellum*). To 8 ft. and more: lvs. decompound, segms. oblong to orbicular, 3-lobed: fls. polygamous, the white sepals about length of stamens: fr. with 6–8 wings or ribs, short-stalked. E. N. Amer.

purpuráscens: the plant grown under this name is *T. dasycarpum.*

purpùreum: *T. minus.*

Rochebruniànum. Glaucescent per.: lvs. bipinnate to ternate, lfts. entire or terminal one sometimes 3-lobed, ovate, obtuse, petiolules filiform: fls. in panicles. Japan.

rugòsum: a confused name.

ruthénicum: *T. minus.*

saxátile: *T. minus.*

símplex. Glabrous, strict, 2-3½ ft., sts. angled: upper lvs. with very long narrow divisions: infl. very narrow, little branched; fls. small: fr. striate, sessile. Eu., Asia.

squarròsum. Lvs. decompound, the lfts. ovate, 3-parted or entire: fls. white or yellow, drooping. Siberia.

sulphùreum: listed name.

tsukushinénse: listed name of plant said to come from Japan, growing to 4 in. high with rose-colored fls.

venulòsum. To 1½ ft., diœcious: lvs. 3–4 times ternate into 3–5-lobed toothed strongly veined segms., bluish-green: fls. small, in narrow dense panicles: fr. thick-walled, nearly sessile. Man. to Utah.

THAMNOCÁLAMUS. *Gramineæ.* Bamboos often considered a section of Arundinaria, differing in the lvs. not conspicuously tessellate and in technical floral characters; native in the mts. of Asia. See *Bamboo.*

aristàtus (*Arundinaria aristata*). To 12 ft., with yellow sts.: lvs. to 4 in. long and ½ in. wide, glabrous, rugose, rough on edges, the sheaths with a stiff point. Himalayas.

Fálconeri (*Arundinaria Falconeri. A. nobilis*). To 60 ft.: lvs. to 4 in. long and ½ in. wide, glabrous, finely toothed, the sheaths truncate at tip. Himalayas.

Hìndsii: *Pleioblastus Hindsii.*

THAMNOSÒMA. *Rutaceæ.* Low much branched strong-scented shrubs from W. Amer., having small simple early-deciduous alternate lvs. and fls. in racemose cymes, with 4-lobed persistent calyx, 8 stamens and 2-celled ovary: fr. a leathery 2-lobed caps.

montàna. Turpentine Broom. To 2 ft., sts. yellowish-green, glandular, broom-like: lvs. narrowly oblanceolate-linear, obtuse, to ⅝ in. long: fls. purplish, petals ½ in. long. Dry slopes and deserts, Colo., Utah, New Mex. to Calif.

THÈA. *Theaceæ* (*Ternstroemiaceæ*). Asian evergreen shrubs and trees with alternate simple toothed lvs., showy white or pink nodding fls. which are usually solitary, and capsular fr.; distinguished from Camellia (with which the genus is sometimes united) chiefly by the pedicelled nodding fls. and persistent sepals. From the lvs. of *T. sinensis* is made the tea of commerce; also grown for ornament. For cult. see *Camellia.*

assámica: *T. sinensis* var.

Bohèa: *T. sinensis* var.

cuspidàta (*Camellia cuspidata*). Shrub to 6 ft.: lvs. to 3 in. long: fls. white, 1½in. across. China.

japónica: *Camellia japonica.*

oleòsa: referred by most authors to *T. sinensis*, of which it is probably a form.

Sasánqua: *Camellia Sasanqua.*

sinénsis (*Camellia Thea*). Tea. Shrub or tree to 30 ft.: lvs. to 5 in. long: fls. white, fragrant, to 1½ in. across. China, India; can be grown in southern states. Var. **assámica** (*T. assamica*) has fls. 1–4 together; in var. **Bohèa** (*T. Bohea*) the lvs. are dark green and fls. usually solitary; var. **cantoniénsis** has solitary terminal fls.; the lvs. of var. **víridis** (*T. viridis*) are light green and fls. 1–4 together.

víridis: *T. sinensis* var.

THEÀCEÆ or **TERNSTRŒMIÀCEÆ.** Tea Family. About 16 genera of trees and shrubs, sometimes evergreen, native in warm regions, with commonly alternate simple lvs., regular bisexual fls. having mostly 5 sepals and petals, numerous stamens, superior 2–10-celled ovary, and fr. a caps. or drupe. The family furnishes the tea-leaf of commerce and the following genera of ornamentals: Camellia, Eurya, Gordonia, Schima, Stewartia, Ternstrœmia, Thea.

THELESPÉRMA. *Compositæ.* Herbs or subshrubs, ann. or per., of about 10 species in W. N. Amer. and S. S. Amer., one of them grown in the flower-garden; differs from Coreopsis in technical characters, as the inner involucral bracts united to the middle or above.

ambíguum. Per. to 1½ ft.: heads with broad yellow rays ½ in. long and purple disk turning brown. Colo.

Burridgeànum (*T. hybridum. Cosmidium Burridgeanum*). Ann. to 1½ ft., branching: lvs. divided into thread-like lobes: heads long-peduncled, to 1½ in. across, the rays red-brown or deep orange with yellow margin. Tex.—Formerly erroneously considered to be a hybrid between a Thelesperma and Coreopsis. Of easy cult. as a garden ann. in an open exposure, as for Coreopsis.

hýbridum: *T. Burridgeanum.*

THELOCÁCTUS. *Cactaceæ.* Mexican or Texan globular or somewhat depressed spiny cacti of medium size, of which all the older species have been named in Echinocactus: ribs low or often indefinite (or apparently absent) and few in number and divided into large prominent tubercles: fls. from near center of plant, bell-shaped, diurnal. See *Cacti.*

bícolor (*Echinocactus bicolor*). Simple, globose to conic, to 4 in. diam., glaucous, very spiny; ribs commonly 8; spines colored, the radials 9–18 and centrals mostly 4: fls. purplish-pink, 2 in. or more long. S. Tex., Mex. Var. **bolánsis** (*T. bolansis*) has stouter white spines. Var. **trícolor** usually has red and white to all red spines which are closer together than in type.

bolánsis: *T. bicolor* var.

Buèkii. Differs from *T. tulensis* in its smaller habit, its more angular tubercles and its reddish somewhat arching and spreading spines. Mex.

conothèlos (*Echinocactus conothelos*). Solitary, ovoid to subcylindric, to 4 in. high and 3 in. diam.; ribs slightly spiralled, notched toward base; radials 14 to 16, to ½ in. long, white; centrals 2–4, often to 1 in. long or more. Mex.

Éhrenbergii (*Echinocactus Ehrenbergii*). Globose to short-cylindric, to 6 in. high and 3 in. diam., gray-green; ribs 8–13, spiralled, tubercles ⅓ in. high; radial spines usually 6, to ¾ in. long; central 1, stouter: fls. rose, to 1¾ in. long. Mex.

fossulàtus. Solitary, usually depressed-globose, to 6 in. diam.; ribs about 13, somewhat glaucous, tubercles very conspicuous, soft, compact; radials 4–5, to 1½ in. long, unequal, brown; central 1, to 1¾ in. long, stout, ringed: fls. white or tinged pink. Mex.

Gielsdorfiànus (*Echinocactus Gielsdorfianus*). Solitary or occasionally cespitose, globose to subcylindric, blue-green to gray-green, to 3¼ in. diam.; ribs about ¼ in. high; spines all radial, usually 6–7, to ¾ in. long, dark at tip: fls. cream-white, to 1 in. long. Mex.

hástifer. Solitary, cylindrical to club-shaped, to 6 in. tall and 2½ in. diam.; ribs 18–20, tubercled, to ⅓ in. high; radials 20–25, to ⅝ in. long, recurved, white; centrals usually 4, lower ones to 1¼ in. long, curved: fls. violet-pink within, to 2¾ in. long. Mex.

heterochròmus: *T. Pottsii.*

hexædróphorus (*Echinocactus hexædrophorus*). Globose or somewhat flattened or hollowed on top, glaucous, not ribbed but strongly tubercled; radials 6–9; central 1 and stouter: fls. purplish, about 2 in. long. Cent. Mex.

Knuthiànus (*Echinocactus Knuthianus*). Solitary or cespitose, globose, to 2½ in. diam.; ribs 13–21, tubercled; radials 18–20, about ⅓ in. long, white; central 1, stouter than radials: fls. pale pink, to 1 in. long. Mex.

leucacánthus (*Echinocactus leucacanthus*). Densely cespitose, individuals short-cylindric to 6 in. long; ribs 8–13; radials 7–20 and at first yellow; central 1, to 2 in. long: fls. yellow, tinged rose-pink, 2 in. long. Mex.

longispìnus: hort. name.

lophothèle (*Echinocactus lophothele*). Cespitose in the wild, individuals globose, depressed or short-cylindric to 10 in. high, glaucous; ribs indefinite, tubercles flattened; radials 3–5; central 1 or none: fls. salmon or yellow, about 2 in. across. Mex.

Mandrágora (*Echinocactus Mandragora*). Root fusiform, st. globose, to 2½ in. diam., completely covered with spines; tubercles compact, 4-sided; radials 12, awl-shaped, incurved, white; centrals usually 2, to ¾ in. long, erect, white: fls. white within, striped rose-pink, to 1 in. across. Mex.

megalothèlos: *Gymnocalycium megalothelos.*

nídulans (*Echinocactus nidulans*). Depressed-globose, to 4 in. high and 8 in. diam., usually glaucous; ribs 20–25; spines about 15 and to 2½ in. long: fls. yellowish-white, 1½ in. long. Mex.

pectinàtus: probably *Echinocereus pectinatus.*

phymatothèle (*Echinocactus phymatothele*). Depressed-globose, to 2 in. tall and 4 in. diam., woolly on top; ribs 13, about ½ in. high, tubercled, spiralled; spines similar, usually 3–4, to ¾ in. long, ascending, often deciduous: fls. pink, segms. margined yellow, to 2 in. long. Mex.

porréctus (*Echinocactus porrectus*). By some considered a variety of *T. leucacanthus*, from which it differs in its shorter radial spines, in having 4 centrals and fls. clear yellow. Mex.

Póttsii (*Echinocactus Pottsii* and *heterochromus*). Globular or depressed, to 6 in. diam., yellowish; ribs 8 or 9; radials 7–10; centrals several: fls. light purple, about 2 in. long. Mex.

rinconénsis (*Echinocactus rinconensis*). Globose, to 3 in. high and 5 in. diam.; ribs strongly tubercled; spines 3 and ½ in. long: fls. white, 1½ in. long. Mex.

Roseànus (*Echinocactus Roseanus*). Solitary or cespitose, ovoid, to 2 in. tall and 1¼ in. diam.; ribs 8–13, tubercles low and broad; radials about 15, to ⅝ in. long, needle-like, yellowish; centrals 4–6, to ¾ in. long, stouter: fls. pale pink. Mex.

Sauèri (*Echinocactus Saueri*). Solitary, depressed-globose, to 1¼ in. high and about 2 in. diam., white-woolly on top; ribs 13, tubercles 6-sided; radials 14–18, mostly ⅛ in. long with 3–4 to ½ in. long, white; centrals 1–2, blackish tipped: fls. white with rose-pink throat, to 1 in. long. Mex.

Saussièri (*Echinocactus Saussieri*). Depressed-globose, to 8 in. across; ribs strongly tubercled; radial spines 9 and grayish-white; central spines 4 and to 1½ in. long: fls. purplish, 1½ in. across. Mex.

tulénsis (*Echinocactus tulensis*). Often cespitose, globular or short-cylindric, to 10 in. high; ribs 8–13 and strongly tubercled; radial spines 6–8 and ½ in. long; central 1–2: fls. rose, 1 in. long. Mex.

Valdeziànus (*Echinocactus Valdezianus. Pelcyphora Valdeziana*). Usually solitary, globose to subcylindrical, to 1 in. diam.; tubercles angular, blue-green, glossy; spines all radial, 25–35, very short and bristly-pectinate: fls. violet-pink, to ¾ in. long. Mex.

Wagneriànus (*Echinocactus Wagnerianus*). Solitary or cespitose, sts. usually cylindrical, to 8 in. tall and 2½ in. diam.; ribs 13, tubercled; radials about 20, usually pectinate, reddish-yellow; centrals 1–4, to ¾ in. long, base bulbous. Mex.

THELYPÒDIUM. *Cruciferæ.* Ann., bien. and per. erect herbs of N. Amer., glabrous or nearly so, one sometimes transferred to grounds: lvs. simple, entire or toothed, sometimes pinnatifid: fls. white or purplish, in racemes: fr. a linear pod or silique.

Wrìghtii (*Stanleyella Wrightii*). Slender branched ann. or bien. to 2½ ft.: lvs. lanceolate to linear, toothed to pinnatifid, the upper ones sometimes entire: fls. white. Colo. and Utah south.

THELYPTERIS: *Dryopteris.*

THENÁRDIA. *Apócynaceæ.* Mexican woody climbers with opposite stalked lvs. and umbel-like clusters of pedicellate fls. that bear a wide open or nearly rotate corolla with twisted lobes and exserted stamens: fr. a pair of long follicles. **T. floribúnda** is grown in Calif. for its fragrance; it is a slender-branched strong vine: fls. whitish tinged purple, about 1 in. long.

THEOBRÒMA. *Sterculiaceæ.* Trop. American trees with alternate simple entire lvs., small fls. in axillary clusters or borne on the branches and trunk, and large woody frs. from the seeds of which are obtained commercial cocoa and chocolate.

Cacao requires tropical temperatures and trees are planted in groves 10–15 feet apart each way. Propagated by seeds, the seedlings set permanently when 1–2 feet high. Trees will bear in about four years.

Cacào. CACAO. To 25 ft., evergreen: lvs. leathery, to 1 ft. long: fls. yellowish: fr. red to brown, ribbed, to 1 ft. long, the seeds to 1 in. across. Cent. and S. Amer.

THEOPHRASTÀCEÆ. THEOPHRASTA FAMILY. Five trop. genera of evergreen trees or shrubs: lvs. simple: fls. bisexual or unisexual, gamopetalous, with 5-lobed calyx and corolla, 5 or rarely 4 stamens, 5 staminodia, and superior 1-celled ovary: fr. indehiscent, leathery or fleshy. Clavija may be planted in S. U. S.

THERMÓPSIS. *Leguminosæ.* Per. herbs with lvs. of 3 digitate lfts., leaf-like stipules, papilionaceous fls. in racemes, and flattened or inflated pods; native in N. Amer. and N. and E. Asia.

They are suited to deep well-drained soil; planted for ornament. Propagated by seeds sown in fall or spring over heat; also by division.

caroliniàna. To 5 ft.: fls. yellow, in erect terminal racemes: pods flat, 2 in. long, tomentose. N. C. to Ga.

fabàcea. To 3 ft.: fls. yellow, in erect axillary racemes: pods flat, to 3 in. and more long. Siberia.

fraxinifòlia. To 3 ft.: fls. yellow, in loose racemes: pods linear, to 4 in. long, glabrous. N. C. to Ga.

lanceolàta. To 1 ft.: lfts. ovate-lanceolate, to 1½ in. long, base narrowly cuneate: fls. yellow, in compact racemes: pods to 2 in. long, strongly recurved. Siberia and Alaska.

macrophýlla. To 2 ft.: lfts. obovate, to 4 in. long, silky becoming glabrate: fls. yellow, in dense racemes to 6 in. long: pods straight, silky. Calif.

móllis. To 3 ft.: fls. yellow, the racemes mostly terminal: pods flat, slightly curved, to 4 in. long, glabrous. S. Va. to Ga.

montàna. To 2 ft.: fls. yellow, in terminal racemes: pods linear, 2 in. or more long, pubescent. Mont. to Wash.

pinetòrum. To 1½ ft.: lfts. oblong to ovate, to 1¾ in.

long, glabrous: fls. yellow, few in short racemes to 2 in. long: pods linear, straight, sparingly pubescent. Utah, Colo., N. Mex.

rhombifòlia. To 1 ft.: lfts. ovate-rhombic, to 1 in. long, base broadly cuneate: fls. yellow, in terminal or axillary racemes: pods to 2½ in. long, recurved, pubescent. Sask. to Colo.

THEROFON: *Boykinia.*

THERORHODION: *Rhododendron camtschaticum.*

THESPÈSIA. *Malvaceæ.* Trees and shrubs or tall herbs in trop. Afr., Asia and Pacific Isls., with alternate mostly entire or angle-lobed lvs. and large showy yellow or red fls. with 3–5 small or deciduous bractlets; fr. a woody mostly indehiscent caps.; one is planted for ornament in the tropics and S. Fla. The wood is also used for making furniture. Propagated by seeds.

grandiflòra: *Montezuma speciosissima.*

popúlnea. Portia-Tree. To 60 ft., more or less finely scaly: lvs. cordate-ovate and acuminate, somewhat poplar-like, to 5 in. long: fls. yellow changing to purple, to 3 in. across. Tropics of Old World.

THEVÈTIA. *Apocynaceæ.* Shrubs and trees in trop. Amer., with alternate lvs., large funnelform fls. in terminal cymes, and fr. a fleshy drupe.

One is grown under glass, and out-of-doors in the South. It thrives in rich sandy soil and can stand a few degrees of frost if banked with dry sand. Propagated by cuttings.

nereifòlia (*Cerbera Thevetia*). Yellow Oleander. To 30 ft., evergreen: lvs. to 6 in. long and ¼ in. wide: fls. yellow, fragrant, 2–3 in. long: fr. black, 1 in. across, hard and angled.

THIMBLEBERRY: *Rubus occidentalis.*

THISTLE, BLESSED: *Cnicus, Silybum Marianum.* **Bull:** *Cirsium lanceolatum.* **Fishbone:** *Cirsium Diacantha.* **Globe:** *Echinops.* **Golden:** *Scolymus hispanicus.* **Holy:** *Silybum Marianum.* **Milk:** *Silybum Marianum.* **Plumed:** *Cirsium.* **Plumeless:** *Carduus.* **Russian:** *Salsola pestifer.* **St. Marys:** *Silybum Marianum.* **Scotch:** *Onopordum Acanthium.* **Swamp:** *Cirsium muticum.*

THLADIÁNTHA. *Cucurbitaceæ.* Per. tuberous-rooted tendril-climbing diœcious herbs of Cent. and E. Asia and Philippines, distinguished from related genera by seeds horizontal in the fr. rather than pendulous: fls. yellow, bell-shaped; staminates mostly clustered, pistillates often solitary: fr. and seeds small.

dùbia. Tall climber, pubescent: lvs. cordate-ovate, not lobed, toothed: fls. 1 in. or less across: fr. oblong, 10-ribbed, mostly less than 1 in. long. N. China; little planted in our territory, but tending to be spontaneous in some parts.

THLÁSPI. Penny-Cress. *Cruciferæ.* Ann. and per. herbs of temp. and cold regions, for the most part glabrous and glaucous, erect: lvs. oblong to broad-ovate, entire or toothed, basal ones forming rosette, on st. auriculate: fls. white, rose or purplish, in racemes: fr. mostly a flat short winged silicle or pod.

A few species are grown in the rock-garden and others for the large flat ornamental pods often useful in dry bouquets. The cultivation is simple from seed, and some of the perennials by division.

alpéstre. Glabrous per. to 12 in. in fr., in tufts: basal lvs. obovate and stalked: fls. white, mostly reddish tinged, in rather open infl. High mts., Eu.—The Rocky Mt. plant formerly referred here is **T. coloradénse,** to 6 in.: fls. white, in dense head.

alpìnum. Per. to 6 in., glabrous: basal lvs. spatulate, entire or dentate, st.-lvs. ovate-cordate: fls. white, petals twice as long as sepals: pods oblong-obovate, style filiform and exceeding lobes. Mts., Cent. Eu.

arvénse. Rather weedy ann. to 18 in., strong plants branching above: st.-lvs. oblong to lanceolate, dentate, only the upper ones clasping: interesting for its flat nearly orbicular pods to ½ in. across. Eu., also nat.

bellidifòlium. Tufted per. allied to *T. rotundifolium,* but has oblong-spatulate lvs. and violet fls.; differs from *T. stylosum* in pod apex retuse. Macedonia.

bellidioìdes: catalogue name.

bulbòsum. Bien. to 4 in.: basal lvs. ovate-orbicular and stalked: fls. deep violet, in fr. the racemes to 4 in. long. Greece.

cepæifòlium: *T. rotundifolium* var.

cilícicum (*Carpoceras cilicicum*). Per., dwarf: lower lvs. ovate, entire, upper clasping: pods linear. Asia Minor.

coloradénse: see *T. alpestre.*

hésperum: listed name.

Jánkiæ: *T. præcox.*

limosellifòlium: *T. rotundifolium.*

montànum. Per. to 8 in., with stolons at base: lvs. entire or dentate, basal ones obovate, others oblong: fls. white. Mts., Cent. and S. Eu.

prǽcox (*T. Jankiæ*). Per. to 1 ft.: basal lvs. in rosettes, oblong or orbicular, stalked, entire or nearly so, often purplish beneath: fls. white, the calyx purplish edged with white. S. Eu.

rotundifòlium (*T. limosellifolium*). Per., cespitose, with stolons, to 8 in.: lvs. thick, entire or dentate, basal ones roundish to obovate, others oval: fls. lilac. Mts., S. Eu. Var. **cepæifòlium** (*T. cepæifolium*) has smaller notched basal lvs. and more numerous st.-lvs.

stylòsum. Little alpine per.: lvs. tufted, spatulate, ¼ in. long, entire: fls. rose, in dense racemes 1 in. or so high. Italy.

violáscens. Bien. to 6 in., glaucous: basal lvs. ovate-oblong, st.-lvs. oblong, entire, clasping: fls. violet with violet anthers. Asia Minor.

THOMÁSIA. *Sterculiaceæ.* Shrubs of Australia with alternate entire or lobed lvs., purple or white fls. without petals borne in racemes, and capsular frs.; the first species grown as a ground-cover in S. Calif.

purpùrea. Small subshrub: lvs. oblong or linear, to 1 in. long, stellate-hairy particularly beneath: fls. small, in racemes longer than lvs.

rugòsa. Lvs. cordate-ovate, lobed, to 3 in. long, wrinkled and stellate-hairy above, densely tomentose beneath: fls. rather large.

THOMSÒNIA. *Araceæ.* Trop. Himalayan genus differing from Amorphophallus in top of spadix covered with conical tubercles. One species, **T. nepalénsis,** may be cult. To 2 ft. or more high, with subterranean basal tuber 4–5 in. diam.: lf. pinnatisect, to 20 in. or more long, lfts. ovate to oblong-lanceolate, to 5 in. long, long-acuminate: spathe green, to 18 in. long; spadix to 10 in. long, stout.

THORNAPPLE: *Cratægus.*

THORN, BOX-: *Lycium.* **Camel-:** *Acacia Giraffæ.* **Christ-:** *Paliurus Spina-Christi.* **Cockspur:** *Cratægus Crus-gallii.* **Hedge-:** *Carissa Arduina.* **Jerusalem-:** *Paliurus Spina-Christi, Parkinsonia aculeata.* **Kangaroo-:** *Acacia armata.* **Karroo-:** *Acacia horrida.* **Lily-:** *Catesbæa spinosa.* **Mysore:** *Cæsalpinia sepiaria.* **Washington:** *Cratægus Phænopyrum.*

THOROUGH-WAX: *Bupleurum.*

THOROUGHWORT: *Eupatorium.*

THRIFT: *Armeria.* **Prickly-:** *Acantholimon.*

THRÌNAX. Peaberry Palms. *Palmaceæ.* About 10 small or slender unarmed hermaphrodite fan-palms native in S. Fla., W. Indies, Yucatan and British Honduras, with infl. among the nearly or quite orbicular lvs., the solitary trunk naked or clothed with old lf.-stalks: spadix longer than petiole and sometimes surpassing the blade, bearing many rather short side branches on a long continuing axis; stamens mostly 6: fr. globose, pea-like, white or light colored, flesh white, often on slender pedicels that remain when the drupe falls; albumen homogeneous and the small seed smooth and even, but a central cavity (centralium) extending partially or wholly through it. For cult. see *Palm.*

altíssima: probably *Coccothrinax alta.*

argéntea: *Coccothrinax argentea.*

barbadénsis: indefinite name.

élegans, elegantíssima: unidentified names.

excélsa. Stout tree to 20 ft. or perhaps more, with lvs. whitish or glaucous underneath: fr. ⅓ in. diam., pedicellate, fleshy when fresh and mature, yellowish to white, flattened endwise; central cavity extending length of seed. Jamaica. —Apparently one of the species confused in cult.

floridàna: *T. parviflora.*

keyénsis: *T. microcarpa.*

microcárpa (*T. keyensis. Simpsonia microcarpa*). To 30 ft. or more: lvs. about 2 ft. across, silvery-white underneath and tomentose when young, pale green above; petioles slender: spathelets pubescent or lanate; fls. on very short thick disk-like pedicels: fr. about ⅛ in. diam., sessile, with thin flesh; central cavity extending only part way through seed. S. Fla., Bahamas, W. Indies.

Mórrisii. Low, 3–4 ft., making a mound-like specimen, the trunk sometimes elongating: lvs. nearly orbicular, to 3½ in. across, glaucescent but not silvery-white underneath, deeply cleft into about 30 segms.: spathelets glabrous or nearly so; fls. on very short pedicels or sessile: fr. spherical, about $\frac{3}{16}$ in. diam., sessile; central cavity only part way through seed. Anguilla and Anegada Isls.

parviflòra (*T. floridana. T. Wendlandiana*). Slender, to 25 ft.: lvs. light green, not white or glaucous-white underneath, segms. 50 or more and about 1 in. broad: fr. globular, about ¼ in. diam., drying to a thin brittle shell, pedicellate; seed with central cavity extending through it. Fla. keys, Bahamas, Cuba, Jamaica, Haiti; reported in Yucatan and British Honduras.

radiàta: dubious name.

Wendlandiàna: *T. parviflora.*

THRINCOMA: *Coccothrinax alta.*

THRINGIS: *Coccothrinax alta.*

THRÍXSPERMUM. *Orchidaceæ.* Epiphytes in the Old World with leafy sts. and fls. in racemes, usually one opening at a time; sepals and petals nearly equal; lip 3- or more-lobed, saccate at base, distinguished from Sarcochilus by the lip being rigidly attached to the column. See *Orchids* for cult.

Calcèolus (*Sarcochilus Calceolus*). Sts. to 12 ft. long: lvs. numerous, distichous, to over 4 in. long: infl. racemose, few-fld.; fls. about 2 in. across, snow-white with orange-yellow on the 3-lobed lip. Malaya, Sumatra.

THROAT: the opening or orifice into a gamopetalous corolla or perianth; the place where the limb joins the tube.

THROATWORT: *Trachelium.*

THRYÁLLIS. *Malpighiaceæ.* Shrubs or somewhat tree-like, in trop. Amer., with opposite simple lvs., yellow or reddish fls. in panicles, and fr. a caps. separating into 3 parts; grown under glass (propagated by cuttings in heat) or out-of-doors in the S.

brasiliénsis: see *T. glauca.*

glaùca (*T. gracilis. Galphimia glauca*). Neat floriferous glaucous bush to 5 ft.: lvs. oblong, to 2 in. long: fls. yellow, ¾ in. across, in many-fld. panicles. Mex. to Panama, and nat. elsewhere.—Sometimes grown as *T. brasiliensis,* but that species is smaller-fld. and probably not in cult.

grácilis: *T. glauca.*

THÙJA. ARBOR-VITÆ. *Pinaceæ.* Evergreen trees of N. Amer. and E. Asia, having frond-like branchlets, scale-like lvs. or when young needle-shaped, and erect ovoid-oblong small cones with few scales. For cult. see *Conifers.* Although the thujas may make tall trees in nature, in plantations they are usually prized for their slow compact growth, and the dwarf garden forms are very many.

beverleyénsis: *T. orientalis* var.

Biòta: *T. orientalis.*

bonìta: *T. orientalis* var.

caucásica: *T. occidentalis* var. *robusta.*

dolabràta: *Thujopsis dolobrata.*

elegantíssima: plants so listed may be a var. of *T. occidentalis* or of *T. orientalis.*

giganteà: *T. plicata.*

japónica: *T. Standishii.*

koraiénsis. Spreading shrub or rarely tree to 25 ft.: lvs. glaucous beneath, glandular: cones ⅓ in. long. Korea.

Lóbbii: *T. plicata.*

obtùsa: *Chamæcyparis obtusa.*

occidentàlis. AMERICAN A. To 60 ft.: lvs. yellowish-green beneath, glandular: cones ½ in. long. N. S. to N. C. and Ill. There are many hort. vars., as: **álba,** QUEEN VICTORIA A., tips of young branchlets white; **argéntea** is var. *variegata;* **aùrea,** of bushy habit, lvs. deep yellow; **aùreo-variegàta,** lvs. variegated with golden-yellow; **Bàtemannii** is listed; **Bódmeri,** monstrous form with thick clumpy growth; **Boòthii,** low and compact with rather large lvs.; **Buchánanii,** narrow-pyramidal grayish-green form; **Búrrowii,** lvs. yellow; **caucásica** is var. *robusta;* **Colúmbia,** lvs. variegated with silver; **columnàris** is var. *fastigiata;* **compácta,** of dense habit; **cónica,** cone-shaped; **cristàta,** dwarf with stout crowded branchlets; **densifórma,** very dense; **Doúglasii aùrea,** lvs. bronzy-yellow; **Doúglasii pyramidàlis,** dense pyramidal form with fern-like branches, perhaps not distinct from var. *filiformis;* **dumòsa,** dwarf dense form; **elegantíssima** is var. *lutea;* **Ellwangeriàna,** low form with both adult and juvenile lvs. and in **aùrea** lvs. yellow; **ericoìdes,** dwarf or bushy form with needle-shaped lvs.; **fastigiàta** (var. *pyramidalis,* var. *stricta,* var. *columnaris*), columnar, branches short; **filicoìdes,** of narrow-pyramidal habit and pinnately arranged branchlets; **filifórmis,** bushy form with long slender branchlets; **Fròebelii** is var. *globosa;* **globòsa** (var. *Froebelii,* var. *Spihlmannii,* var. Tom Thumb), dwarf globose form, lvs. bright green; **Háncii,** hort. name; **Hóllandii,** a semi-globose form with green foliage; **Hoòpesii,** broad-pyramidal or dome-shaped form; **Hòveyi,** of dwarf globose habit and bright green foliage; **intermèdia,** dwarf and compact; **lùtea** (var. *elegantissima*), GEORGE PEABODY A., of pyramidal habit, with bright yellow lvs.; **lutéscens,** yellow-lvd. form of var, *robusta;* **Mástersii** (var. *plicata*), pyramidal form with much flattened branchlets; **nàna,** dwarf and compact; **nìgra** differs from type in darker green color and more compact habit; **Òhlendorfii** (var. *Spaethii*), of bushy habit, with two kinds of lvs.; **péndula,** branches bending downward; **plicàta,** see *Mastersii;* **pùmila** (var. Little Gem), dwarf and dense, lvs. dark green; **pygmæ̀a,** dwarf; **recúrva nàna,** dwarf with recurved branchlets; **Rèidii,** dwarf broad form; **Ríversii,** of compact pyramidal habit, lvs. yellowish-green; **robústa** (var. *Wareana,* var. *sibirica*), lower and denser than the type; **Ròsenthalii,** columnar, lvs. glossy dark green; **semperaùrea,** lvs. golden-yellow; **Smithiàna,** low and compact, foliage nearly purple in autumn; **Spaèthii** is var. *Ohlendorffii;* **Spíhlmannii** is var. *globosa;* **spiràlis,** branchlets appearing as if spirally arranged; **Stándishii** is *T. Standishii;* **theodonénsis,** branchlets thick and broad; **umbraculífera,** dwarf with umbrella-like top; **variegàta** (var. *argentea*), branchlets variegated white; **Vervæneàna,** smaller and denser with bronzy branchlets in winter; **víridis,** of narrow-pyramidal habit and glossy dark green lvs.; **Wagneriàna,** globose dark green; **Wareàna** is var. *robusta;* **Woòdwardii,** dense and globose, lvs. deep green. Other listed names are *Brinkerhoffii, gallica, monumentalis, Reevesii.*

orientàlis (*Biota orientalis*). ORIENTAL A. To 60 ft.: lvs. bright green, glandular: cones to 1 in. long. China, Korea; less hardy than the American arbor-vitæ. Some of the garden vars. are: **argénteo-variegàta** (*B. orientalis* var. *argentea*), tips of young shoots creamy-white; **aùrea,** golden-yellow in spring; **azùrea,** foliage glaucous blue-green; **Bàkeri,** foliage pale green, adapted to hot dry locations; **beverleyénsis,** of pyramidal habit, lvs. golden-yellow; **bonìta,** cone-shaped, lvs. tipped golden-yellow; **cæ̀sia,** foliage said to be blue-gray; **chinénsis,** of variable habit from dwarf globose to pyramidal and with variable foliage forms, possibly of hybrid origin; **columnàris,** of narrow-columnar habit, lvs. green; **compácta** is *Sieboldii;* **conspícua** (var. *aurea conspicua*), compact golden-yellow suffused with green; **cupressifòlia,** of pyramidal habit, thread-like bluish-green foliage, listed as a hybrid between a Chamæcyparis and this species; **decussàta,** dwarf juvenile form with acute bluish-green lvs.; **elegantíssima,** compact, bright yellow in spring; **excélsa,** dwarf compact pyramidal form with bright green lvs.; **filifórmis** is var. *flagelliformis;* **flagellifórmis** (var. *pendula, B. orientalis* var. *filiformis*), branches drooping and thread-like; **Frùitlandii** is listed as a dwarf globose form with dark green foliage; **funiculàta,** branchlets drooping, lvs. of two kinds; **glaùca,** pyramidal habit with blue-green foliage; **globòsa,** dwarf globose habit; **grácilis,** slender pyramidal form; **gracíllimus,** narrow globose form with compact dark green lvs.; **Hoẁardii** is listed as a pyramidal form to 10 ft.; **intermèdia,** branchlets drooping, lvs. of two kinds; **Maurieàna,** very slender columnar form, green lvs.; **Mayhewiàna,** compact pyramidal habit, branchlets tipped yellow; **meldénsis,** narrow-pyramidal form with bluish-green needle-like lvs.; **nàna** is var. *Sieboldii;* **nàna compácta,** dwarf columnar or conical habit; **newarkénsis,** listed name; **péndula** is var. *flagelliformis;* **pygmæ̀a,** said to be dwarf form; **pyramidàlis** is var. *stricta;* **semperauréscens,** dwarf, lvs. golden-yellow; **Sièboldii** (var. *nana,* var. *compacta*), low and globose; **stríta** (*B. orientalis* var. *pyramidalis*), of dense pyramidal habit; **tatárica,** branchlets yellow tipped; **texàna glaùca,** pyramidal habit, blue-green foliage. Other listed forms are: *Berckmanniana, Hudginsii, Ramseyi* and *Sikesii.*

pachyphylloìdes: listed name.

plicàta (*T. gigantea. T. Lobbii*). Giant A. To 200 ft.: lvs. with whitish marks below, usually not glandular: cones ½ in. long. Alaska to Calif.; in the N. should not be exposed to strong winter winds. Var. **atróvirens** has dark green lvs., var. **aùrea** yellowish lvs., var. **elegantíssima** is listed, var. **fastigiàta** columnar habit, and var. **péndula** drooping branches.

pyramidàlis: form of *T. occidentalis* or *T. orientalis.*

sibírica: *T. occidentalis* var. *robusta.*

Stándishii (*T. japonica*). Japanese A. To 50 ft.: lvs. with triangular white marks below, not glandular: cones to ½ in. long. Japan.

THUJÓPSIS. *Pinaceæ.* Evergreen pyramidal tree to 50 ft., allied to Thuja, native in Japan. **T. dolabràta** (*Thuja dolabrata*). Hiba Arbor-Vitæ. False Arbor-Vitæ. Branchlets flattened and frond-like: lvs. appressed, glossy above, with broad white band beneath: cones ovoid, about ½ in. long, with flat woody scales. Var. **Hôndai** is taller with smaller lvs. Var. **nàna,** dwarf, lvs. lighter green. Var. **variegàta,** tips of branchlets creamy-white. Hardy in central states, and in S. New England can be grown in sheltered situations near the coast. *T. borealis* is *Chamæcyparis nootkatensis.* For cult. see *Conifers.*

THUNBÉRGIA. Clock-Vine. *Acanthaceæ.* Herbs or shrubs of warm countries, often climbing, with opposite lvs. and funnelform 5-lobed fls. subtended by 2 large bracts, in shades of blue, purple, yellow or white, and blooming mostly in late summer and autumn.

Thunbergias are popular in southern United States for covering porches, trellises and arbors, and are also grown in the North under glass. Propagated by seeds, cuttings of young growth, and by layers in summer.

alàta. Black-eyed Susan. Twining per. herb sometimes grown as an ann. from seeds: lvs. triangular-ovate, to 3 in. long, toothed, with winged petiole: fls. creamy with dark purple throat, 1½ in. long, solitary on long peduncles. Trop. Afr.; widely nat. in tropics. Var. **álba,** fls. white with dark center. Var. **aurantìaca,** fls. orange-yellow with dark center. Var. **Bàkeri,** fls. pure white.

coccínea. Woody twiner: lvs. ovate, to 5 in. long, thick, 3–5-nerved from base, toothed: fls. scarlet with yellow throat, 1 in. long, in drooping racemes. India.

erécta (*Mayenia erecta*). Erect shrub to 6 ft.: lvs. ovate, to 3 in. long, nearly entire: fls. blue-purple with yellowish-white tube, to 2¾ in. long, solitary. Trop. Afr. Var. **álba** has white fls.

fràgrans. Woody twiner: lvs. lanceolate to triangular-ovate, to 3 in. long, nearly entire: fls. white, fragrant, 1¼ in. long and 2 in. across, solitary. India.

Gíbsonii. Twining per. herb: lvs. ovate, to 3 in. long, toothed, with winged petioles: fls. orange, 1¾ in. long and broad, solitary on long hairy peduncles. Trop. Afr.—Readily grown as an ann. from seeds.

grandiflòra. Woody twiner: lvs. ovate, to 8 in. long, 3-nerved from base, very rough, angle-toothed: fls. blue (or white), somewhat 2-lipped, to 3 in. long and broad, usually in drooping racemes. India; nat. in tropics, and common in cult. for arbors and porches. Var. **álba,** fls. white.

Hárrisii: *T. laurifolia.*

laurifòlia (*T. Harrisii*). Woody twiner: lvs. lanceolate or ovate-lanceolate, coriaceous, to 5 in. long, nearly entire, 3-nerved from base: fls. light blue with white or yellowish throat, 3 in. across, in racemes. India.

THÙNIA. *Orchidaceæ.* Epiphytic orchids native of Asia, with tufted sts. which are distichously leafy above and terminate in drooping 3–12-fld. racemes; sepals and petals similar, elliptic-oblong; lip subtrilobed, with the lower part surrounding the column, shortly spurred and crested. See *Orchids* for cult.

álba. To 3½ ft.: lvs. oblong-lanceolate, to about 1 ft. long: fls. white, up to 2¾ in. long; lip marked with yellow or purplish fringed keels. May–Aug. India, Burma, China. Var. **Marshalliàna** (*T. Marshalliana*), fls. white, lip yellow in the upper part marked with fringed orange keels. June–July.

Bénsoniæ. Habit similar to *T. alba:* fls. 3 in. long; sepals and petals reddish-purple shading to white at base; lip purple shading to white below, with conspicuous yellow crests. July. Burma.—Often treated as a var. of *T. alba.*

Marshalliàna: *T. alba* var.

THURBÈRIA. *Malvaceæ.* Herbs or subshrubs of the warmer regions of W. N. Amer., differing from Gossypium in the caps. of 3 rather than 5 cells and the lvs. usually more deeply lobed. Probably only 1 species, occasionally grown for ornament in S. W. U. S.

thespesioìdes. Arizona Wild Cotton. To 10 ft., usually glabrous: lvs. mostly 3–5-palmately lobed, segms. often extending nearly to base, lanceolate, entire, to 3 in. long, glandular-dotted: fls. white turning purplish, to 2 in. across, axillary or in corymbs: caps. to ¾ in. long, seeds woolly. S. Ariz. to Mex.

THYME: *Thymus.* **Spanish:** *Coleus amboinicus.*

THYMELÆÀCEÆ. Mezereum Family. Nearly 40 widely distributed genera of trees and shrubs or rarely herbs, temp. and trop. in both hemispheres, with simple lvs., regular bisexual or diœcious fls. having 4–5-lobed petaloid calyx like a corolla, no petals, 2–many stamens, and superior 1–2-celled ovary. Some genera have medicinal and economic uses and Dais, Daphne, Dirca, Edgeworthia, and Pimelea are planted for ornament.

THYMOPHÝLLA. *Compositæ.* Low ann. or per. herbs or subshrubs from S. U. S. and Cent. Amer., usually pleasantly scented, with alternate or opposite lvs. and radiate heads of yellow fls. having a cup-shaped involucre: achenes mostly terete, striate and with a scaly pappus.

tenuíloba (*Hymenatherum tenuilobum*). Dahlberg Daisy. Golden-Fleece. Ann., perhaps sometimes per., to 1 ft., diffusely branched: lvs. to ¾ in. long, pinnately parted into 7–11 subulately-filiform bristle-tipped segms.: heads to ½ in. across, usually borne in profusion, involucres about 12-lobed: pappus of about 10 scales. Tex. and Mex.—An excellent bedder, having a flowering period of several months in the S., blossoming from seed in four months, preferring a well-drained sandy soil in full sun and best adapted to use in warm regions.

THỲMUS. Thyme. *Labiatæ.* Aromatic little herb-like shrubs or subshrubs, evergreen or partially so, classed with sweet herbs, with small entire lvs., and somewhat 2-lipped fls. in few-fld. whorls which are axillary or in terminal clusters; used in borders, rock-gardens and as a seasoning. Propagated by division or seeds.

Adamovícii. Prostrate, sts. many, unbranched, fl.-sts. terminal, erect, densely leafy, all very densely velutinous: lvs. elliptic, red-glandular on both surfaces, veins not prominent nor anastomosing: fls. rose, in small compact heads, corolla minutely red-hairy-glandular. Serbia.

álbus: *T. Serpyllum* var.

alsinoìdes. Tufted suffrutescent per. to 2½ in., puberulous to velutinous: lvs. linear to linear-lanceolate, rarely to ¼ in. long, sometimes canaliculate, obtuse: fls. rose-pink, in dense globose to oblong heads. Galicia.

angustifòlius: *T. Serpyllum* var.

argénteus: *T. Serpyllum* var.

aùreus: *T. Serpyllum* var.

azóricus: *T. Serpyllum.*

bálticus: listed name for a woolly plant.

Broussonètii. Tufted, suffruticose, erect or ascending, to 6 in., sts. puberulous: lvs. to ½ in. long, ovate-lanceolate, upper ones narrower, all glabrous, sparsely glandular-punctate: fls. rose, glandular-hairy, in dense ovate-cylindrical heads. Morocco.

carnòsus. Subshrub to 9 in., white-pubescent: lvs. oblong, nearly cylindrical, minute, revolute, fleshy, floral lvs. ovate: fls. white, in dense heads. Portugal.

Chamædrys: *T. glaber.*

cimícinus. Sts. woody, much branched, procumbent: lvs. oblong, obtuse, glaucous when young, base cuneate, ciliate: fls. pink to purplish, usually axillary, calyx-teeth ovate-lanceolate, those in front the longest. S. Russia.

citrìnum: hort. name, perhaps for *T. Serpyllum* var. *vulgaris.*

citriodòrus. This name correctly belongs to a hybrid between *T. pulegioides* and *T. vulgaris* and may not be in cult. See *T. Serpyllum* var. *vulgaris.*

croáticus: see *Micromeria croatica.*

eréctus: hort. name.

ericæfòlius: listed name.

Éricksonii: listed name.

fragrantíssimus: hort. name, possibly for *T. Serpyllum* var. *vulgaris.*

glàber (*T. Chamædrys*). Plants with sterile axillary runners which are terminated by an infl. the succeeding season: lvs. oblong, to ⅓ in. long and half as wide, glabrous: fls. rose-purple, infl. subglobose and elongating in fr. Eu.—Differs from *T. Serpyllum* in its thin lvs. and peculiar method of branching.

glabréscens. Low, mat-forming: lvs. oblong-lanceolate, ⅓- ⅞ in. long, usually obtuse, glabrous, margins ciliate at base: fls. purple, in elongated spikes or condensed heads. Cent. and E. Eu. Var. **Loveyànus** (*T. Loveyanus*). Lower sts. retrorse-hairy: lvs. narrowly linear to oblong or spatulate, sparsely puberulent beneath, to ⅝ in. long: infl. usually an elongated head. S. E. Eu.

Hérba-baròna. Procumbent subshrub, the floral branches to 5 in.: lvs. ovate-lanceolate, acute, sticky: fls. purplish, the calyx white-hairy, in heads. Corsica.

hirsùtus. Per., cespitose or procumbent: lvs. linear-subulate, obtuse, hoary-tomentose, ciliate: fls. rose, in oblong heads, on ascending tomentose sts. S. E. Eu.

hyemàlis. Erect shrub to 1 ft., branchlets gray-hairy: lvs. linear-lanceolate, to ⅙ in. long, margins ciliate and strongly revolute: fls. deep rose, in dense suborbicular head, calyx sparsely villous, glandular-punctate. W. Spain.

lanicaùlis. To 4 in., hairs of pubescence as long or longer than st. diam.: basal lvs. linear, to ⅓ in. long, st.-lvs. elliptic, to nearly ½ in. long, glabrous above, ciliate on basal half or more: fls. rose-pink, in globose head-like infl., calyx ⅙ in. long, villous. Balkans.

lanuginòsus: *T. Serpyllum* var.

Loveyànus: *T. glabrescens* var.

maculàtus: listed name.

Marschalliànus: a name of uncertain application.

máximus: hort. name.

membranàceus. Cespitose plant having small lanceolate glaucous lvs. and white fls. subtended by large paper-white bracts. Spain.

mìcans: *T. Serpyllum.*

montànus: a form of *T. Serpyllum* with larger lvs. and more erect sts.

nítidus. Shrub: lvs. ovate or oval-oblong, shining above: calyx purple at tips. Sicily.

nummulàrius: *T. Serpyllum.*

odoratíssimus: *T. pectinatus.*

pectinàtus (*T. odoratissimus*). Very fragrant per.: lvs. linear-subulate, punctate: fls. pale purple, in heads. S. Russia, Asia Minor.

Przewálskii. Allied to *T. Serpyllum*, differing only in stout woody sts., glabrous lvs., and larger fls. Japan.—Probably not distinct from *T. Serpyllum* var. *vulgaris.*

Serpýllum (*T. micans. T. azoricus. T. nummularius*). MOTHER-OF-THYME. CREEPING T. Prostrate subshrub, the sts. rooting: lvs. ovate to oblong, to ½ in. long, short-petioled: fls. purplish, ¼ in. long, June–Sept. Eu., Asia, N. Afr.; nat. in N. Amer. There are many hort. vars. as: **álbus,** fls. white; **angustifòlius** (*T. angustifolius*) has narrower linear-oblong lvs.; **argénteus,** lvs. variegated with silver; **aùreus,** lvs. variegated with yellow; **cinèreus,** fls. lilac; **coccíneus,** to 3 ft., fls. crimson; **dalmáticus** is listed as a dwarf form of var. *vulgaris*; **lanuginòsus,** lvs. and infl. gray-pubescent; **pulchéllus,** upper part of calyx purple; **ròseus,** fls. rose; **spléndens,** fls. red; **variegàtus,** lvs. variegated with white; **vulgàris** (*T. citriodorus*), LEMON T., lvs. small and lemon-scented. Other vars. listed include **carmíneus, cárneus, mìnus, odoràtus, ovàtus, Púrdyi, purpùreus** and **rùbrum.**

vulgàris. COMMON T. Erect subshrub to 8 in., the branches usually white-pubescent: lvs. ovate to linear, to ½ in. long, nearly sessile, revolute: fls. lilac or purplish, ¼ in. long. May–June. S. Eu. Vars. **argénteus, fragrantíssimus** and **ròseus** are listed.

Zỳgis. Per. to 4 in.: lvs. linear: fls. whitish, large, in distant clusters. Spain. Var. **grácilis** is offered.

THYRSACANTHUS: *Odontonema.*

THYRSE: compact and more or less compound panicle; more correctly a panicle-like cluster with main axis indeterminate and other parts determinate.

THYSANOLÆNA. *Gramineæ.* One grass to 12 ft. high, native in trop. Asia. **T. máxima.** Lvs. to 2 ft. long and 4 in. wide, leathery: spikelets pale yellow, borne on thread-like branches in panicles to 2 ft. long.—Intro. in S. Calif.

THYSANÒTUS. *Liliaceæ.* Australian perennials with fibrous or tuberous roots, grass-like basal lvs. and fls. usually in umbels, the perianth-segms. distinct, the 3 inner fringed on edges. Propagated by offsets.

dichótomus. To 2 ft., rarely somewhat twining: lvs. short, soon withering: fls. purple, ½ in. long, in 1–3-fld. terminal umbels.—Intro. in Calif.

TIARÉLLA. FALSE MITREWORT. *Saxifragaceæ.* Erect mostly small hardy herbaceous woods perennials for colonizing, for the wild or rock-garden or any shady situation, especially attractive in the autumn for the brilliant color of the foliage: lvs. radical, simple or 3-foliolate: fls. reddish or whitish, in simple or compound racemes; stamens 10: N. Amer. and Asia. Propagated by division and by seed when obtainable.

cordifòlia. FOAM-FLOWER. To 1 ft., tufted: lvs. broadly cordate, to 4 in. across, lobed and toothed: racemes simple. N. S. to Ga. and Ala. Var. **purpùrea** (*T. purpurea*), fls. purple and its variations **màjor,** salmon-rose or wine-red, **marmoràta,** very attractive bronze foliage passing to blackish-green, marbled with purple, fls. numerous, maroon.

laciniàta: *T. trifoliata.*

polyphýlla. To 1½ ft.: lvs. cordate-ovate, to 3 in. across, wavy-toothed: fls. in racemes. Himalayas.

purpùrea: *T. cordifolia* var.

trifoliàta (*T. laciniata*). Stemless: lvs. of 3 lfts., the middle one rhombic, 3-lobed and toothed, to 3 in. long, lateral lfts. 2-cleft: fls. white, in narrow panicles. Alaska to Ore., E. Asia.

unifoliàta. To 2 ft.: lvs. cordate-ovate, to 4 in. across, 3–5-lobed: fls. in panicles. Alaska to Calif.

TIBOUCHÌNA (*Lasiandra*). GLORY-BUSH. *Melastomaceæ.* Tree-like shrubs or rarely herbs of trop. Amer., with simple 3–5-nerved lvs., large fls. in terminal panicles or solitary, and capsular frs.: grown under glass or out-of-doors in the S. where they will stand a few degrees of frost. Propagated by cuttings under glass.

élegans (*Pleroma elegans*). To 6 ft.: lvs. oblong: fls. purple, 1½ in. across, calyx bristly. Brazil.

láxa. Bushy and climbing branches hairy: lvs. ovate and somewhat cordate: fls. few in a cluster, violet-purple. Ecuador, Peru; planted in Calif.

ròsea: listed as a form with large rosy-pink fls.

semidecándra (*Pleroma macranthum* and *splendens*). To 10 ft.: lvs. ovate or oblong-ovate, to 4 in. long, densely hairy on both sides and pale beneath: fls. purple, to 5 in. across. Brazil. Var. **grandiflòra** is listed.

TICANTO: *Cæsalpinia Crista.*

TICKSEED: *Bidens, Coreopsis.*

TIDY TIPS: *Layia elegans.*

TI-ES: *Lucuma nervosa.*

TIGER-FLOWER: *Tigridia.*

TIGRÍDIA. TIGER-FLOWER. *Iridaceæ.* Bulbous herbs native from Mex. to Chile having narrow st.-lvs. and leaf-like spathes bearing 1 or more erect fls. without perianth-tube, the segms. forming a broad cup at base.

Bulbs should be planted 2-3 inches deep in late spring and will bloom in July or August. They should be lifted before frost and stored in a dry place over winter. Propagated by offsets and seeds.

conchiflòra: *T. Pavonia* var.

Pavònia. To 2½ ft.: fls. red oddly spotted with yellow and purple, to 6 in. across, showy, lasting a day and succeeded by others. Mex., Guatemala. Varieties are: **álba**, fls. white, spotted with red in throat; **aùrea**, see *lutea;* **canariénsis**, fls. pale yellow; **carmínea**, fls. salmon-red with darker spots; **conchiflòra**, fls. bright golden-yellow; **grandiflòra** has larger vari-colored fls.; **lùtea immaculàta**, fls. pure yellow; **ròsea**, fls. rose with yellow variegated center; **speciòsa**, fls. deeper red; **Watkinsònii**, a hort. hybrid between *T. Pavonia* and var. *conchiflora* having deep orange-yellow fls. often streaked and spotted scarlet.

Watkinsònii: *T. Pavonia* var.

TÍLIA. Linden. Lime. Basswood. *Tiliaceæ.* Many trees with alternate usually heart-shaped toothed lvs., small, fragrant, white or yellowish fls. in drooping clusters, and nut-like frs. whose peduncles are partially united to a broad membranaceous bract; good ornamental subjects, also furnishing valuable timber and fiber from the inner bark. The species are confused.

The lindens are not particular as to soil but do not withstand drought. Propagated by seed in autumn or stratified and sown in spring, by layers, mound-layering, and cuttings. The named kinds are commonly grafted in spring or budded in summer on available common stocks.

álba: a name of inexact application.

americàna (*T. glabra*). American L. To 120 ft.: lvs. broad-ovate, to 6 in. or more long, abruptly acuminate, teeth long-pointed, glabrous beneath except in vein-axils, turning yellow in autumn. N. B. to Mo. Var. **dentàta** (*T. longifolia dentata*), lvs. coarsely irregularly toothed. Var. **macrophýlla** (var. *mississippiensis, T. laxiflora*) has larger lvs.

argéntea: *T. tomentosa.*

cordàta (*T. ulmifolia. T. parvifolia*). Small-leaved L. To 100 ft.: lvs. to 2½ in. long, glaucous beneath and also glabrous except in axils of veins. Eu.

dasýstyla. Lvs. broad-ovate, aristate-toothed, to 6 in. long, shining above, hairy in axils beneath. W. Asia.—Most of the material cult. under this name is *T. euchlora.*

euchlòra. Crimean L. Hybrid between *T. cordata* and *T. dasystyla*, with dark green glossy lvs. paler beneath and glabrous underneath except for axillary tufts.

europæ̀a (*T. vulgaris. T. intermedia*). Hybrid between *T. platyphyllos* and *T. cordata:* lvs. to 4 in. long, glabrous and bright green beneath except for axillary tufts, dull green above.—Excellent street tree.

flavéscens. Hybrid between *T. cordata* and *T. glabra:* lvs. 3 in. long, glabrous beneath.

floribúnda: a form of *T. flavescens.*

glàbra: *T. americana.*

Henryàna. Tree to 50 ft.: lvs. ovate, to 4¾ in. long, briefly acuminate, denticulate, pubescent beneath, petiole to 1½ in. long: fls. whitish-green, in pendulous cymes. Cent. China.

heterophýlla. To 60 ft.: lvs. ovate, gradually tapering, aristate-serrate, shining above at maturity, to 7 in. long, white-tomentose or pubescent underneath. Ind. to Fla.—Perhaps it would be better treated as *T. americana* var. *heterophylla.*

intermèdia: *T. europæa.*

japónica. Japanese L. To 60 ft.: lvs. to 3 in. long, closely sharp-serrate, not lobed, glabrous beneath at maturity but bluish-green and pubescent on veins when young. Japan.

laxiflòra: *T. americana* var. *macrophylla.*

longifòlia dentàta: *T. americana* var. *dentata.*

macrophýlla: *T. americana* var.

mandshùrica. To 60 ft.: lvs. round-ovate, short-acuminate, teeth with long points, to 6 in. long, gray- or white-tomentose beneath and little pubescent above. N. E. Asia.

mississippiénsis: *T. americana* var. *macrophylla.*

Móltkei (*T. spectabilis*). Hybrid between *T. glabra* and *T. petiolaris:* lvs. round-ovate, to 7 in. long, gray-tomentose beneath.

mongólica. Mongolian L. To 30 ft.: lvs. to 2½ in. long, coarsely serrate and mostly 3-lobed, shining above, glabrous beneath except in axils of veins, somewhat glaucous. Mongolia, N. China.

neglécta. Tree to 100 ft., young sts. glabrous, red: lvs. ovate, to 8 in. long, acuminate, serrate, smooth above, pubescent beneath: fls. in loose cymes. Canada to N. C. west to Minn.

Óliveri. Tree to 50 ft.: lvs. nearly orbicular-ovate, to 4 in. long, dentate, glabrous above, white-pubescent beneath: fls. small. Cent. China.

parvifòlia: *T. cordata.*

petiolàris. Weeping White L. To 80 ft., the branches pendulous: lvs. round-ovate, sharp-serrate, to 4½ in. long, white-tomentose beneath and slightly pubescent above, petiole longer than half the blade. Probably S. Eu., W. Asia.

platyphýllos. Large-leaved L. To 120 ft.: lvs. to 4 in. long, light green and lightly pubescent beneath at least on veins. Eu. Var. **aùrea** has golden-yellow branchlets when young and var. **rùbra** (var. *corallina*) red. In var. **laciniàta** (var. *asplenifolia*) the lvs. are deeply cut. Var. **pyramidàlis** is of pyramidal habit. Var. **vitifòlia** has slightly 3-lobed lvs.

Spaèthii. Hybrid of *T. cordata* with larger lvs.

spectábilis: *T. Moltkei.*

tomentòsa (*T. argentea*). White or Silver L. To 100 ft.: lvs. very broad-ovate, sharp-serrate, to 5 in. long, white-tomentose beneath and slightly pubescent above when young, petiole short. E. Eu., Asia Minor. Var. **péndula** is listed.

ulmifòlia: *T. cordata.*

vulgàris: *T. europæa.*

TILIÀCEÆ. Linden or Basswood Family. More than 30 widely distributed genera of trees, shrubs or rarely herbs, with usually alternate simple lvs., regular fls. having commonly 5 sepals and petals, or petals lacking, numerous stamens, superior 2–10-celled ovary, and fr. a drupe, caps. or berry. The following genera are cult. for ornament, fiber and timber: Corchoropsis, Corchorus, Entelea, Grewia, Sparmannia, Tilia.

TILLÁNDSIA. *Bromeliaceæ.* Mostly epiphytic American herbs with entire basal lvs. crowded or in rosettes, and blue, purple, red, orange or white fls. in spikes, heads or panicles; grown in the greenhouse and the Spanish-moss common on trees in the southern states where it is also used as a packing material and in manufacture. Cult. as for *Bromeliaceæ*; some species are large and stiffly erect and others drooping or hanging.

acaùlis: *Cryptanthus acaulis.*

Duvaliàna: *Vriesia Duvaliana.*

fasciculàta. Lvs. linear-lanceolate, to 1½ ft. long, grayish-green: fls. blue, in many-fld. spikes to 6 in. long, on branched scapes to 2 ft. high, the bracts greenish tinged with red. W. Indies, Cent. Amer.

júncea: *T. setacea.*

Lindeniàna. Lvs. to 1 ft. long and ¾ in. wide: fls. bluish-purple, in large spikes, the bracts carmine. Ecuador, Peru.

nigréscens. Lvs. lanceolate: fls. white, the bracts bordered and tipped with red. Colombia.

setàcea (*T. juncea*). Lvs. to 1 ft. long, erect, rigid, somewhat subulate: fls. in dense spikes, floral bracts yellow edged red, closely imbricated and abruptly mucronate, corolla white with purple areas on uppermost portion. Jamaica.

usneòides (*Dendropogon usneoides*). Spanish-Moss. Sts. slender and hanging, often 20 ft. and more long, hoary-gray, festooned over the trees: lvs. scattered, to 3 in. long and very narrow: fls. yellow, small, solitary or 2 in axils of lvs. Fla. to Tex. and trop. Amer.

utriculàta. To 3 ft.: lvs. broad at base, forming pockets that hold water, subulate at tips: fls. cream or ivory-white, 1¾ in. long, far apart on the branched infl. S. Ga. to S. Amer., on trees, perishing after fruiting.

TIMOTHY: *Phleum pratense.*

TINÁNTIA. *Commelinaceæ.* Erect herbs native in trop. Amer., with alternate lvs. and fls. in terminal cymes; occasionally grown under glass or planted out in summer; has something of the habit of a tradescantia.

anómala: *Commelinantia anomala.*

fùgax. To 1½ ft.: lvs. ovate-lanceolate, to 4 in. long: fls. blue, about ½ in. long. July–Aug. Mex., S. Amer.

TIPUÀNA. Tipu-Tree. *Leguminosæ.* Trees of S. Amer., with pinnate lvs., showy papilionaceous fls. in terminal panicles, and samara-like 1–3-seeded winged pods; planted for ornament in trop. regions and also a source of rosewood.

speciòsa: *T. Tipu.*

Tìpu (*T. speciosa. Machærium Tipu*). To 30 ft. and more: lfts. oblong, 1½ in. long: fls. yellow: pods to 2½ in. long.

TIPULÀRIA. *Orchidaceæ.* Terrestrial orchids with solid bulbs, a solitary basal lf. appearing in autumn, and terminal racemes of small fls.; sepals and petals similar; lip 3-lobed, long-spurred; akin to Aplectrum.

díscolor (*T. unifolia*). Crane-Fly Orchis. To 26 in. high: lf. cordate to ovate-elliptic, slender-petioled, to almost 4¼ in. long: raceme loose, many-fld., to about 11 in. long; fls. greenish, yellow or purplish, about ⅓ in. long. July–Aug. Mass. to Fla., Ind. and Tex.

unifòlia: *T. discolor.*

TIPU-TREE: *Tipuana.*

TISSA: *Spergularia.*

TITANÓPSIS. *Aizoaceæ.* Segregate from Mesembryanthemum: like Nananthus but lvs. more erect, spatulate and very obtuse, the apical part covered with crowded white tubercles: calyx sub-equally 6-lobed; stigmas, valves and cells of fr. 6, the cells roofed with membranous wings, ovary inferior.

Ástridiæ: *T. Hugo-Schlechteri.*

calcàrea (*M. calcareum*). Lvs. resembling stones, to 1¼ in. long and ¾ in. wide, grayish-green: fls. light yellow, to 1 in. across.

Hùgo-Schléchteri (*M. Hugo-Schlechteri. M. Astridiæ*). Differs from *T. Schwantesii* in having fewer tubercles on lvs. which are grayish-green or brownish.

Schwántesii (*M.* and *Verrucifera Schwantesii*). Rosettes to 1½ in. across: lvs. to ¾ in. long, ⅛ in. wide, ¼ in. thick and warty at tip, rounded on back: fls. yellow, ¾ in. across.

setífera. Lvs. erect or sometimes spreading, spatulate, about 1 in. long and wide and ½ in. thick, with hair-like or bristle-like papillæ: fls. orange-pink, yellow inside, 1½ in. across.

Trièbneri: listed name.

TITHÒNIA. *Compositæ.* Large herbs or shrubs with alternate lvs. and large yellow sunflower-like heads on thickened stalks, of ray- and disk-fls.; pappus of scales or none; native in Mex., Cent. Amer. and W. Indies and grown under glass or out-of-doors in the S.

arbòrea: listed name.

diversifòlia (*Mirasolia diversifolia*). Per. or shrub to 30 ft.: lvs. ovate or triangular, to 8 in. long, usually 3–5-lobed: heads to 6 in. across, orange-yellow. Mex., Cent. Amer.

rotundifòlia (*T. speciosa*). Shrub to 6 ft.: lvs. broad-ovate, to 6 in. or more long, mostly crenate, sometimes 3-lobed: heads 3 in. across, orange-yellow. Mex., Cent. Amer. Var. **grandiflòra** is an improved form.

speciòsa: *T. rotundifolia.*

tagetifòlia. Coarse herb to 8 ft. or more: lvs. to 15 in. long, all but upper ones usually 3-lobed: fls. deep orange to orange-yellow, to 4 in. across, on stout naked peduncles to 1 ft. long. Mex.

TITHYMALOPSIS: *Euphorbia.*

TITHYMALUS: *Euphorbia.*

TITI: *Cliftonia monophylla.*

TITOKI: *Alectryon excelsum.*

TIUM: *Astragalus.*

TOADFLAX: *Linaria.*

TOBACCO: *Nicotiana.* **Indian:** *Lobelia inflata.*

TOCÒCA. *Melastomaceæ.* Shrubs of S. Amer., with large simple 5-nerved lvs., showy white or rose fls. in terminal panicles, and fr. a berry.

Grown in a warm greenhouse in a moist shaded position. Leaf-mold mixed with fibrous loam is a good soil. Propagated by single-eye cuttings in January struck in sand and covered with glass; also by cuttings from the base of the shoot with a piece of stem attached.

platyphýlla (*Sphærogyne latifolia*). Sts. bristly: lvs. broadly ovate, to 1 ft. long: fls. rose or red. N. S. Amer., Costa Rica.

TODDALIA: *Vepris lanceolata.*

TODEA: see *Leptopteris.*

TOFIÈLDIA. *Liliaceæ.* Per. herbs with fibrous roots, linear basal lvs. and small fls. in terminal racemes, on the Zigadenus order; sometimes transplanted to the garden.

glàbra. White-Featherling. To 2 ft.: basal lvs. linear: fls. white, in racemes to 4 in. long, petals acute: caps. about 1½ in. long. N. C. to Ga.

intermèdia. To 1 ft., st.-sticky-hairy: lvs. to 8 in. long and ⅕ in. wide: fls. yellow, in dense racemes to ¾ in. long. Alaska to Calif.

occidentàlis. To 20 in., st. sticky-pubescent: lvs. linear, to 8 in. long and ⅕ in. wide, acute: fls. yellow, sepals and petals narrower than in *T. intermedia*, raceme 1–2 in. long: caps. ⅓ in. long. B. C. to Ida. and Calif.

racemòsa (*Triantha racemosa*). To 2 ft., st. pubescent and minutely glandular: lvs. linear, to 1 ft. long: fls. whitish, in panicles, petals to ⅙ in. long: seed with white appendage. N. J. to Fla. west to Ala.

TOLMIÈA. *Saxifragaceæ.* Per. herb grown in the rock-garden; much like Tiarella but stamens only 2 or 3. Propagated by adventitious buds which are produced at tips of petioles. **T. Ménziesii.** To 2 ft.: lvs. mostly basal, cordate-ovate, to 3½ in. across, lobed and toothed: fls. green, ⅓ in. long, nodding, in long racemes. Alaska to Calif.

TÓLPIS. *Compositæ.* Herbs of the Medit. region with mostly radical lvs. and yellow heads of ligulate fls.; pappus of bristles; one species sometimes grown for ornament. Propagated by seed.

barbàta (*Crepis barbata*). Ann. to 1 ft.: lvs. lanceolate, toothed: heads about ½ in. long, the outer involucral bracts thread-like and similar bracts on the st. near the head. S. Eu.—The plant has been sold as "Golden Yellow Hawkweed."

TOLUIFERA: *Myroxylon.*

TOMATILLO: *Physalis ixocarpa.*

TOMATO (*Lycopersicon esculentum* and *L. pimpinellifolium*). Tender herbs grown as annuals for the much-prized fruits, both out-of-doors and under glass. The husk-tomato and strawberry-tomato are Physalis and the tree-tomato *Cyphomandra betacea.* The tomato is closely allied to potato, and it is possible to graft one on the other: see *Potomato.*

Tomatoes are started under glass or in protected seed-beds for the purpose both of producing early fruit and prolonging the bearing season. Seeds are sown in light fertile soil in pots, pans, or shallow boxes four to six or eight weeks before time for planting in the field. If started too early and not shifted the plants become pot-bound or else too long and weak from overcrowding. When plants have reached the height of 2 or 3 inches in the bed or seed-box they should be transplanted into 3-inch pots, old berry-boxes or other receptacles, and allowed to grow slowly and firmly until time to set them out, which is when all danger of frost is past. The young plants should not be allowed to become stunted. They should be in a vigorous growing condition when set out, full green and stocky, not slender and yellowed and with a blossom at the top. One ounce of seed should produce 1,500–2,000 good plants. The soil for tomatoes should be "quick,"—one in which the fertility is at once available.

Tomato plants may be set in rows 4 or 5 feet apart, the plants being 3–4 feet apart in the rows. Tomatoes are grown on many kinds of soils from the sandy loams to silt and clay loams; for an early crop and in regions having a short growing season, a light soil is desirable. The soil should be well fertilized and maintained in good physical condition by the use of manure or soil-improving crops. In home gardens and in commercial plantings in some regions tomato plants are pruned and tied to stakes or wire trellises. A showy method is that of a frame made like an inverted V, which allows the fruits to hang free. This support is made by leaning together two lath frames. When tomatoes are tied or trained they may be set 18–24 inches apart in the row. The late fruits may be picked green and ripened on a shelf in the dark or in diffused light. If the family is fond of tomatoes, two or three sowings may be made in succession. The first sowings may be of the earliest varieties.

A good range of varieties is always available from seedsmen, and it is interesting to provide the home garden with yellow as well as the usual red kinds, also the small plum and cherry kinds for conserves. The currant tomato (*Lycopersicon pimpinellifolium*) is grown more for curiosity and ornament than for service because the many fruits are so small.

In field operations tomatoes are spaced for horse or power tillage, commonly about 4 feet apart in either direction, and are allowed to take their natural course without tying or training. Of canning tomatoes in field culture 5–8 tons to the acre is a good crop, but 12 or more tons are possible. The fruits are picked into crates, and for the green-grocery market they are sold in baskets or lug boxes, the better trade requiring the product to be graded. The tomato is now a staple product in North America, being grown in great quantities under general field conditions both for direct table use and for canning, the making of catsup and soups. Latterly the little cherry and plum tomatoes have been much grown for the fancy fruit and table trade.

Under glass the tomato is an important crop for late autumn, winter and spring trade. Seeds may be sown in June for the fall crop and in December to February for spring. Two to three shifts from seed-bed to permanent planting should provide vigorous unchecked stocky plants. From 4-inch pots the plants may go into the bed, which is usually solid. How tomatoes are to be handled under glass depends greatly on the previous and subsequent crops to which the house is devoted. The soil should be fertile, and the essential plant-food quickly available. The rows under glass may be 30–36 inches apart, and the plants 12–18 inches in the row. The plants are ordinarily grown to single stems, supported on perpendicular wires or strings. The night temperature may be 65°F., but not below 60°. Overwatering is a common fault under glass, particularly in dull weather. When the plants are dry and the house is sunny, pollination may be insured by jarring the plants once or twice a day to discharge and scatter the pollen; some growers distribute the pollen with a camel-hair brush. Four to six pounds of fruit is a good winter crop from each plant; the spring crop may go higher. There are varieties particularly adapted to forcing.

Diseases of tomatoes may be controlled to considerable extent by employing clean seed, by burning all the crop refuse and thoroughly cleaning the area in autumn and by choosing resistant varieties or races. Leaf-spot and similar infections are treated by bordeaux and resin fish-oil applied with spray under pressure.

TOMENTOSE: with tomentum; densely woolly or pubescent; with matted soft wool-like hairiness.

TONÉLLA. *Scrophulariaceæ.* A small genus of annuals differing from Collinsia in the corolla-lobes not strongly bilabiate but rotately spreading and some of the cauline lvs. ternately divided or parted. One species, **T. tenélla** (*T. collinsioides*), is cult. To 6 in.: lowest lvs. orbicular to ovate, entire or apically notched, to ⅓ in. long, upper lvs. 3-parted or divided into oblong segms.: fls. white or very pale blue, petals scarcely exceeding calyx and sometimes purple-dotted on lobes.—Some of the material listed as *Collinsia parviflora* may belong here.

TONESTUS: *Haplopappus Lyallii.*

TONTANEA: *Coccocypselum.*

TOOART-TREE: *Eucalyptus gomphocephala.*

TOOG: *Bischofia javanica.*

TOONA: *Cedrela.*

TOOTHACHE-TREE: *Zanthoxylum Clava-Herculis.*

TOOTHWORT: *Dentaria.*

TOPATO: *Potomato.*

TORÈNIA. *Scrophulariaceæ.* Small herbaceous annuals and perennials usually somewhat decumbent and freely branching, with short few-fld. racemes, the fls. tubular, 2-lipped, produced freely from spring to frost; native in trop. Asia and Afr., a few grown in greenhouses for winter bloom but usually in the garden as annuals; in Fla. they are successfully used as a substitute for pansies.

Torenias require no special culture but prefer some shade and plenty of moisture. They are easily propagated by seed sown either inside or in the open early in the spring, or from cuttings.

asiática. Ann.: fls. to 1½ in. long, corolla-tube dark purple, limb pale purple with a dark blotch on 3 of the 4 lobes. India.

Baillonii: *T. flava.*

flàva (*T. Baillonii*). Ann. or grown as such: fls. to 1½ in. long, corolla-tube yellow, red-purple above, limb yellow with purple eye. India, E. Asia.

Fournièri. Ann. to 1 ft.: lvs. toothed, to 2 in. long: corolla-tube pale violet, yellow on the back, upper lip pale blue, lower lip with 3 purplish-blue lobes, yellow blotch at base of central one. Cochin-China. Var. **álba** has white corolla with yellow blotch at base of central lobe of lower lip. Var. **compácta** is listed as of a dense habit. Var. **grandiflòra** has larger fls. Var. **speciòsa** is a showy hort. form.

pedunculàris. Ann.: fls. ¾ in. long, pale blue. Malaya.

TORNILLO: *Prosopis pubescens.*

TORRÈYA (*Tumion*). *Taxaceæ.* Evergreen trees native in N. Amer. and Asia having narrow yew-like lvs. with 2 narrow glaucous bands beneath, diœcious fls. and drupe-like frs. For cult. see *Conifers.* Hardy in central and southern states and *T. nucifera* farther north. Distinguished from Taxus by the glaucous lines on under surface of lvs. and the drupe-like fr., as well as characters of anthers.

califórnica. California-Nutmeg. To 70 ft. and more: lvs. linear, to 2½ in. long, glossy dark green above: fr. green streaked purple. Calif; can be grown N. E. in sheltered places but may become deciduous.

Fárgesii. Differs from *T. grandis* in the darker green lvs. more gradually pointed. China.

grándis. To 75 ft.: lvs. linear, to 1 in. long, yellow-green above: fr. brownish. China.

nucífera. To 75 ft.: lvs. lanceolate, to 1¼ in. long, glossy dark green above: fr. green tinged purple. Japan; hardy in sheltered places N. E.

taxifòlia. Stinking-Cedar. To 40 ft.: lvs. linear, to

1½ in. long, glossy dark green above, of fetid odor when bruised: fr. purple. Fla.

TORULOSE: cylindric with swollen portions at close intervals, as in some capsules or leguminous fruits when swelling is due to seeds within.

TORUS: receptacle.

TOTAI: *Acrocomia Totai.*

TOUCH-ME-NOT: *Impatiens.*

TOÙMEYA. *Cactaceæ.* A monotypic genus allied to Pediocactus from which it primarily differs in its flattened and papery spines. **T. papyracántha.** St. ovoid to subcylindrical, about 2 in. tall and 1½ in. diam., usually solitary, but occasionally cespitose; ribs 8–13, spiralled, with Mammillaria-like tubercles; spines flat, flexuous, papery, and white, radials usually 7–9, to ⅓ in. long, centrals 3–4, to ¾ in. long, curved: fls. white, to ¾ in. long. N. Mex.

TOURRÈTIA. *Bignoniaceæ.* A monotypic genus of the Andes Mts. in Peru. **T. volùbilis** (*T. lappacea*). Subshrub or climbing herb to 6 ft.: lvs. opposite, di- or trichotomously divided, serrate, membranous: fls. purple-violet with unequally bilabiate limb, in long terminal spicate racemes.—Best treated as an ann., starting early in spring from seed and planting outside over a trellis after the last frost.

TOUS-LES-MOIS: *Canna edulis.*

TOVÀRA. *Polygonaceæ.* Herbaceous species separated from Polygonum on technical characters of fls. and infl. **T. virginiàna** (*Polygonum virginianum*). Per. to 6 ft.: lvs. ovate, to 6 in. long, slightly glaucous beneath: fls. greenish or rose-colored, in clusters on an infl. to 1 ft. long. E. N. Amer., E. Asia. Var. **filifórmis** (*Polygonum filiforme*) differs in obovate lvs. and fls. dark red at maturity.

TOWNSÉNDIA. *Compositæ.* Per. or bien. herbs of W. N. Amer. with alternate entire lvs. and many-fld. usually solitary heads of white, pink or purple ray-fls. and disk-fls.; pappus of bristles. A few species may be transferred to the wild-garden.

exscàpa (*T. sericea. T. Wilcoxiana*). Stemless: lvs. linear-spatulate, to 2 in. long: heads to 2 in. across. Alta. to Ariz.

florífer. Bien., st. to 4 in. high, strigose: lvs. linear to oblanceolate: heads to 1½ in. across, ray-fls. pink to rose-colored. N. W. U. S.

grandiflòra. To 8 in. with st.: lvs. linear, to 2 in. long: heads to 2 in. across. S. D. to New Mex.

serícea: *T. exscapa.*

Wilcoxiàna: *T. exscapa.*

TOXICODENDRON: *Rhus radicans.*

TOXICOPHLŒA: *Acokanthera.*

TOXICOSCORDION: *Zigadenus.*

TOXYLON: *Maclura.*

TOYON: *Heteromeles arbutifolia.*

TRACHÈLIUM. Throatwort. *Campanulaceæ.* Per. herbs or small shrubs of the Medit. region, having purplish or blue small fls. in dense terminal heads and not campanulate, alternate simple lvs., and capsular frs. Propagated by seeds or cuttings.

cærùleum. To 3 ft., with the look of a valerian: lvs. ovate, to 3 in. long, toothed: fls. deep blue varying to white, ¼–½ in. long, slender, in large terminal corymbs, the styles long-exserted. S. Eu.—Grown under glass or in the open far S.

rumeliànum (*Diosphæra dubia*). To 6 in., pubescent: lvs. elliptic, sessile, sharp-toothed: fls. blue, ⅕ in. long, in dense head-like corymbs, styles exserted. Greece.

TRACHELOSPÉRMUM. *Apocynaceæ.* Twining or clambering woody evergreen vines with opposite lvs., salver-shaped rather small fls. in terminal or axillary cymes, and fr. of 2 long follicles; native from E. India to Japan, one grown under glass and in the open S. Propagated by cuttings in spring.

asiáticum (*T. divaricatum*). Differs from *T. jasminoides* in broader lvs., yellowish-white fls. and slightly exserted stamens. Japan, Korea.

divaricàtum: *T. asiaticum.*

fràgrans. Tall climber: lvs. elliptic-lanceolate, to 5 in. long: fls. white, to ⅝ in. long: pods to 9 in. long. India.

jasminoìdes (*Rhynchospermum jasminoides*). Star- or Confederate-Jasmine. Evergreen: lvs. oval to ovate-lanceolate, to 3 in. long: fls. white, fragrant, to 1 in. across. China. Var. **variegàtum** has green and white lvs. often tinged red, said to be hardier.—A light yellow-fld. form has been listed as *Rhynchospermum Mandaianum.*

TRACHYCÁRPUS. *Palmaceæ.* Several monœcious (or polygamous) Asian fan-palms of small or intermediate stature, comprising some of the hardiest kinds planted in the U. S., unarmed except perhaps on the petioles, with shaggy often fiber-bearing trunks: spadices several or many, shortly branched, among the lvs. and shorter than them; fls. solitary or in 2's: fr. of 3 more or less united dry small angled carpels, but sometimes 1 or 2 of the carpels fail to mature. These palms are still often called Chamærops, a practice that should be discontinued; from Chamærops the genus Trachycarpus is distinguished by valvate rather than imbricate perianth-lobes, the small dry 3-parted or 2-parted or at least carpel-like fr., and homogeneous rather than ruminate albumen of the seed, the small callous points or teeth on the petioles rather than long sharp spines. For cult. see *Palm.*

cæspitòsus. Differs from other species in the few or several trunks arising from the same base, the trunks to 15 ft. and leafy throughout or bearing remains of old lvs. and also much fibrous material: lvs. 1½–2½ ft. across, cleft ⅔ or nearly to the base into narrow stiffish segms.; petiole slender, equalling or exceeding the blade, finely irregularly sharp-serrate on the edges particularly near the base: fls. very small and in technical structure differing from other species: fr. almost as in *T. Fortunei*, and slightly hairy under a lens. First described from plants growing in S. Calif.; supposed to be native in Japan.

excélsus of hort.: *T. Fortunei.*

Fórtunei (*T. excelsus*, hort. *Chamærops excelsa*). Windmill Palm. Trunk solitary and slender, to 10–30 or 40 ft., conspicuously covered with dark hair-like fiber, the old lvs. persistent and eventually hanging and sometimes developing a "petticoat" or shag like a Washingtonia: lvs. nearly or quite orbicular, 2–4 ft. across, dull and sometimes lightly glaucous, variously divided to middle or almost to base into stiffish horizontal or drooping segms.; petiole long, with irregular fine hard serratures or callous points: fr. globose-reniform, 3-lobed, or irregular from the abortion of 1 or more of the 3 carpels, bluish, size of pea or bean; seed umbilicate. Cent. and E. China, perhaps also Japan.—The commonly planted Trachycarpus of this country, standing as far north as N. C., and on west coast to Ore.

khasiànus: *T. Martianus.*

Martiànus (*T. khasianus*). Trunk slender, mostly naked and ringed with scars, bearing a hemispherical head, the old lvs. shedding: lvs. nearly orbicular and regularly circular with many segms. extending uniformly to the middle: fr. olive-form, ½ in or less long; seed deeply sulcate or furrowed. Cent. and E. Himalayas, Assam, N. Burma.

nepalénsis: *T. Wagnerianus.*

Tàkil. Robust, trunk ascending from an inclined or oblique base, clothed with lf.-sheaths but lacking hair-like fiber, the old lvs. shrivelling-persistent: lvs. nearly orbicular, irregularly parted (to different depths) into about 50 short-bifid segms.: fr. reniform, ½ in. or less long; seed umbilicate. W. Himalayas (Mt. Takil, etc.).

Wagneriànus (*T. nepalensis*). Mostly low, with erect solitary trunk covered with rough fibers: lvs. orbicular-ovate, irregularly parted to half or nearly to the base into many very stiff outstanding segms. that are entire or shortly bifid at apex; petiole very slender, with many irregular callous teeth toward base: fr. much as in *T. excelsus.* Species founded on cult. plants; probably Japanese.

TRACHÝMENE. *Umbelliferæ.* Herbs with mostly ternately compound lvs., white or blue fls. in simple umbels, and compressed frs.

A few kinds are grown for ornament. For summer bloom seeds should be sown in spring where plants are to stand. Seeds may be sown in autumn under glass for spring bloom.

cærùlea (*Didiscus cærulea*). Blue Lace-Flower. Ann. to 2 ft.: lvs. 1–2-ternately compound into narrow lobes: fls. blue, the long-stalked umbels to 3 in. across. Australia.

pilòsa. Ann. to 6 in.: lvs. divided into linear lobes: fls. in small short-stalked umbels. Australia.

TRACHYSTÈMON (*Psilostemon*). *Boraginaceæ.* Per. herbs of the Medit. region of which one is rarely cult. for ornament. **T. orientàle** (*Borago orientalis*). Hairy: basal lvs. cordate, long-stalked, st.-lvs. ovate-lanceolate: fls. bluish-purple, with tube and 5 revolute lobes, borne in many-fld. panicles, the stamens long-exserted.—Propagated by seeds and division.

TRACYANTHUS: *Zigadenus angustifolius.*

TRADESCÁNTIA. Spiderwort. *Commelinaceæ.* Per. herbs in western hemisphere with blue, rose-purple or white fls. in umbels or rarely solitary.

Spiderworts are grown under glass, in baskets, and in the open. Of easy culture. Propagated by cuttings of the growing shoots, seeds and division.

albiflòra: *T. fluminensis.*

anómala: *Commelinantia anomala.*

aùreo-striàta: hort. name for a plant with yellow-striped lvs.

bengalénsis: hort. name for a plant with red fleshy lvs. and blue fls.

bícolor: *T. gracilis.*

bracteàta. To 1 ft.: lvs. linear or linear-lanceolate, to 8 in. long: fls. blue or reddish, with 2 involucral bracts broader than lvs., sepals densely sticky-hairy. Minn. to Mo. and Tex. Var. **ròsea,** fls. rose-pink.

brevicaùlis. An old name of somewhat ambiguous application applied to plants which are now considered to be diminutive forms of *T. virginiana* having hairy sts. to 4 in. high and linear-lanceolate lvs. to 1 ft. long.

canaliculàta (*T. reflexa*). To 3 ft.: lvs. linear-lanceolate, to 1½ ft. long, glaucous, blade narrower than unfolded sheath: fls. blue, rose or white, sepals glabrous or tipped with tuft of hairs. Ohio to Fla. and Tex.; cult. in the open. Var. **álba,** fls. white with blue stamens.

díscolor: *Rhœo discolor.*

dracænoìdes. To 2 ft., the roots tuberous: lvs. to 6 in. long and 1¼ in. wide, ciliate: fls. rose. Mex.—Some of the material cult. under this name is *Spironema fragrans.*

dracenæfòlia: listed name of plant said to have deep green dracena-like lvs. marked with chocolate-brown.

fluminénsis (*T. albiflora. T. striata. T. tricolor. T viridis*). Wandering Jew. Prostrate, sts. rooting: lvs. ovate, to 2½ in. long, glabrous beneath, sheaths glabrous outside and often with upper margin ciliate: fls. white. S. Amer.; nat. in S. U. S.—Common under benches in greenhouses. Sometimes confused with *Zebrina pendula* which has lvs. dark red beneath with lf.-sheaths villous without and rose-pink fls. on short stout pedicels. Lvs. normally lively green but they are striped with yellow and white in var. **variegàta**; also yellow- and white-lvd. sports as in **álbo-vittàta** and **aùrea.**

fuscàta. Stemless: lvs. to 8 in. long and 2 in. wide, brown-tomentose: fls. blue or bluish-purple. S. Amer.

geniculàta (*T. hypophæa*). Sts. procumbent, zig-zag at the joints: lvs. lanceolate, to 5 in. long and 2 in. wide, villous beneath and sheaths densely villous outside: fls. white, on capillary peduncles and pedicels. Trop. Amer.—Material so listed may be *T. fluminensis.*

grácilis (*T. bicolor*). Sts. green, procumbent, glabrous: lvs. ovate, to ¾ in. long, glaucous blue-green beneath, acute, usually glabrous, ciliate, sheath ciliate, to ¼ in. long, inflated: fls. white, 4–7 in terminal umbels having pubescent peduncles, leafy bracts subtending calyx small, purplish. Chile.

hirsùta. Per. to 1½ ft., ascending, st. somewhat pubescent, at least about the nodes: lvs. oblong-lanceolate, acuminate and usually undulate, margin ciliate on lower third: fls. bright purple, on short peduncles. S. Amer. Var. **brachyphýlla** is listed.

hùmilis. To 1 ft., rough-pubescent: lvs. oblong-linear, short: fls. pale blue or pink. E. Tex.

hypophæa: *T. geniculata.*

lækenénsis: hort. name for a plant with pink and green lvs.

lanceolàta: hort. name for a plant with large downy lvs.

micrántha. Small creeper, or prostrate, with narrow lvs. 1½ in. or less long, and many small rose-purple fls. Tex. and adjacent Mex., sometimes in greenhouses and gardens in the region.

montàna: *T. subaspera* var.

multícolor: *Zebrina pendula* var. *quadricolor.*

multiflòra. Lvs. ovate, to 2 in. long: fls. white, small, in clustered umbels. Jamaica, N. S. Amer.

occidentàlis. To 2½ ft., st. glabrous, branching, bright green: lvs. linear, to 1 ft. long, involute: fls. blue or reddish, ½ in. long, sepals glandular-pubescent. Ia. to Tex. Var. **rùbra** has red fls.

pilòsa: *T. subaspera.*

quadrícolor: *Zebrina pendula* var.

refléxa: *T. canaliculata.*

Regìnæ. Lvs. lanceolate, to 6 in. long, purplish-crimson in center, silvery toward edge, purple beneath. Peru.

somalienénsis: listed name of unknown botanical standing.

striàta: *T. fluminensis.*

subáspera (*T. pilosa*). To 3 ft., st. zig-zag and shaggy-pilose to glabrate: lvs. linear to elliptic-lanceolate, to 15 in. long and 2 in. wide, dark green, not glaucous: fls. light to deep blue, rarely white, about 1 in. across, sepals hairy and often glandular. S. Pa. to Fla. and Mo. Var. **montàna** (*T. montana*) has sts. straight and uppermost cymes pedunculate, not sessile. S. W. Va. to N. Fla. and Ala.—The older name of *T. subaspera* has only recently been recognized as representing the same plant heretofore known as *T. pilosa.*

supérba. Lvs. sessile, oblong-acuminate, dark metallic-green above with white line on each side of midrib and purple beneath. Peru.

thuríngia: hort. name for a plant with green and white lvs.

trícolor: *T. fluminensis.*

versícolor: *Rhœo discolor.*

virginiàna. Common S. To 3 ft.: lvs. to 15 in. long and 1 in. wide: fls. violet-purple. N. Y. to S. D. and Ark.; an outdoor garden plant. Hort. varieties are: **álba,** fls. white; **cærùlea,** fls. bright blue; **cárnea,** fls. pinkish; **coccínea,** fls. bright red; **Hútchinsonii,** fls. pale blue; **lilácina,** fls. pale lilac; **màjor,** fls. double; **nàna,** dwarf form; **ròsea,** fls. rose-pink; **rùbra,** fls. purplish-red.

víridis: *T. fluminensis.*

vittàta: hort. name, probably for a form of *T. fluminensis.*

zebrìna: *Zebrina pendula.*

TRAGOPÒGON. Goats-Beard. *Compositæ.* Erect biennials and perennials with a tap-root, narrow grass-like lvs., and large yellow or purple heads of ligulate fls.; seed or fr. long and stick-like; pappus of plumose bristles; native in S. Eu., N. Afr. and Asia.

The first species is cultivated for the edible root. The seeds are sown in spring where plants are to stand. They should be thinned to 3–6 inches apart in the row. The roots may remain in the ground all winter. The plant blooms and seeds the following year.

porrifòlius. Salsify. Vegetable-Oyster. Oyster-Plant. Hardy bien. to 4 ft., with roots to 1 ft. long: heads purple, to 4 in. across, exceeded by involucral bracts, opening in morning, closing by noon. S. Eu.; nat. in N. Amer.

praténsis. Hardy bien. to 3 ft.: heads yellow, to 2½ in. across, rays longer than involucral bracts. Eu.; nat. in N. Amer.—Seldom grown for ornament.

TRAJANS-COLUMN: *Pachycereus Columna-Trajanii.*

TRÀPA. Water-Chestnut. *Onagraceæ* (or *Trapaceæ*). Floating herbs with the submerged lvs. opposite and pinnatifid and the floating lvs. clustered, rhombic-orbicular and toothed, the petioles inflated, small white fls. borne among the lvs., and leathery or bony indehiscent nut-like frs. with prominent horns; grown in ponds and aquaria and also yielding edible frs. Propagated by seeds which must be kept moist.

bispinòsa. SINGHARA-NUT. Petioles and under sides of lvs. hairy: fr.-body ¾ in. across, with usually 2 horns. Ceylon.

nàtans. Petioles and lvs. glabrous except veins beneath: fr. to 2 in. across, 4-horned. Eu., Asia; nat. in E. U. S.

TRAUTVETTÈRIA. *Ranunculaceæ*. Per. herbs with broad palmately lobed lvs. and small white fls. in panicles, having 3–5 caducous sepals, no petals and numerous stamens; native in N. Amer. and Asia, the species variously interpreted. Propagated by division of roots; wild border.

carolinénsis (*T. palmata*). To 3 ft.: lvs. to 8 in. across, with 5–11 toothed lobes: fls. about ½ in. across. Pa. to Fla. and Mo.

grándis. Differs from *T. carolinensis* in the more deeply lobed lvs. and longer somewhat curled styles. B. C. to Mont. and Calif.

palmàta: *T. carolinensis.*

TRAVELERS-JOY: *Clematis Vitalba.* **-Tree:** *Ravenala madagascariensis.*

TREAD-SOFTLY: *Cnidoscolus.*

TREE: a woody plant that produces one main trunk and a more or less distinct and elevated head. **-of-Heaven:** *Ailanthus altissima.* **-of-Sadness:** *Nyctanthes Arbor-tristis.*

TREFOIL: *Lotus.* **Tick:** *Desmodium.* **Yellow:** *Medicago lupulina.*

TRÈMA. *Ulmaceæ*. Trees and shrubs bearing alternate toothed lvs. 3-nerved from base, small unisexual fls. in axillary clusters, and drupaceous frs.; native in trop. and warm regions of both hemispheres.

bracteolàta. To 20 ft.: lvs. to 5 in. long and 2 in. wide, pubescent or becoming glabrous: fr. black, about 1/12 in. across. Afr., Arabia.—Grown in S. Calif.

TREMANDRÀCEÆ. TREMANDRA FAMILY. Three genera of heath-like shrubs with small lvs., red or purple fls. solitary in the axils, having usually 4–5 sepals and petals, 8–10 stamens, superior 2-celled ovary, and fr. a caps. Tetratheca is occasionally cult.

TREMASTELMA PALÆSTINUM: *Scabiosa brachiata.*

TREVÈSIA. *Araliaceæ*. Shrubs or small trees in trop. Asia, with compound or lobed lvs. and fls. in panicled umbels; grown in the greenhouse with a moist atmosphere.

palmàta (*Gastonia palmata*). To 20 ft.: lvs. palmately 5–9-lobed, to 1½ ft. across, on petioles 1 ft. or more long: fls. yellowish-white, 1 in. across. Himalayas.

Sánderi. Lvs. to 2 ft. across, digitately compound. Cochin-China.

TREVÒA. *Rhamnaceæ*. Small much branched spiny trees native in S. Amer., with opposite 3-nerved lvs., fls. in axillary clusters, and small drupaceous frs.; one species cult. in S. Calif. for ornament.

trinérvis. Spines about ½ in. long: lvs. to 1 in. long, toothed. Chile.

TRIADENUM: *Hypericum virginicum.*

TRIANTHA: *Tofieldia racemosa.*

TRÍBULUS. *Zygophyllaceæ*. Ascending or prostrate herbs of the subtropics and tropics, having abruptly pinnate opposite lvs. in unequal pairs and solitary fls., usually white or yellow. Propagated by seeds or cuttings.

terréstris. PUNCTURE VINE. Prostrate or decumbent ann. or per., sts. to 3 ft. long, hairy: larger lf. of each pair to 2½ in. long, lfts. of 5–8 pairs, oblong to linear-oblong, to nearly ½ in. long, acutish, sessile, villous beneath: fls. usually yellow, axillary, petals to ¼ in. long: fr. to ¾ in. across, separating into 5 woody carpels each armed with 2 sharp and stout divergent spines to ¼ in. long and several smaller ones. Old World tropics and nat. in warmer regions of the world, becoming a roadside weed in S. W. U. S. and Mex. extending north to Mo.

TRICALÝSIA. *Rubiaceæ*. Shrubs in Afr. with opposite lvs., small axillary fls. having funnelform 4–8-lobed corolla, and fr. leathery and berry-like; one species sometimes cult. in S. Calif., with the look of Pentas.

floribúnda: *T. Kraussiana.*

Kraussiàna (*T. floribunda. Kraussia floribunda*). Lvs. ovate-oblong or lanceolate, to 3 in. long: fls. white, ¼ in. long: fr. ¼ in. across. Natal.

TRICHÍLIA. *Meliaceæ*. Trees and shrubs of trop. Amer. and Afr.: lvs. ternate or odd-pinnate, alternate: fls. not showy, in panicles, the calyx 4–5-lobed and petals 4–5: fr. a dry mostly leathery caps. of 2 or 3 cells, opening and exposing the seeds.

spondioìdes. To 20 ft.: lvs. pinnate; lfts. 6–20, opposite, ovate-oblong and pointed, entire, 1½ in. or more long: fr. more or less rugose, about ½ in. diam., seeds yellowish. Trop. Amer.—Planted in S. Fla. for ornament.

TRICHÍNIUM. *Amaranthaceæ*. Herbs or subshrubs of Australia, grown out-of-doors in warm regions or under glass in the N.: lvs. alternate, entire, narrow: fls. in globose to oblong heads or in dense spikes, white, straw-colored to rose-pink, perfect, stamens 5, perianth 5-parted.

spathulàtum. Per., sts. prostrate, spreading, to 8 in. long, glabrous: basal lvs. spatulate to ovate, to 1 in. long, obtuse, decurrent; st.-lvs. narrower, more acute: fls. yellowish, to ½ in. long, in cylindrical spikes to 4 in. long, segms. plumose.

TRICHOCAÙLON. *Asclepiadaceæ*. Succulent leafless African perennials with thick cylindrical sts. covered with tubercles and rather small fls. having 5-lobed corolla and double crown; of the Stapelia tribe.

Delaetiànum. Sts. to 8 in., with purplish-brown bristles: fls. broad-bell-shaped, ½ in. across, red-brown outside, brownish-yellow inside.

Dínteri. Sts. 1–6, to 2½ in. tall and 1½ in. thick, covered with blunt tubercles: fls. bell-shaped, to ¼ in. across, buff with reddish-brown dots.—A closely related form, *T. Marlothii*, has a flattened saucer-shaped corolla.

Éngleri. Sts. to 7 in. tall and 3½ in. thick, club-shaped, spineless: fls. broadly bell-shaped, to ½ in. across, yellowish-green to cream-colored with blackish- or reddish-brown dots.

karasmontànum. Sts. shortly cylindrical, 16–20 rows of spiny tubercles: fls. inconspicuous, not well known.

keetmanshoopénse. Sts. to 6 in. tall and 1½ in. thick, tubercles rounded, grayish-violet to yellowish-brown: fls. rotate-campanulate, to ½ in. across, whitish-green to greenish-yellow, spotted reddish-brown.

melofórme. Sts. to 3 in., spineless: fls. at top of sts., ½ in. across, dark red outside, maroon inside with yellow base spotted maroon.

pilíferum. Sts. to 8 in. or more tall and 2 in. thick, about 25 rows of spiny tubercles: fls. to ⅔ in. across, purplish-brown.

TRICHOCÈREUS. *Cactaceæ*. More or less branched columnar S. American cacti, erect or procumbent, with ribs few to many and commonly very spiny: fls. nocturnal, funnelform. Plants formerly named in Cereus. See *Cacti.*

Bertramiànus. Solitary or cespitose, cylindrical, to about 5½ ft. tall and 1 ft. diam.; ribs 20, to ¾ in. high, pale green; spines pale yellow, radials 12, spreading laterally and basally, to 1 in. long, unequal, centrals 4, one to 3 in. long: fls. yellowish-white, to ¾ in. long. N. Bolivia.

Brídgesii (*Cereus Bridgesii*). To 15 ft., more or less branching, somewhat glaucous; ribs 4–8 and obtuse; spines yellowish and 2–4 in. long: fls. 2 in. and more long, probably white or whitish. Bolivia.

cándicans (*Cereus candicans* and *gladiatus*). Making large clumps to 10 ft. across, joints erect or spreading to 2 ft.; ribs 9–11; spines awl-like, the radials 10 or more, centrals several and to 4 in. long: fls. white, fragrant, to 6 in. long. Argentina.

cephalomacróstibas (*Cereus cephalomacrostibas*). To 7 ft. tall, clump-forming; ribs 7–8, broad, areoles close together; radials 6–8, about 1½ in. long; centrals usually 3, to 5 in. long, pungent: fls. white, to 5 in. long, their areoles very woolly. S. Peru.

cephalopasacàna. Similar to *T. pasacana* from which it differs in its smaller and more profusely branched habit and with tops of the fl.-sts. densely woolly. N. Argentina.

chiloénsis (*Cereus chiloensis* and *Funkii*). Commonly with erect right-angled branches, to 25 ft., columnar; ribs 16 or 17 and divided into tubercles; radials 8–12; central 1: fls. white, tinged red outside, 5 in. or more long. Chile.

coquimbànus (*Cereus coquimbanus*). To 3 ft. or sometimes prostrate, branches 3 in. diam.; ribs 12–13; spines 20 and to 3 in. long, central spines several: fls. white, 4 in. long. Chile.

cuzcoénsis (*Cereus cuzcoensis*). To 18 ft., much branched; ribs 7–8; spines numerous and stiff and to 2½ in. long: fls. white, fragrant, 5 in. long. Peru.

fasciculàris (*Cereus fascicularis* and *Weberbaueri*). Forming large clusters to 12 ft. high; ribs 16; spines numerous and to 2½ in. long: fls. greenish or brownish, pinkish outside, 4 in. long. Peru, Chile.

huáscha (*Cereus huascha*). Erect or ascending, branching from base, to 3 ft. tall and 4 in. diam.; ribs 12–18, about ¼ in. high, obtuse, areoles very close together; spines numerous, radials to ⅝ in. long, the 4–6 centrals to 2½ in. long: fls. red to yellow, to 4 in. long. N. Argentina.

Knuthiànus: listed name.

lamprochlòrus (*Cereus lamprochlorus*). Columnar, single, or branched at base, to 6 ft. high and 3 in. thick; ribs 10–17; radials 11–14; centrals 4: fls. white, red outside, 8 in. or more long. Argentina.

litoràlis (*Cereus litoralis*). Differs from *T. chiloensis* in the prostrate habit of the sts. which form large clumps, short spines, and tube of fl. covered with long dark hairs. Chile.

macrogònus (*Cereus macrogonus*). Tall, bluish-green, rather slender; ribs commonly 7; spines needle-like and brown and several from an areole: fls. white. S. Amer.

Pachanòi. To 18 ft., branches upright; ribs 6–8; spines few or none and ½ in. long: fls. white, reddish-brown outside, to 10 in. long, very fragrant and night-blooming. Ecuador.

pasacàna (*Cereus* and *Cephalocereus pasacana*). To 30 ft. and more, columnar, simple or sparingly branched; ribs 20–38 and low; spines yellow, to 5 or 6 in. long: fls. 4 in. long, white. Bolivia, Argentina. Vars. **albicéphala** and **senìlis** are listed.

peruviànus. To 12 ft., with branches 8 in. diam.; ribs 6–8; spines 10 and to 1½ in. long and stiff: fls. white, large. Peru.

pòco. Similar to *T. pasacana*, differing in its smaller habit and spines, and in having red fls. Bolivia and Argentina.

Schickendántzii (*Echinopsis Schickendantzii*). To 10 in. high and 2½ in. diam., often cespitose; ribs 14–18; radial spines 9 or more and to ⅓ in. long; centrals 2–8: fls. white, 8 in. long. Argentina.

Shàferi. Cespitose, to 20 in. tall and 5 in. diam.; ribs about 14, to ⅝ in. high, light green; spines usually 10, to ½ in. long, slender, light yellow: fls. white, to 7 in. long. Argentina.

Spachiànus (*Cereus Spachianus*). Upright, eventually branching at base, branches parallel with main st., to 3 ft. high; ribs 10–15; radials 8–10; central 1: fls. white, about 8 in. long. W. Argentina.

strigòsus (*Cereus strigosus*). Forming clumps to 3 ft. across, branches 2 in. diam. and very spiny; ribs 15–18; spines numerous and to 2 in. long: fls. white, 8 in. long. Argentina. Var. **longispìnus** has very long spines, red when young.

tarejénsis: listed name.

tephracánthus (*Cereus*, *Eriocereus* and *Roseocereus tephracanthus*). Erect, to 5 ft. tall and 2½ in. diam., branching at base; ribs 8, obtuse, wide; radials about 7, to ½ in. long, stout, whitish; central 1, to ¾ in. long: fls. greenish-white, to 7 in. long. Bolivia.—Slow growing.

Terschéckii (*Cereus Terscheckii*). To 40 ft., with woody trunk and many branches to 8 in. diam.; ribs 8–14; spines 8–15 and to 3 in. long: fls. white, 8 in. long. Argentina. Var. **montànus** is listed.

thelegonoìdes (*Cereus thelegonoides*). Trunk to 18 ft. high and 7 in. diam., branches curved and 3 in. diam.; ribs 15; spines 8–10 and bristle-like: fls. white, greenish outside, to 10 in. long. Argentina.

thelegònus (*Cereus thelegonus*). Procumbent or with erect branches, sts. to 3½ ft. long and cylindric and to 3 in. diam.; ribs 12 or 13, divided into 6-sided tubercles; radials 6–8; central 1: fls. white, about 8 in. long.

uyupampénsis. Cylindrical, usually branching, to 7 ft. long and 1½ in. diam.; ribs 9, flat; radial spines 8–10, irregularly arranged, somewhat swollen at base; centrals usually 2, to ¼ in. long: fls. white inside, reddish outside. S. Peru.

Volliànus. Erect, to 4 in. diam.; ribs 13, obtuse, about ¼ in. high, bright green, areoles about 1 in. apart; radial spines 8–11, to ⅓ in. long, slender, pungent; central 1, to 1 in. long, yellowish: fls. white, to ½ in. long. Bolivia.

Werdermanniànus. Sts. to 2 ft. diam., branches to 6 in. thick; ribs about 13, areoles white-felted; radial spines 8; central 1: fls. white. S. Bolivia.

TRICHODIADÈMA. *Aizoaceæ.* Formerly included in Mesembryanthemum (which see): S. Afr.: shrub-like small plants, with somewhat cylindric lvs. that are barbed at end with surface cells slightly prominent and elongated: fls. solitary, short-stalked, medium size or small; stigmas 5–8.

barbàtum (*M. barbatum*). To 4 in. high, branches to 1½ ft. long, decumbent and tortuous: lvs. scattered, ½ in. long: fls. reddish, 1 in. across, axillary and terminal, petals much exceeding calyx.

bulbòsum (*M. bulbosum*). To 8 in., forming thick clumps with prostrate branches: lvs. to ⅓ in. long and ⅛ in. thick, papillose, crowned with white hairs: fls. red, ¾ in. across.

dénsum (*M. densum*). To 3 in.: lvs. to ¾ in. long and ⅕ in. thick, crowned with long radiating white hairs: fls. violet-red, 2 in. across.

intónsum (*M. intonsum*). Lvs. to ½ in. long and ⅙ in. thick, papillose, edges ciliate, with brown bristles at tip: fls. pink or whitish, ¾ in. across.

mirábile (*M. mirabile*). To 3 in., sts. white-bristly: lvs. to 1 in. long and ¼ in. thick, with dark brown bristles: fls. white, petals ¾ in. long.

setulíferum (*M. setuliferum*). Branches prostrate, 1 ft. long: lvs. to 1½ in. long and ⅕ in. thick, papillose, with tuft of white hairs at apex: fls. violet-red.

stellàtum (*M. stellatum*). To 4 in.: lvs. ⅓ in. long and ⅛ in. wide, papillose, with stiff white bristles at apex: fls. bright violet-red, 1 in. across.

stellígerum (*M. stelligerum*). Shrubby, much branched: lvs. to ½ in. long and ¼ in. thick, shining, papillose, with white or brownish bristles at tip: fls. purple-red.

vittàtum: perhaps *Nananthus vittatus*.

TRICHOLÆNA. *Gramineæ.* Mostly per. grasses with silky-hairy spikelets on slender stalks forming panicles; native in warm parts of Old World and one grown in the S. for forage and ornament and nat. See *Grasses*.

atropurpùrea: *T. rosea* var.

ròsea (*T. violacea. Panicum tonsum*). NATAL-GRASS. RUBY-GRASS. To 4 ft., grown as ann.: lvs. to 8 in. long and ¼ in. wide: panicles to 10 in. long, open, pink or reddish-brown, attractive, shining. S. Afr. Var. **atropurpùrea** (*T. atropurpurea*) has purplish-red panicles.

violàcea: *T. rosea*.

TRICHOPETALUM GRACILE: *Bottionea thysanoloides*.

TRICHOPÍLIA. *Orchidaceæ.* Epiphytes of trop. Amer., with 1-lvd. pseudobulbs and fls. on lateral nodding or erect scapes, the sepals and petals similar, the lip entire or 3-lobed, rolled around the column. Grown in a temperate greenhouse; see *Orchids*.

coccínea: *T. marginata*.

críspa. Lvs. to 8 in. long: infl. usually 2-fld.; fls. nearly 5 in. across when expanded; sepals and petals similar, linear-lanceolate, wavy but not twisted, red, often with a yellowish-white border; lip purple-crimson in throat and lighter above. Apr.–June. Cent. Amer.

fràgrans. Pseudobulbs slender, to 6 in. high: lf. oblong-elliptic or oblong, acute, to 11 in. long: infl. erect or pendent, to 1 ft. long, usually 2–5-fld.; sepals and petals white or greenish-white; lip pure white with an orange-yellow blotch at base, fragrant. Dec.–Jan., May–July. W. Indies, Colombia, Venezuela.

Galeottiàna. Lvs. to about 7 in. long: infl. 1–2-fld.; sepals and petals similar, flat, pale yellowish-green; lip light yellow with a darker yellow throat often dotted with reddish spots. July–Sept. Mex.

gigantèa: listed name.

marginàta (*T. coccinea*). Lvs. elliptic-oblong, to about 12 in. long: infl. 1–3-fld.; sepals and petals similar, more or less twisted, pale brown or reddish, margined with green or white; lip whitish on outer surface, crimson within. Costa Rica, Panama.

suàvis. Lvs. elliptic to elliptic-oblanceolate, to 16 in. long and 4 in. wide: infl. 1–5-fld.; sepals and petals similar, cream-white sometimes spotted with pale rose, more or less wavy on margin; lip white spotted with lilac, throat spotted with orange-yellow. Dec.–May, Oct. Cent. Amer.

tórtilis. Lvs. to 8½ in. long and about 1¾ in. wide: infl. 1–2-fld.; sepals and petals similar, much twisted, purplish-brown or dull rose with greenish-yellow border; lip white with central part yellowish and spotted with purplish-brown. Feb.–June, Sept.–Dec. Cent. Amer.

TRICHOSÁNTHES. *Cucurbitaceæ.* Tendril-bearing ann. and per. monœcious or diœcious herbs of trop. Asia and Australia and Polynesia, one much grown in some countries: fls. white, pistillate usually solitary and staminate usually racemose: fr. fleshy, indehiscent, of various shapes.

Anguìna (*T. colubrina*). Serpent, Snake or Club Gourd. Climbing or long-running monœcious ann.: lvs. broad-ovate to triangular-ovate, to 9 in. long, sometimes shallowly 3-lobed: fls. deeply and finely laciniate, the staminate long-stalked: fr. 1–6 ft. long and very slender, mostly curved or coiled unless hanging from a support. India, and there grown for the edible fr., with us as a curiosity.

colubrìna: *T. Anguina.*

cucumeroìdes. Diœcious: sts. 10–15 ft. long from a tuberous root: lvs. ovate, 3–5-lobed or sometimes nearly entire, villous at least underneath, margins undulate or crenulate: staminate fls. in racemes; pistillate on very short slender peduncles: fr. ovoid, 2–3 in. long, cinnabar-red. Japan.

japónica. Sts. slender, long, branching, plant glabrous: lvs. ovate, shallowly 3–5-lobed, margins entire or denticulate: staminate fls. few in a raceme; pistillate on peduncles 1–2 in. long: fr. ovoid but tapering either way, about 3 in. long, yellowish-green. Japan.

TRICHOSMA SUAVIS: *Eria coronaria.*

TRICHÓSPORUM (*Æschynanthus*). *Gesneriaceæ.* Woody climbers with mostly opposite lvs., 2-lipped tubular fls. solitary or in clusters, and linear capsular frs.; native in trop. Asia.

These plants should be grown in pans or baskets hung to the rafters of a warm greenhouse. They require loose open soil with fibrous material. Propagated by stem-cuttings about 2 inches long having two leaves and another joint.

Boschiànum. Lvs. ovate or oval, entire: fls. scarlet, 2 in. long, pubescent, twice as long as calyx. Sumatra.

Lobbiànum. Lvs. ovate, nearly entire: fls. scarlet with yellow throat, pubescent, twice as long as purple calyx. Java.

marmoràtum (*Æ. zebrina*). Lvs. oblong-lanceolate to ovate, to 3½ in. long, reddish-purple beneath: fls. green spotted with brown, ciliate. Habitat unknown.

púlchrum. Lvs. broad-ovate, toothed: fls. scarlet with yellow throat, glabrous, three times as long as calyx. Java.

TRICHOSTÈMA. Blue-Curls. *Labiatæ.* Herbs in N. Amer. with entire lvs. and blue or purple fls. in axillary cymes or racemes; sometimes planted in the wild- or rock-garden.

dichótomum. Ann. to 2 ft., sticky-pubescent: lvs. oblong-lanceolate, to 3 in. long, base cuneate: fls. blue, pink or white, to ¾ in. long, not densely woolly, paniculate. Me. to Fla., Mo. and Tex.

lanàtum. Per. to 4 ft., shrubby at base: lvs. linear-lanceolate, to 2 in. long, revolute, tomentose beneath: fls. ½ in. long, densely covered with blue or purple wool. S. Calif.

TRICUSPIDARIA: *Crinodendron.*

TRICÝRTIS (*Compsoa*). Toad-Lily. *Liliaceæ.* E. Asian per. herbs with short or sometimes creeping rootstocks, alternate sessile or clasping lvs. and bell-shaped spotted fls., the perianth-segms. distinct; grown in pots or partially hardy out-of-doors in the N. Propagated by division.

affìnis. Erect, 1–4 ft., hirsute: lvs. oblong to ovate-oblong, nearly or quite sessile, ciliate and pubescent: fls. white with purple spots or only rarely without spots, ¾ in. or less long. Japan.

flàva. Dwarf, slightly hairy: lvs. oblong-lanceolate: fls. yellow, not spotted, in racemes. Japan.

hírta (*T. japonica*). To 3 ft., hairy all over: lvs. ovate, to 6 in. long: fls. whitish spotted inside with purple and black, 1 in. long, several together in axils. Japan.

japónica: *T. hirta.*

macrópoda. To 3 ft.: lvs. oblong, to 5 in. long, slightly pubescent beneath: fls. pale purple minutely spotted with purple, ¾ in. long, in terminal corymbs. China, Japan. Var. **striàta** has lvs. striped green and white.

stolonífera. To 2 ft., stoloniferous, st. hairy becoming glabrous: lvs. elliptic-lanceolate, to 8 in. long, ciliate, ends tapering, glabrous except on nerves beneath: fls. purple with cream-colored blotches within, 1 in. long, in lax terminal corymbs. Japan.

TRÌDAX. *Compositæ.* Small herbs of trop. Amer., with opposite lvs. and long-stalked heads of white, pink or yellow ray-fls. and yellow disk-fls.; pappus of scales or awns. Occasionally grown in the flower-garden.

trilobàta. Ann. to 1 ft.: lvs. 3-lobed or toothed: heads yellow, about 1 in. across. Mex.

TRIENTÀLIS. Starflower. *Primulaceæ.* Small per. herbs of the northern hemisphere, sometimes grown in the wild-garden: lvs. mostly clustered at top of st.: fls. white or pink, wheel-shaped, 1–3 on slender pedicels.

americàna: *T. borealis.*

árctica: *T. europæa* var.

boreàlis (*T. americana*). To 9 in.: lvs. in a whorl of 5–10, lanceolate, to 4 in. long: fls. ½ in. across, on stalks to 2 in. long. Lab. to Va. and Ill.

europǽa. To 8 in.: lvs. scattered, obovate, to 2½ in. long: fls. to ¾ in. across. Eu., Asia. Var. **árctica** (*T. arctica*), low form with smaller lvs. and white fls. Var. **latifòlia** (*T. latifolia*), lvs. in clusters of 4–7, fls. white to rose-red.

latifòlia: *T. europæa* var.

TRIFÒLIUM. Clover. *Leguminosæ.* Ann., bien. and per. herbs with mostly digitate lvs. of 3 lfts., small papilionaceous fls. in dense heads or spikes, and small pods usually inclosed by the calyx; fls. red, purple, pink, yellow, white.

The genus furnishes valuable forage and cover-crop plants in the species *T. alexandrinum, hybridum, incarnatum, medium, pratense, repens;* some kinds may be grown for ornament. Propagated by seed sown broadcast, in early spring. See *Clover.* Alyce clover is *Alysicarpus.*

agràrium. Ann. to 1½ ft.: lfts. obovate or oblong: fls. yellow, in oblong heads. Eu.; nat. in E. U. S.

alexandrìnum. Berseem. Egyptian C. Ann. to 2 ft.: lfts. oblong: fls. white or yellowish-white, in globular heads. Egypt, Syria.

alpéstre. To 1 ft. or more: lvs. oblong-lanceolate: fls. purple, in globular heads. Eu., W. Asia.

alpìnum. Per. to 4 in.: lfts. lanceolate: fls. red, rarely yellowish-white, in loose heads. Mts. of Eu.

arvénse. Ann. to 1½ ft.: lfts. linear or oblanceolate: fls. whitish, in oblong heads. Eu., N. Asia; nat. in N. Amer.

atropurpùreum: *T. repens* var.

dasyphýllum. Tufted per. to 4 in.: lfts. linear-oblong: fls. with pale yellow standards and dark purple wings and keel, in globose heads. Mts., Colo.

filifórme. Diffuse ann. about 6 in. high: lfts. obovate: fls. yellow, in few-fld. heads. Eu.

hýbridum. Alsike C. Per., with erect or lopping sts. to 2 ft. high: lfts. ovate: fls. pink, in globular heads. Eu.; nat. in U. S.

incarnàtum. Crimson C. Ann. to 3 ft.: lfts. broadly obovate: fls. crimson, in oblong spike-like heads. Eu.; nat. in U. S.

mèdium. Zigzag C. Per. to 1 ft., with creeping rootstock, the sts. zigzag: lfts. elliptic to oblong; stipules narrow at base and pointed: fls. deep purple, in globular heads; calyx glabrous outside. Eu.

mìnus: a form of *T. repens.*

montànum. Per. to 1½ ft.: lfts. linear-lanceolate: fls. white. Eu.

nànum. Tufted per. to 3 in.: lfts. linear-oblanceolate, to ⅜ in. long, usually 3, minutely denticulate: fls. rose to reddish-purple, usually 1–3 in head, peduncles to 1¼ in. long. Mont., Colo. and Utah.

Párryi. Low tufted per.: lfts. oval, sharply denticulate, to 1¾ in. long: fls. purple, with conspicuous bracts, peduncle 2–6 in. long. Wyo., Colo. and Utah.

praténse. RED C. Per. to 2 ft. without rootstock: lfts. oval to obovate; stipules broad at base and awned: fls. rose-purple or rarely white, in globular heads; calyx hairy outside. Eu.; nat. in U. S. Var. **foliòsum,** OREL C., is a very leafy race. Var. **perénne,** a more or less indefinite name for forms of *T. pratense.* Var. **serótinum,** MAMMOTH RED C., late-flowering robust race.

rèpens. WHITE C. Per., sts. creeping to 1 ft.: lfts. obcordate: fls. white, in globular heads. Eu.; nat. in U. S. Var. **atropurpùreum** (*T. atropurpureum*), lfts. deep bronzy red with green margin. Var. **purpùreum,** lfts. bronzy-purple.

resupinàtum (*T. suaveolens*). Ann., trailing or diffuse: lfts. obovate: fls. purple, in globular heads. Greece to Persia.

rùbens. Per. to 2 ft.: lfts. narrowly oblong: fls. purplish-red, in spike-like usually twin heads. Eu.

suavèolens: *T. resupinatum.*

uniflòrum. Tufted creeping per.: lfts. ovate: fls. with blue standard and purple wings and keel, solitary. S. E. Eu.

TRIGONÉLLA. *Leguminosæ.* Herbs occasionally grown for forage or ornament, with trifoliolate lvs., papilionaceous fls., and beaked pods. Propagated by seeds.

cærùlea (*Melilotus cærulea*). Ann. to 2 ft.: fls. blue and white, in long-stalked heads: pods short with long beak. Eu.

Fœnum-Græcum. FENUGREEK. Ann. to 2 ft.: fls. whitish, 1 or 2 together: pods long and slender with long beak, the seeds having medicinal value: employed in Medit. region for forage. S. Eu., Asia.

TRIGONIDIUM: *Lælia monophylla.*

TRÍLISA. *Compositæ.* Erect per. alternate-lvd. herbs of E. N. Amer., sometimes transferred to grounds, separated from Liatris largely on the character of involucre and the corymbose or paniculate infl.

odoratíssima (*Liatris odoratissima*). CAROLINA VANILLA. To 3 ft., with fibrous root: lvs. oblong to spatulate, entire or toothed, to 10 in. long: heads rose-purple, without rays, in autumn. N. C. to Fla. and La.—Herbage vanilla-scented when bruised.

paniculàta (*Liatris paniculata*). Differing from the above chiefly in the sticky-pubescent sts.: fls. purple or white. Va. to Fla.

TRÍLLIUM. *Liliaceæ.* Attractive low per. herbs of woods, with short thick rootstocks and simple sts. bearing at the top 3 broad whorled lvs. and a solitary white, pink or purplish fl., the perianth-segms. distinct, the 3 outer green and persistent; planted in the wild-garden or border for the early spring bloom. Odd forms occur in nature.

Trilliums require fertile moist soil in partial shade. Roots may be transplanted from the wild, preferably after flowering. Propagated also by seeds.

Cátesbæi. To 1½ ft.: lvs. elliptic or oval: fls. pink or rose, on nodding pedicels to 2 in. long. N. C. to Ga. and Ala.—*T. declinatum* of Fla. to Ala. is closely allied to this species, has more oblong lvs. and is not known to be cult.

cérnuum. To 1½ ft.: lvs. broadly rhombic-ovate, to 5 in. long, sessile: fls. white, 1 in. long, drooping on peduncles to 1¼ in. long. Newf. to Ga. and Mo.

chloropétalum (*T. sessile* var. *californicum*). To 1½ ft.: lvs. round-ovate, to 6 in. long, mottled: fls. maroon to greenish-yellow or white, to 4 in. long, sessile. Wash. to Calif.

declinàtum: the material in cult. under this name is *T. Gleasonii;* see also *T. Catesbæi.*

díscolor. To 1 ft.: lvs. oval, mottled: fls. greenish, the petals broad-spatulate, sessile. N. C. to Ga.

eréctum. To 1 ft. or more: lvs. broadly rhombic-ovate, to 7 in. long: fls. brown- or greenish-purple, 1 in. long, nearly erect on peduncles to 4 in. long. N. S. to N. C. and Tenn. Var. **álbum** has white fls.

erythrocárpum: *T. undulatum.*

Glèasonii (*T. declinatum* of authors). To 15 in.: lvs. broad-rhombic, to 5 in. long: fls. white, to 2 in. long, on declined or spreading pedicels to 2½ in. long. N. Y. to Minn. and Mo.

grandiflòrum. To 1½ ft.: lvs. broadly rhombic-ovate, to 6 in. long: fls. white fading to rosy-pink, to 3 in. long, erect on peduncles to 3 in. long. Que. to N. C. and Mo.—Double-fld. forms are known.

Hùgeri. To 10 in.: lvs. orbicular or ovate, mottled: fls. dark maroon or brown, sessile. N. C. to Fla. and Miss.

lùteum. A form of *T. sessile* with greenish-yellow petals. N. C., Tenn.

nivàle. To 6 in.: lvs. ovate, to 2 in. long: fls. white, 1 in. long, erect or drooping on peduncles to 1 in. long. Pa. to Ky. and Neb.

ovàtum. To 1½ ft.: lvs. rhombic-ovate, to 6 in. long: fls. white fading to rose, 2 in. long, erect on peduncles to 3 in. long. B. C. to Calif.

petiolàtum. To 6 in., the st. scarcely rising above the ground: fls. purple, to 2 in. long, sessile. Ida., Ore.

pusíllum. To 8 in.: lvs. oblong or lanceolate: fls. pink, 1 in. long, erect on peduncles ½ in. long. N. C., S. C.

recurvàtum. To 1½ ft.: lvs. ovate to oblong: fls. brown-purple, 1 in. long, erect, sessile. Ohio to Miss. and Ark.

rivàle. To 8 in.: lvs. ovate-lanceolate: fls. white marked with purple, to 1 in. long, erect on peduncles to 1½ in. long. Ore., Calif.

rùbrum: hort. name, probably for *T. sessile* var.

séssile. To 1 ft.: lvs. ovate: fls. purple or green, 2 in. long, erect, sessile. Pa. to Fla. and Miss. Var. **álbum,** with white fls., is listed. Var. **califórnicum** is *T. chloropetalum.* Var. **rùbrum** has red-purple fls.

símile. To 2 ft.: lvs. oval: fls. cream or white, to 2 in. long, on erect pedicels to 2½ in. long. N. C., Ga.

stylòsum. To 1½ ft.: lvs. oval: fls. pink or rose, to 2½ in. long, drooping on pedicels to 2 in. long. N. C. to Ga. and Ala.

undulàtum (*T. erythrocarpum*). To 2 ft.: lvs. ovate: fls. white veined purple, 1½ in. long, erect or somewhat drooping on peduncles to 2½ in. long. N. S. to Ga. and Mo.

Vàseyi. SWEET T. To 2 ft.: lvs. ovate-acuminate: fls. reddish-purple, to 6 in. across, petals to 2 in. wide, filaments to ⅜ in. long. Tenn. to S. C.—A white-fld. form is known.

víride. To 15 in.: lvs. oblong or ovate, to 4 in. long, often mottled: fls. pale or purplish-green, 2 in. long, sessile. Tenn., Miss. to Kans.

TRIMÈZA (*Trimezia*). *Iridaceæ.* Bulbous herbs of trop. Amer., one intro. in S. Calif.: perianth-segms. distinct, the 3 inner much smaller than the 3 outer.

martinicénsis (*Cipura martinicensis*). To 2 ft.: lvs. linear-lanceolate: fls. in terminal clusters, yellow with brown at base, ¾ in. long. W. Indies, S. Amer.

TRIÓSTEUM. HORSE GENTIAN. FEVERWORT. *Caprifoliaceæ.* Per. herbs of weedy habit sometimes transferred to grounds: lvs. opposite, entire, sessile: fls. yellowish or purplish, gamopetalous, solitary or clustered in the axils, not showy: fr. a leathery drupe.

aurantìacum. To 4 ft.: lvs. ovate to oblong-lanceolate, to 10 in. long: fls. dull red, ¾ in. long: fr. orange-red. N. B. to N. C. and Mo.

perfoliàtum. To 4 ft.: lvs. ovate or oval, to 9 in. long, often connate at base: fls. purplish, ¾ in. long: fr. orange-yellow. Mass. to Ky. and Kans.

TRIPETALÈIA. *Ericaceæ.* Japanese deciduous shrubs, differing from Elliottia in fls. with 3 separate petals and 6 stamens; fr. a caps.; 2 species are known.

paniculàta. To 7 ft.: lvs. alternate, rhombic to rhombic-ovate, to 2½ in. long, tapering toward base, margins entire: fls. white tinged pink, to ⅝ in. across, in terminal panicles to 4 in. long.

TRIPHÀSIA. *Rutaceæ.* Spiny evergreen shrub or small tree grown far S. for ornament and hedges. **T. trifòlia** (*T. aurantiola*). LIME-BERRY. To 15 ft.: lvs. nearly sessile, 3-foliolate, the lateral lfts. small, the terminal to 1½ in. long, all blunt or emarginate and more or less finely crenate: fls. white, fragrant, solitary in axils; stamens 6, not united: fr. a dull red berry ½ in. diam. Origin unknown; probably Malayan.—Propagated by seeds. *T. monophylla* is Severinia.

TRÍPLARIS. *Polygonaceæ.* Trees or large shrubs, native in trop. Amer., diœcious: lvs. large, alternate, simple, on the ovate, oblong, lanceolate order: fls. relatively small, sessile or nearly so between bracts in a spicate or racemose infl.: fr. a 3-angled nut.

americàna. Tree to 30 ft. or more, with hollow branches: lvs. oblong to elliptic, to 15 in. long, acuminate: fls. in great panicles, the pistillate ones red and showy: fr. falling with a spinning motion. Cent. Amer.—Known as hormigo and volador. Planted in S. Fla.

TRÍPTERIS. *Compositæ.* Herbs or small shrubs, mostly from S. Afr., having glandular-sticky and strong-scented herbage, heads of both ray- and disk-fls., the achene without a pappus but produced into a beak and broadly 3-winged.

hyoseroìdes. Probably ann., to 1½ ft., somewhat branched toward top: lower lvs. elliptic-oblong, to 5 in. long, obtuse, obtusely sinuate, cuneate, st.-lvs. alternate, oblong-linear, subentire, acute, finely pubescent: ray-fls. 2–3 times as long as involucre. S. Afr.

Vaillántii. Subshrub to 1½ ft., glandular-hairy: st.-lvs. oblong-lanceolate, toothed, half-clasping: heads yellow, small. Arabia to Palestine.

TRIPTERÝGIUM. *Celastraceæ.* E. Asian deciduous shrubs with large alternate petioled lvs., polygamous small white fls. in terminal panicles, and fr. a 1-seeded 3-winged samara.

Régelii. To 6 ft. or more, the branches long and lithe: lvs. celastrus-like, wide-elliptic to ovate, blunt-serrate, to 6 in. long: panicles to 10 in. long: fr. nearly orbicular in outline and ¾ in. or more across. Manchuria to Japan; hardy N.

TRISÈTUM. FALSE OAT. *Gramineæ.* Per. tufted grasses resembling oats and one species sometimes planted for ornament: lvs. flat: spikelets borne in panicles, the florets awned: widely distributed in temp. regions. See *Grasses*.

flavéscens (*Avena flavescens*). To 2½ ft.: lvs. to 5 in. long and ¼ in. wide: panicles to 5 in. long, yellow turning brown, florets with long twisted awns. Eu., Asia; nat. in Mo. and Kans.

spicàtum. To 2 ft.: differs from above in panicles dense and usually spicate and pale to dark purple in color. Arctic Amer. south to Pa., Minn., mts. of New Mex., and Calif.; also alpine regions of Old World and S. Amer.

TRISTÀNIA. *Myrtaceæ.* Trees and shrubs native in Malaya and Australia with simple lvs. alternate or whorled at ends of branchlets, small yellow or white fls. in axillary cymes, and capsular fr.; grown out-of-doors in warm regions. Propagated by seeds or half-ripened cuttings under glass.

conférta. BRISBANE BOX. To 150 ft.: lvs. ovate-lanceolate, to 6 in. long: fls. white, ¾ in. across: fr. ½ in. across. Australia.

laurìna. Small tree or shrub: lvs. lanceolate or elliptic, to 4 in. long: fls. yellow, ⅙ in. long: fr. ¼ in. across. Australia.

TRITELEIA: *Brodiæa.*

TRITERNATE: three times three; the leaflets or segments of a twice ternate leaf again divided in three parts.

TRITHRÌNAX. *Palmaceæ.* A few species of low or middle-sized hermaphrodite fan-palms of trop. and S. Brazil, Bolivia, Paraguay, Argentina, often cespitose, characterized by very strong long spines terminating the stiff network of the old lf.-sheaths on the trunk: lvs. more or less orbicular in outline, firm, cut into many deep segms.; the petiole unarmed, except perhaps a few hard fibers at the base: spadix among the lvs., branched, the fls. solitary and sessile; stamens 6: fr. globose, 1 in. or less diam., the perianth somewhat enlarged but not prominent; seed 1. The Trithrinaxes are somewhat planted in the open in S. Calif. and probably elsewhere as single specimens, interesting for their good habit and vicious spines. See *Palm.*

acanthócoma. Trunk single and several ft. high, densely clothed with deflexed slender but stiff spines 3–6 in. long from the network base: lvs. to 3 ft. across, green both sides but lighter underneath, deeply cleft into some 40 finely striate segms. which are bifid for an in. or two at apex and which droop on the lower lvs.: fr. about ¾ in. thick, with short stigmatic point not centered. S. Brazil.

brasiliénsis. Trunk single, to 12 ft. or more, clothed with spines much as in the above species: lvs. to 3 ft., stiff, divided to about the middle, and the 30 or so segms. not or scarcely drooping, green above and glaucescent underneath, the finely striate segms. bifid at the end 5–8 in. deep. S. Brazil to Paraguay.

campéstris. Trunk to 10 or 12 ft. but in cult. often long remaining a mass of sword-like points with st. covered in foliage, the sharp spines very stiff and strong and often above 6 in. long: lvs. 2–3 ft. across, gray-green, divided nearly to base into 20 or more rigid spine-tipped segms. that are bifid 5–8 in.: fr. nearly 1 in. across, with a flexible exterior. Argentina.

TRÍTICUM. *Gramineæ.* Tall ann. or bien. grasses with flat lvs. and spikelets borne in terminal close spikes; native in Medit. region and W. Asia, and grown for the grain which is the principal source of bread flour. By some authors the species treated below are considered to be varieties of *T. æstivum.* See *Grasses.*

æstìvum. WHEAT. Ann. to 4 ft.: lvs. to 15 in. long and ½ in. wide: spikes to 4 in. long, awned or awnless: grains ¼ in. long, grooved. Cultigen; winter and spring wheat.

dicóccum. EMMER. Differs from *T. æstivum* in having dense awned or bearded spikes and each floret permanently inclosing the grain.

monocóccum. EINKORN. Spikelets long-awned and flattened in slender spikes.

polónicum. POLISH WHEAT. Glumes papery, as long as spikelets.

Spélta. SPELT. Spikes awned, slender, more or less 4-sided.

TRITOMA: *Kniphofia.*

TRITÒNIA (*Montbretia*). *Iridaceæ.* Cormous herbs of S. Afr. having narrow lvs. toward base of st. and yellow, orange, red or white fls. in simple or panicled spikes on sts. to 3 ft. high, the perianth with long or short tube.

Culture as for gladiolus; hardy in the North, and may be left permanently or replanted each year from corms well ripened and stored after the blooming period; plant 3 or 4 inches deep and 3–6 inches or more apart.

crocàta. Fls. tawny-yellow or orange-red, 2 in. across. Var. **miniàta,** fls. bright red or scarlet; in Calif. gardens.

crocosmæflòra. Fls. orange-crimson, to 2 in. across, with tube shorter or longer than segms. Hybrid of *T. Pottsii* and *Crocosmia aurea.* Var. **aurantìaca** has deep orange fls.

deústa. Differs from *T. crocata* in having a purple-black blotch on claw of outer segms.

hyálina. Differs from *T. crocata* in perianth-segms. narrowed below into claw with inflexed hyaline margin.

lineàta. Fls. white or pale pink, 1¼ in. long, anthers protruding.

Póttsii. Fls. bright yellow-red, 1 in. long, the tube twice longer than segms.

ròsea. Fls. bright red spotted yellow at base, 1 in. long, the tube as long as segms.

securígera. Fls. bright red, lower perianth-segms. with large callus at throat, 1½ in. long.

squálida. Fls. white or pinkish with yellow blotch at base of perianth-segms.

undulàta. To 1 ft.: lvs. to 4 in. long, linear, glabrous, margins strongly undulated: fls. pink, in lax spikes.

TROCHODENDRÀCEÆ. Trochodendron Family. Two genera from E. Asia, trees or shrubs with alternate toothed lvs. without stipules, bisexual fls. without perianth, carpels 5 or more, and fr. a samara or follicle. The family is closely associated with Cercidiphyllaceæ, and once included in the Magnoliaceæ. Euptelea and Trochodendron are grown for ornament.

TROCHODÉNDRON. *Trochodendraceæ.* Japanese and Korean evergreen tree sometimes planted in S. U. S. **T. aralioìdes.** To 60 ft.: lvs. obovate to lanceolate, to 6 in. long, wavy-toothed, long-stalked, shining above: fls. bright green, ½ in. across, in racemes to 3 in. long: fr. brown, ½ in. across.

TRÓLLIUS. *Ranunculaceæ.* Per. herbs native in the north temp. zone mostly in swampy or low places, with thick fibrous roots, palmately lobed or divided lvs., usually solitary terminal fls. in spring and early summer, having 5–15 petal-like sepals, 5 or more small petals, and many stamens; spring.

Trollius requires moist soil. The species make attractive spring-flowering clumps, in yellow and orange; useful for borders. Propagated by seeds or division.

acaùlis. To 6 in.: fls. lemon-yellow, 2 in. across, with 6–8 spreading sepals, the 12–16 petals shorter than stamens. Himalayas.

albiflòrus. To 1 ft.: fls. white, to 1½ in. across, with 5–7 spreading sepals, the petals shorter than sepals and stamens. B. C. to Colo.

asiáticus (*T. giganteus*). To 2 ft. or more: fls. orange, with 10 spreading sepals, the petals longer than stamens but shorter than sepals. Siberia.

caucásicus. To 3 ft.: fls. yellow, with 5–8 spreading sepals, the 10 petals about length of stamens and shorter than sepals. W. Asia.

chinénsis (*T. sinensis*). Tall: fls. yellow, with 12–13 spreading sepals, the 20 petals longer than stamens and sepals. N. China.

dschungáricus. Differs from *T. europæus* in the sepals spreading, incurved and mucronate, also in fls. reddish outside and golden-yellow within, and from *T. asiaticus* it is distinguished by petals not longer than stamens. Turkestan.

europæus. Globe-Flower, To 2 ft.: fls. lemon-yellow, to 2 in. across, globular, with 10–15 incurved obtuse sepals, the petals about length of stamens and shorter than sepals. Eu. Var. **Lóddigesii** has deep yellow fls. Var. **napellifórmis** (*T. napelliformis*) has many-fld. sts. and deeply divided lvs. Improved forms are listed as **grandiflòrus** and **supérbus.**

Fórtunei: listed name, probably *T. japonicus.*

genuìnus: a hort. varietal name under *T. patulus* but including several other species.

giganteùs: *T. asiaticus.*

hýbridus: hort. name for improved strains of garden hybrids.

japónicus. To 8 in.: fls. yellow, with 5–6 spreading sepals, the petals longer than stamens. Japan. Var. **flòre-plèno** has double fls.

láxus. To 2 ft., the sts. weak: fls. yellowish-green, to 2 in. across, with 5–7 spreading sepals, the 15–25 petals much shorter than stamens. E. U. S., in bogs and swamps.

Lédebouri. To 2 ft.: fls. yellow, with 5 spreading sepals, the 10–12 petals longer than stamens but shorter than sepals. Siberia.

napellifórmis: *T. europæus* var.

pátulus. To 1 ft.: fls. golden-yellow, with 5–7 spreading sepals, the 1–5 petals about length of stamens and shorter than sepals. W. Asia.

pùmilus. To 1 ft.: fls. yellow, 1 in. across, with 5–6 spreading sepals, the 10–12 petals about length of stamens but shorter than sepals. Himalayas. Var. **yunnanénsis** is taller, with 6–8 sepals and petals shorter than stamens. W. China.

sinénsis: *T. chinensis.*

yunnanénsis: *T. pumilus* var.

TROPÆOLUM. Nasturtium. The only genus of *Tropæolaceæ.* Quick-growing soft herbs, often climbing by means of coiling petioles, sometimes with tuberous roots, having alternate lvs., showy mostly yellow, orange or red irregular fls. solitary on long axillary sts., one sepal produced into a slender nectar-spur, and fr. of 3 1-seeded carpels; native Mex. to Chile.

Nasturtiums are grown as annuals in warm sunny situations. Seed may be sown where plants are to stand or in early spring in boxes and pots and transplanted in May. They are useful for cut-flowers and the abundant foliage covers rocks and brushy places acceptably. The plants are frost-tender. The flower-buds and young seeds are sometimes picked and used as seasoning, under the name Indian cress.

Bódgeri: hort. name for double-fld. race of *T. majus.*

canariénse: *T. peregrinum.*

coccíneum: plants in trade under this name are probably *T. majus* var., although it is also a botanical synonym for *T. tricolor.*

Lobbiànum: *T. peltophorum.*

màjus. Garden N. Climbing: lvs. round or somewhat kidney-shaped, peltate, on long petioles: fls. to 2½ in. across, of various colors, usually with a yellow or orange background striped and spotted with red and brown. S. Amer. Var. **Búrpeei.** Golden Gleam N. A patented race of double-fld. plants. Var. **nànum.** Tom Thumb N. A dwarf strain. Some of the named color forms are: **atropurpùreum,** dark red; **coccíneum,** scarlet; **Heìnemannii,** chocolate; **hemisphéricum,** light yellow; **lùteum,** yellow; **Regeliànum,** purple-violet; **Scheueriànum,** straw-colored.

mìnus. Dwarf, not climbing but more or less scrambling, smaller than *T. majus:* fls. 1½ in. or less across. S. Amer.

nànum: *T. majus* var.

peltóphorum (*T. Lobbianum*). Climbing, hairy: lvs. round, peltate: fls. 1 in. long, orange-red. S. Amer.

pentaphýllum. Climbing, with tuberous root: lvs. divided into 5 lfts.: fls. 1½ in. long, with large red spur. Argentina.

peregrìnum (*T. canariense*). Canary-Bird-Flower. Climbing: lvs. deeply 5-lobed, peltate: fls. to 1 in. across, canary-yellow with green curved spur. Probably Peru and Ecuador.

polyphýllum. Per., prostrate or climbing: lvs. peltate, orbicular, deeply divided into 7–9 narrow segms.: fls. yellow streaked with red, smaller than *T. majus.* Chile. Var. **Leichtlínii** is listed with longer more trailing sts. and orange fls.

speciòsum. Per., climbing: lvs. divided into 6 lfts.: fls. to 1½ in. long, vermilion-red. Chile.

trícolor. Per., climbing, with fleshy root: lvs. divided into 6 lfts.: fls. 1 in. long, with vermilion spur, purplish lobes and yellow petals. Chile.

tuberòsum. Climbing, with large underground tubers: lvs. 5-lobed, peltate: fls. to ¾ in. long, with long red spur and yellow petals. W. S. Amer., where the tubers are prepared for eating.

TRUMPET-CREEPER: *Campsis.* **-Flower:** *Bignonia capreolata.* **-Vine:** *Campsis radicans.*

TRUNCATE: appearing as if cut off at the end; the base or apex nearly or quite straight across.

TSÙGA. Hemlock. Hemlock-Spruce. *Pinaceæ.* Evergreen trees with slender horizontal branches, linear usually flattened lvs. with 2 white bands beneath, and small cones having woody persistent scales; native in N. Amer. and Asia. Numbers of variations are perpetuated by asexual propagation and under names, not all of which may be in commerce.

Hemlocks are valuable lawn trees, particularly as young specimens; they are best when not too much exposed to winter winds and winter sun. *T. canadensis* is the hardiest, but most of the others stand in climates like that of central New England. For cultivation see *Conifers.*

canadénsis (*Abies canadensis*). Lvs. finely toothed, obtuse or acutish: cones to ¾ in. long, stalked. N. S. to Ala. Hort. vars. are: **álbo-spìca,** tips of young branchlets white; **atróvirens,** very dark green foliage; **aùrea,** foliage tinged yellow; **compácta,** dwarf conical form; **Dawsoniàna,** slow-growing and compact, foliage dark green; **fastigiàta,** narrow or columnar; **Frémdii,** pyramidal and slow-growing, foliage dark green; **globòsa,** rounded and compact; **grácilis,** branches drooping at ends, lvs. very small; **Hússii,** very dwarf with short twiggy branches; **Jénkinsii,** narrow-pyramidal with graceful declined branches and short lvs.; **macrophýlla,** lvs. larger; **microphýlla,** lvs. ¼ in. or less long;

nàna, dwarf form to 7 ft. high, branch spread greater than height; **parvifòlia,** densely bushy, top of many ascending sts. and open central crown, lvs. small; **péndula** (var. *Sargentii pendula*), branches drooping, forming a dense broad bush; several named forms are offered.

caroliniàna (*Abies caroliniana*). Lvs. entire, obtuse or slightly notched at apex, glossy dark green above: cones to 1½ in. long. Mts. of Va. to Ga. Var. **compácta** is a denser round-topped form.

chinénsis. Lvs. entire, notched at apex, glossy dark green above, the bands beneath inconspicuous: cones to 1 in. long. W. China.

diversifòlia. JAPANESE H. Branches reddish-brown: lvs. entire, obtuse or notched: cones to ¾ in. long. Japan.

dumòsa. Lvs. finely toothed, acute: cones 1 in. long. Himalayas.—To be planted far S.

heterophýlla. WESTERN H. Lvs. finely toothed, obtuse or acutish: cones to 1 in. long. Alaska to Calif.

Hússii: *T. canadensis* var.

Jéffreyi. Hybrid between *T. Mertensiana* and *T. heterophylla*.

macrophýlla: *T. canadensis* var.

Mertensiàna. MOUNTAIN H. Lvs. rounded or keeled, bluish-green, acutish: cones to 3 in. long. Alaska to Calif. Var. **argéntea** has bluish-white lvs.

microphýlla: *T. canadensis* var.

Sárgentii: a weeping form, *T. canadensis* var. *pendula*.

Sièboldii. Branchlets glabrous: lvs. entire, notched at apex: cones to 1¼ in. long. Japan.

yunnanénsis. Twigs densely pubescent: lvs. entire, obtuse: cones to 1 in. long. W. China.

TSUSIOPHÝLLUM. *Ericaceæ.* A monotypic half-evergreen genus distinguished from Rhododendron by the regular tubular corolla with stamens not exserted. **T. Tanákæ.** Prostrate shrub to 20 in., branchlets setose: lvs. obovate-elliptic, to ½ in. long, apiculate, setose above, glabrous and glaucous beneath except on midrib: fls. white to pale pink, nearly ½ in. long, corolla pubescent, with short spreading lobes. Cent. Japan.

TUBEFLOWER: *Clerodendrum Siphonanthus.*

TUBER: a short congested part; usually defined as subterranean (as of a rootstock), although this is not essential.

TUBERCLE: a small tuber, or rounded protruding body.

TUBEROSE: *Polianthes tuberosa.*

TULBÁGHIA. *Liliaceæ.* Per., sometimes cormous, herbs of trop. and S. Afr. having numerous fls. in a terminal umbel, differing from Agapanthus in the fls. urn-shaped or salverform with perianth-tube much longer and often cylindrical with a corona present which may be ring-like or formed of 6 distinct scales, the fr. a loculicidally dehiscent caps.

Propagated by seeds and offsets, adapted to pot culture in the North or may be grown in open in South in a light sandy soil.

cepàcea. To 1½ ft.: lvs. linear, to 8 in. long and ⅛ in. wide, usually only 4–6: fls. bright lilac, to ½ in. long, on slightly shorter pedicels and in umbels of 6–12. S. Afr.

violàcea. To 2½ ft.: lvs. erect, linear, to 1 ft. long, acute, canaliculate at base, usually only 4–8: fls. bright lilac, about ¾ in. long, in umbels of 8–16, pedicels violet, to 1½ in. long, segms. lanceolate with deeper colored medium stripe. S. Afr.

TULIP: *Tulipa.* **Globe-:** *Calochortus.* **Star-:** *Calochortus monophyllus.* **-Tree:** *Liriodendron.*

TÙLIPA. TULIP. *Liliaceæ.* Hardy spring-blooming bulbs planted out-of-doors and forced in the greenhouse, having basal and st.-lvs. and bell-shaped or saucer-shaped mostly erect fls. which are commonly solitary but sometimes 2–5 at top of st., the perianth-segms. distinct.

Common garden tulips are supposed to be of the species *Tulipa Gesneriana*, native in Russia and Asia. The very early tulips of the Duc Van Thol kind are *T. suaveolens*, of southwestern Asia and the Caspian region. The dragon or parrot tulips are fringed and crisped forms of the common tulip, *T. Gesneriana* var. *Dracontia*. The Darwin tulips are a tall late-flowering robust race with clear colors, *T. Gesneriana* var. *Darwinia*. The Rembrandts are a sub-class of Darwin tulips with variegated or particolored flowers. The cottage tulips are an early or midseason class, in many colors; the term is usually applied to the common tulips that do not fall into other classes. The "breeder" tulips are strains with self or unbroken colors although the base of the segments may be vari-colored; "broken" tulips have parti-colored segments throughout; "bybloems" have white under-color with markings of rose, lilac or purple; "bizarres" have yellow under-color and red or brownish or purplish over-colors. Tulips have wide range of color in all except true blues, as also of shape of blossom, of stature, and of season, allowing a wide choice to the planter. The bottom of the flower-cup inside is likely to have darker blotches, forming an "eye" when the flower is widely expanded. Special bulb catalogues are useful in making selections.

Other species than *T. Gesneriana* and *T. suaveolens* are more or less grown in borders or as curiosities, and they are likely to be catalogued as "botanical tulips." They are native from Europe to north Africa and Japan. Among them are choice and interesting ornamental subjects, some of them adapted to rock-gardens.

Tulips are planted in autumn as are other Holland bulbs, usually in October in the North. The soil should be deep, fertile and well drained. The bulbs may sit 4 to 6 inches below the surface (depending somewhat on size and soil) and 4 to 6 or 8 inches apart (conditioned on the size and variety). For uniform results in height and blooming season, see that the bulbs are graded to one size and are set in one kind of soil at the same depth; in making pattern beds, is is well to remove the earth, firm the under-soil, place the bulbs carefully, then cover with earth without disturbing them. Mulch freely for winter. After two or three years the tulip plot becomes crowded and it is well to take up the bulbs after the leaves have ripened and replace the best ones. For pattern beds, the bulbs are set each year. Tulips open fully in sunshine, but as the outside of the flower is colored and the cup is attractive in shape at any stage, the plants are serviceable at all hours.

Tulips force readily. Strong bulbs are placed in pots or boxes in autumn, set in a frame or other outdoor area and covered a few inches with mulch of leaves, litter or even light earth until the pots are well filled with roots which will be in four to six weeks. Five or six bulbs of the usual single forcing kinds may be placed in a 6-inch pot or pan, and six to eight in a 7-inch pot; the bulbs are covered to the tip. When well rooted, pots may be brought to a fairly warm building until growth is well started, when they may be placed in the conservatory or living-room; it is well to have a sufficient supply so that pots may be brought in every ten days or two weeks for succession. The best season for bloom is after the holidays till spring. Early tulips are sometimes bloomed in water glasses, for which see hyacinth, although they are not so popular as that flower for this method of culture. After blooming in the house, the bulbs are discarded, although they are sometimes transferred to the border and may recover after a year or two.

Propagation of tulips is usually effected by the natural increase of the bulbs by means of offsets or young bulbs; these planted by themselves produce a blooming bulb in one or two years. Expert propagators stimulate the formation of offsets by cutting the bulb. Seeds may be employed, if one desires to produce new kinds; two or three years are required.

acuminàta (*T. cornuta. T. stenopetala*). TURKISH T. Medium height, 12–18 in.: lvs. rather narrow, undulate: fl. expanded, light yellow with red lines, segms. very long narrow-pointed. Probably Turkey.—Perhaps a form of the *T. Gesneriana* group. Midseason.

austràlis (*T. Celsiana*). Medium: lvs. channelled: fl. yellow, reddish outside, nodding in bud, segms. acute. France to Algeria.—Midseason.

Batalínii. Low, 5 or 6 in.: lvs. very narrow: fl. pale yellow, segms. obtuse or nearly so and sometimes cut near apex: lvs. very narrow. Bokhara.—Early.

biflòra. Small plant with 2 or 3 very narrow lvs.: fls. 2, small, pale yellow or whitish inside tinged reddish or purplish outside, segms. acute. Asia.—Early to midseason. Var. **turkestánica.** Larger, lvs. broader: fls. often 4 or 5 to stem. Var. **màjor** is listed.

Billiettiàna. Robust with broad lvs.: fl. bright yellow, flushed, segms. sharp. Italy.—Late.

Boissièri: *T. montana.*

Borszczòwii: probably *T. Kolpakowskiana.*

carinàta. Fl. dark red with lighter base, segms. acute: lvs. about as long as scape and somewhat undulate. Probably of hort. origin.—Midseason.

Celsiàna: *T. australis.*

chrysántha. To 6 in.: lvs. glaucous and recurved, the upper ones very narrow: fl. medium, bright yellow, the outer segms. acuminate. Persia.—The name is also likely to be applied to a golden-fld. garden tulip.

Clusiàna. Medium: bulb small and hairy: lvs. narrow: fl. small, white or yellowish with purple base, fragrant, segms. more or less acute. Portugal to Persia.—Midseason.

cornùta: *T. acuminata.*

dasystèmon. Small and small-fld., 3–6 in. high: fls. usually several, yellow, segms. edged white and greenish on back, narrow: lvs. glaucous. Turkestan.

Didièri. Medium: lvs. undulate: fl. large, bright crimson with blotch in bottom, outer segms. reflexed. S. Eu.—Runs into several forms. Var. **Mauriàna** has narrower and slightly undulate lvs.: fls. brilliant red with yellow blotch.

Eìchleri. Low, 6–10 or 12 in. with broad long-pointed lvs.: fl. large, deep scarlet with blue-black bottom, segms. obtuse but mucronate. S. W. Asia.

élegans. To 18 in., st. pubescent: lvs. lorate-lanceolate, arising from lower half of st.: fl. scarlet with yellow base, to 3½ in. long, uniform segms. gradually narrowed to acute point. A garden plant not known from the wild and reported to be a hybrid between *T. acuminata* and *T. suaveolens.* Var. **álba** is listed as a white-fld. form.

flàva: hort. tulip said to be very robust with yellow fls.

florentìna: *T. sylvestris.*

formòsa: listed name of unknown botanical standing.

Fosteriàna. Robust: lvs. very broad: fl. very large, intense crimson and darker in bottom. Turkestan.

fúlgens: *T. Gesneriana.*

galática. To 8 in., tunic of bulb silvery-hairy inside: lvs. 4, linear-lanceolate, to 8 in. long, acuminate: fl. pale yellow, campanulate, inner segms. rounded, spatulate, outer ones elliptic to oblong-elliptic, anthers golden-yellow. Asia Minor.

Gesneriàna (*T. fulgens*). COMMON T. Stout plant, to 18 or 24 in., and mostly broad ample lvs.: fl. white, red, yellow, often variously marked, segms. broad and obtuse but often with a mucro. Armenia, Persia. Var. **ixioìdes** is listed as having fls. of soft canary-yellow with black center. Var. **lùtea,** fl. yellow. Var. **ròsea,** fl. rose. Var. **spathulàta,** fl. larger, brilliant red with purple blotch at base of segms.

Grèigii. Low, 12 in. or less, with broad dark colored undulate lvs.: fl. orange-scarlet with dark yellow-margined blotch in bottom, the segms. broad, often cuspidate. Turkestan.—Early.

Grúllemannii. A strain resulting in a cross between a Darwin tulip and *T. Kaufmanniana.*

Hàgeri. Low, about 6 in., with narrow acute lvs.: fls. 1 or 2, usually red with darker bottom, segms. narrow and acute. Greece.—Early.

hùmilis. To 5 in. or less: lvs. 2 or 3, linear: fl. small, pale purple inside but yellowish in bottom, outside reddish-green, segms. narrow and acute. Persia.

íngens. Low, 12 in. or less, with broad hairy lvs.: fl. very large, vermilion with dark bottom, segms. obtuse but mucronate. Bokhara.—Early.

Kaufmanniàna. Beautiful tulip usually 5–10 in. high with very broad short acuminate lvs.: fl. large and open, creamy-white or light yellow with yellow center and carmine marks, segms. obtuse. Turkestan. Var. **aùrea,** fl. golden-yellow, banded crimson, segms. long-acuminate.—Early.

Kolpakowskiàna. Low, with narrow pointed lvs.: fl. yellow, often reddish or purple outside, segms. narrow and mostly acute. Turkestan.—Early. *T. Borszczowii* probably belongs here.

kuschkénsis. To 14 in.: fl. vermilion-red with large black blotches. Turkestan.

lanàta. Dwarf: fl. goblet-shaped, rich vermilion with large black spot at base of segms. Bokhara.

linifòlia. Low, 10 in. or less, with very narrow grass-like lvs.: fl. medium size, crimson with bluish bottom, segms. short, acute. Bokhara.—Early.

lùtea. To 1 ft. or more: lvs. somewhat falcate, to 14 in. long, erect, pale green, margins undulate and somewhat ciliate: fl. yellow, campanulate, perianth erect, segms. oblong-ovate, on slender glabrous scape. Galatia. Var. **màjor** is offered.

Marjoléttii. Slender, 18–24 in., with narrow and acuminate lvs.: fl. yellowish with broad purple-margined short-acute segms. Savoy.—Midseason.

Mauriàna: *T. Didieri* var.

Micheliàna. To 1 ft., with wavy very glaucous lvs. often striped brown: fl. large, vermilion-scarlet tinged outside with lilac, black spots at base of segms. S. W. Asia.

montàna (*T. Boissieri*). To 8 in.: lvs. long-pointed, glaucous: fl. deep crimson with paler outside, 2 in. across, outer segms. acute. Persia, Afghanistan.

Oculus-sòlis. Tall, with rather broad acute lvs.: fl. large, bright red with large black yellow-margined bottom, segms. acute. S. Eu.—Early.

Orphanídea. Low, slender, 12 in., the long narrow lvs. equalling or exceeding scape: fl. yellow and tinted, with narrow very acute segms. Greece.—Early.

pàtens (*T. persica*). Low, mostly 9 in.. or less, with narrow often curved lvs.: fls. 1–3, whitish or yellowish with yellow bottom, fragrant, segms. narrow and obtuse or nearly so. Siberia.—Midseason.

pérsica: *T. patens.*

polychròma. Dwarf, with narrow acute lvs. exceeding the very short scape: fl. vari-colored, yellowish and purplish, segms. very acute. Persia.—Early.

præ̀cox. Leafy, lvs. broad at base and long-pointed, st. 12–18 in.: fl. red or scarlet with purplish bottom, segms. acute or cuspidate. S. Eu. to Asia.—Early.

præ̀stans. Medium, 12–18 in., with broad short-pointed lvs.: fl. light red, segms. nearly or quite obtuse but cuspidate. Bokhara. Var. **Tubergènii** has sts. of 2–5 fls. each.—Early.

primúlina. Low, 12 in. or less: lvs. very narrow: fl. pale primrose, fragrant, segms. narrow and acute. Algeria.

pulchélla. Very low, 6 in. or less: lvs. narrow, next the ground: fl. mauve-red, yellow in bottom, segms. acute. S. W. Asia.

retrofléxa. Supposed to be a hybrid between *T. Gesneriana* and *T. acuminata:* fl. yellow, darker at base.

rùbra máxima: *T. Gesneriana* form.

saxátilis. Medium, 12–18 in.: lvs. narrow: fls. usually 2, mauve with yellow bottom, fragrant, segms. acute. Crete.

sharonénsis. Stemless, or st. subterranean, to 3 in.: lvs. narrowly linear to lanceolate, often overtopping the fl., margins wavy and ciliate, circinate at tip: fl. solitary, crimson with black spot at base of each segm., campanulate, segms. cuspidate, to 1 in. long. Coastal plains of Persia to Syria.—Often confused with *T. montana* from which it differs in its narrower and somewhat circinate lvs.

Spréngeri. Medium, 8–18 in., with long narrow acute lvs.: fl. orange-scarlet with darker bottom, segms. cuspidate. Armenia.—Very late.

stenopétala: *T. acuminata.*

stellàta. Medium: lvs. long and narrow: fl. white or yellow without darker bottom, segms. short-acute. Himalaya, Afghanistan.—Midseason.

strangulàta. Like *T. suaveolens* but taller, mostly red-fld. with black blotch but running to yellows. Italy.

suavèolens. DUC VAN THOL T. Low, 4–8 in., broad-lvd.: fl. bright yellow, very fragrant, segms. acute. S. Eu.—Very early.

sylvéstris (*T. florentina*). Medium, 9–18 in.: lvs. narrow: fl. (sometimes 2) bright yellow, fragrant, segms. narrow and acute. Eu.—Midseason to late.

Tubergeniàna. Lvs. long-acuminate: fl. large, bright crimson with dark-margined blotch, segms. long-pointed. Bokhara.

turkestánica: *T. biflora* var.

violàcea. To 1 ft.: fl. bell-shaped, fragrant, 2 in. across, mauve-red or rosy-crimson flushed with purple, with dark blotch at base of segms. Persia. Listed forms are **pállida,** fl. white tinged pink with dark blue base, and **ròsea,** fl. pink with blue base.

viridiflòra. Tall, to 2 ft., with large broad lvs.: fl. large, light soft green with yellowish or whitish edges, segms. abruptly acute or cuspidate. Cultigen.—Midseason to late. Var. **præ̀cox** is an early large pale green kind.

Willmottiæ. Tall. 18 in, or more, with broad long-acute lvs.: fl. large, clear yellow, slightly fragrant. Asia Minor.—Late.

Wilsoniàna. To 8 in.: fl. vermilion-scarlet margined with red, with bluish-black blotch at base of segms. Mts., S. W. Asia.

TUMION: *Torreya.*

TUNA: *Opuntia.*

TUNG-OIL-TREE: *Aleurites Fordii.*

TÙNICA. *Caryophyllaceæ.* Herbaceous wiry-stemmed annuals and perennials with small narrow lvs. and fl.-heads similar to Dianthus but smaller; native in the Medit. region. Grown as edging plants in the border or rock-garden. Propagated by seed and division.

gramínea. Tufted per. to 1 ft,: lvs. setaceous: fls. rose, to ⅓ in. across. Greece.

prolífera: *Dianthus prolifer.*

Saxífraga (*Petrorhagia Saxifraga*). TUNIC-FLOWER. COAT-FLOWER. Hardy per to 10 in., tufted, spreading: lvs. narrow, linear, to ½ in. long: fls. pink or pale purple,

¼ in. across, summer. Eu.; adventive in E. U. S. Var. **álba** has white fls., **carnòsa** flesh-colored, **ròsea** rose-pink, and **flòre-plèno** double fls. to ½ in. across. Var. **nàna** is listed. Var. **spléndens** is an improved form.

velùtina. Perhaps better kept in Dianthus; allied to *D. prolifer* from which it differs in being pubescent and having 2-parted petals. S. Eu.—Hardly a hort. subject.

TUNIC-FLOWER: *Tunica Saxifraga.*

TUNKA: *Benincasa hispida.*

TUPELO: *Nyssa.*

TUPIDÁNTHUS. *Araliaceæ.* Indian small tree which eventually becomes a tall climber, suitable for cult. in warm climates and sometimes raised under glass for its abundant glossy-green foliage. **T. calyptràtus.** Lvs. palmately divided into 7–9 entire drooping lfts. to 7 in. long: fls. green, borne in compound umbels.

TURGID: swollen from fullness.

TURKEY-BEARD: *Xerophyllum.*

TURKS-TURBAN: *Clerodendrum Siphonanthus.*

TURMERIC: see *Curcuma longa.*

TURNIP. Underground tubers of *Brassica Rapa.* Seed is produced from tubers planted out after the winter or that may be left in the ground in very mild climates; the early varieties often run to seed the first year if sown very early and not gathered at the maturity of the tuber. Turnips are hardy cool-season plants, of unknown nativity, but they will not withstand as much frost as rutabagas.

The true turnips are mostly "flat," that is, not bearing a long neck and the tuber broad rather than long although there are exceptions in the shape; most of them grown in this country are white- or light-fleshed; the substance is less firm and durable than in the rutabaga. All the usual turnips are short-season plants; the supply for late autumn and winter use in the northern states is grown from seeds sown in July—"on the twenty-fifth of July sow your turnips wet or dry" is an old saw. The seeds are broadcast or sown in drills that are 10–20 inches apart; it is necessary to thin the plants well if the best tubers are desired. For drill culture, 1 to 2 pounds of seed are required to the acre. For late spring or summer use, seeds are sown, of early varieties, as soon as the ground is fit. The commonest pest of turnips is aphis, which is controlled (as on cabbage) by thorough spraying or dusting with nicotine preparations.

The Seven-top turnip is *Brassica septiceps.*

TURNIP, INDIAN: *Arisæma triphyllum.*

TURPENTINE TREE: *Syncarpia glomulifera.*

TURRÆ̀A. *Meliaceæ.* Trees or shrubs of Asia and Afr., with alternate simple lvs., white fls. and capsular frs.; grown out-of-doors in S. Calif. and sometimes under glass.

obtusifòlia. Broad attractive shrub to 3 ft. or more: lvs. obovate, to 2 in. long, sometimes 3-lobed near tip: fls. 1½ in. long, many and giving the bush a pleasing effect; petals very narrow, 1 in. or more long. S. Afr.

TURTLE-HEAD: *Chelone.*

TUSSÀCIA. *Gesneriaceæ.* Herbs of trop. Amer. with creeping rhizomes, opposite lvs., and tubular fls. in axillary clusters, the calyx colored; one species intro. in S. Calif.

pulchélla. To 1½ ft.: lvs. to 10 in. long and 4 in. across, toothed, pale beneath: fls. orange-yellow marked with red, ¾ in. across; calyx salmon-colored, ½ in. long. W. Indies.

TUSSILÀGO. *Compositæ.* Stemless per. herb native in Eu., India and Asia and nat. in N. Amer., sometimes grown as a ground-cover and to hold banks. Propagated by root-cuttings. **T. Fárfara.** COLTSFOOT. Lvs. cordate-orbicular, to 7 in. across, lobed and toothed, white-tomentose beneath: heads solitary, on scaly scapes to 1½ ft. high in very early spring before the lvs., the ray-fls. bright yellow; pappus of white bristles, prominent in the dandelion-like head.

TUTSAN: *Hypericum Androsæmum.*

TWAYBLADE: *Liparis, Listera.*

TWEEDIA: *Oxypetalum.*

TWIN-BERRY: *Mitchella repens.* **-Leaf:** *Jeffersonia diphylla.*

TWINFLOWER: *Linnæa borealis.*

TWINSPUR: *Diascia.*

TWISTED STALK: *Streptopus.*

TYDÆA: *Isoloma.*

TỲPHA. CAT-TAIL. The only genus of *Typhaceæ.* Per. herbs in swamps, having creeping rootstocks, tall erect unbranched sts., long, linear, flat, erect, parallel-veined lvs., and unisexual fls. in dense terminal spikes of which the staminate is uppermost; species few, widely distributed in temp. and trop. regions.

Cat-tails are sometimes employed in bog-gardening and on the margins of pools for permanent stately effect. The leaves are used in basketry and for bottoming chairs. Propagated usually by division; sometimes by seeds planted in pots in water.

angustifòlia. To 10 ft.: lvs. to ½ in. across: spikes light brown, the staminate and pistillate parts separated. Amer., Eu., Asia.

latifòlia. To 8 ft.: lvs. to 1 in. across: spikes dark brown to black, the staminate and pistillate parts contiguous. N. Amer., Eu., Asia.

U

UDO: *Aralia cordata.*

ÙLEX. Furze. Gorse. Whin. *Leguminosæ.* Very spiny shrubs with very small spine-tipped lvs. which are often scale-like, yellow papilionaceous fls., and small ovoid pods; grown for ornament and cover on poor and sandy soils.

Seeds should be sown where the plants are to stand or singly in pots, for they do not bear transplanting well. Propagated also by cuttings or grafting on *U. europæus.* Require winter protection in the North.

europæ̀us. To 4 ft.: fls. fragrant, ¾ in. long, in spring or in warm climates flowering all the year. Eu. Var. **nànus** is *U. nanus.* Var. **plènus** has double fls.

lusitánicus. Shrub with densely pubescent spiny sts.: lvs. triangular-acuminate, spine-tipped: fls. bright yellow: pods broadly obovate, hirsute. Portugal.

nànus. Dwarf, to 2 ft.: fls. about ½ in. long, in autumn. W. Eu.

ÚLLUCUS. *Basellaceæ.* Decumbent or climbing per. native in Peru, Bolivia and Chile, grown there for the edible tuberous roots and sometimes planted in our territory for interest. **U. tuberòsus.** Ulluco. Lvs. alternate, fleshy, ovate: fls. small, golden-yellow, in large axillary racemes.—Propagated by division of tubers.

ULMÀCEÆ. Elm Family. Trees and shrubs of about 15 genera widely distributed, having alternate simple lvs., small bisexual or unisexual fls. without petals, with 3–9-parted calyx and as many or twice as many stamens, superior 1-celled ovary, and fr. a samara, nut or drupe. Several genera are grown for ornament, as Celtis, Hemiptelea, Holoptelea, Planera, Trema, Ulmus and Zelkova.

ULMARIA: *Filipendula.*

ÚLMUS. Elm. *Ulmaceæ.* Deciduous trees of the north temp. zone, with alternate toothed short-stalked lvs., inconspicuous fls. in clusters or racemes usually before the lvs., and fr. a flat nutlet surrounded by a wing, making a samara.

Elms are favorite shade and avenue trees and of easy cultivation. Practically all the species here listed are hardy in the North, some of them being among the hardiest lawn and street trees. However, they are attacked by several insects and in such case should be sprayed every year for best results. They will bear transplanting well. Propagated by seeds sown as soon as ripe, by layers in autumn and some species by greenwood cuttings under glass. Varieties may be grafted on common stocks.

alàta. Wahoo E. To 50 ft., the branchlets with 2 broad corky wings: lvs. small, to 2½ in. long, oblong: fr. about ⅓ in. long, with incurved beaks, covered with long white hairs. Va. to Fla. and Tex.

americàna. American, White, or Water E. To 120 ft.: lvs. to 6 in. long: fls. on slender drooping stalks: fr. with densely ciliate margins and deeply notched wings. Newf. to Fla. and Rocky Mts.—Very commonly planted. Var. **aùrea,** lvs. yellow. Var. **columnàris,** of columnar form. Var. **péndula,** branches long and drooping. The varietal names **Líttlefordii, molinénsis, pyramidàlis** and **Úrnii** are in the trade, representing variations in character of branching.

asplenifòlia: *U. glabra* var. *crispa.*

bélgica: *U. hollandica* var.

Berárdii: *U. procera* var.

betulifòlia: *U. procera* var. *nigrescens.*

campéstris: *U. procera.*

carpinifòlia (*U. foliacea. U. nitens*). Smoothleaf E. Pyramidal or upright tree, often with corky branches, commonly suckering; young branches mostly glabrous: lvs. not large, 2–4 in. long, glossy and nearly or quite smooth above and nearly or quite glabrous underneath, obliquely ovate to obovate, double-serrate: fr. obovate, with seed close to upper notch. N. Afr., Eu. and W. Asia. Var. **cornubiénsis** (var. *stricta. U. stricta*). Cornish E. Branches erect and top narrow: lvs. 2–3 in. long, oval or broadly obovate, more or less tufted-pubescent underneath. Var. **Dampièri.** Narrow-topped tree with broad very deeply toothed lvs. crowded on short branches. Var. **Koòpmannii.** Head close, oval: lvs. small, grayish-puberulent beneath and branches often corky. Var. **péndula.** Branches very slender and drooping. Var. **propéndens.** Branches stiff but drooping: lvs. rather small, and branches corky. Var. **sarniénsis** (var. *Wheatleyi. U. campestris* var. *monumentalis*). Guernsey or Jersey E. More stiff and erect than the true Cornish elm, lvs. broader and less tufted underneath. Var. **strícta** is var. *cornubiensis.* Var. **suberòsa.** Small tree, branches corky: lvs. small and roughish above, elliptic to obovate. Var. **umbraculífera.** Globe E. Head dense and broad: lvs. 2–3 in. long, elliptic to broad-ovate, somewhat rough above. Var. **Webbiàna.** Head narrow: lvs. 2–3 in. long, ovate to obovate, roughish above, folded lengthwise. Var. **Whèatleyi** is var. *sarniensis.* Var. **Wrèdei.** Narrow-topped with crowded yellowish deeply toothed broad lvs.

chinénsis: *U. parvifolia.*

Clémmeri: *U. hollandica* var. *Klemmeri.*

crassifòlia. Cedar E. Medium-sized tree with stiff corky or scaly branches: lvs. stiffish, 1 or 2 in. long, oblong to ovate-oblong, obtuse or nearly so, closely serrate, rough above and somewhat pubescent underneath. Miss. to Tex. and N. Mex.; sometimes planted in its region. Blooms in autumn.

Dampièri: *U. carpinifolia* var.

Dauvéssei: *U. hollandica* var.

Dippelìana: *U. hollandica.*

effùsa: *U. lævis.*

exoniénsis: *U. glabra* var.

folìacea: *U. carpinifolia.*

fúlva (*U. Heyderi. U. rubra*). Slippery E. Small or medium-sized open-headed tree with pubescent branchlets: lvs. large, to 6 or 8 in. long, obovate or broadly oblong, acuminate, coarsely serrate, very rough above and pubescent beneath. Canada to Fla.

glàbra (*U. scabra. U. montana*). Wych E. Scotch E. Wide-spreading large tree not suckering: lvs. large, dull green, 4–8 in. long, mostly obovate, coarsely double-serrate, rough above and pubescent beneath: young parts pubescent: fr. large and abundantly produced, with seed in center. Great Britain to Siberia.—Much planted in N. Amer., in several forms. Var. **atropurpùrea.** Lvs. purple. Var. **Cámperdownii.** Camperdown E. Branches gracefully drooping forming a globose head; grown as a top-worked head on a straight elm stock. Var. **cornùta** (*U. tridens* and *triserrata*). Horned E., from the two long projections or lobes on the shoulders or apex of the larger lvs. Var. **críspa** (*U. asplenifolia, incisa* and *urticæfolia*). Fernleaf E. Lvs. thick and narrow (1–2 in. broad), heavily veined and the margins crispate-serrate; sometimes pendulous; slow-growing tree. Var. **exoniénsis** (var. *fastigiata. U. exoniensis*). Exeter E. Branches erect, forming a narrow-headed tree. Var. **fastigiàta** is var. *exoniensis.* Var. **lutéscens.** Lvs. yellow. Var. **nàna.** Bush E. Bush-like, 4–6 ft., small-lvd. Var. **péndula.** Tabletop E. Branches stiffly drooping and more or less elbowed, making a spreading top; worked on erect stocks. Var. **pyramidàlis** is var. *exoniensis.* Var. **variegàta.** Lvs. variegated.

Heỳderi: *U. fulva.*

holländica (*U. Dippeliana* and *U. major*). Holland or Dutch E. A group of forms supposed to be hybrid derivatives of *U. glabra* and *U. carpinifolia,* with mostly large and rather prominently stalked ovate or broadly elliptic lvs. that are nearly smooth and usually glossy above and little pubescent underneath and with unequal base, the veins 14 pairs or less: young parts glabrous or nearly so: seed near the notch of the fr.: large broad trees, often with drooping branches, suckering from the trunk. Var. **bélgica** (*U. latifolia*). Belgian E. Young shoots becoming smooth: lvs. 4–5 or 6 in. long, mostly rather narrowly obovate, soft-pubescent beneath and veins 14–18 pairs. Var. **Dauvéssei.** Tree with broad pyramidal head and hairy branchlets: lvs. soft-pubescent beneath, very unequal at base, to 4 or 5 in. long; perhaps to be associated with *U. glabra.* Var. **Dùmontii.** Similar to var. *belgica* but with narrow head. Var. **Klémmeri.** Tree with narrow pyramidal head, and young branches more or less short-hairy: lvs. 3–4 in. long, ovate, roughish above and slightly pubescent beneath. Var. **péndula.** Downton E. Branchlets somewhat pubescent when young, drooping: lvs. about 3–4 in. long, elliptic, rather thick, smooth above and slightly pubescent underneath. Var. **Pitteùrsii.** Strong-growing: lvs. large, to 5 in. long, broadly ovate to obovate, more or less rough and pubescent; perhaps nearer to *U. glabra.* Var. **supérba** (*U. superba*). Narrow-pyramidal: lvs. to 5 in. long, very oblique at base, glabrous except axillary tufts beneath. Var. **végeta** (*U. Huntingdonii*). Huntingdon E. Vigorous large tree, with ascending branches: lvs. elliptic, to 5 or 6 in. long, mostly smooth above and pubescent beneath only in the axils, veins 14–18 pairs.

Húntingdonii: *U. hollandica* var. *vegeta.*

incìsa: *U. glabra* var. *crispa.*

japónica. Large broad-topped tree with pubescent young branches which are often somewhat drooping: lvs. 3–5 in. long, obovate or oblong, acuminate, veins 12–16 pairs, roughish above and pubescent underneath: seed near apex of fr. Farther Asia.

Kléhmii, Klémmeri: *U. hollandica* var. *Klemmeri.*

lævis (*U. effusa* and *U. pedunculata*). European White E. Tall open-headed tree with branchlets at first pubescent: lvs. to 4 or 5 in. long, oblong or obovate, usually broadest above middle, acuminate, unequal at base, mostly glabrous and smooth above, pubescent underneath. Cent. Eu. and Asia.

latifòlia: *U. hollandica* var. *belgica.*

Líttlefordii: hort. name for habit form of *U. americana.*

màjor: *U. hollandica.*

montàna: *U. glabra.*

nígricans: *U. procera* var. *nigrescens.*

nìtens: *U. carpinifolia.*

parvifòlia (*U. chinensis*). Chinese E. Open-headed tree, partially evergreen in mild climates, blooming in late summer or autumn: lvs. small and firm or thick, 1–2 or 3 in. long, elliptic to ovate, shining and mostly smooth above, becoming nearly or quite smooth underneath: fr. about ⅓ in. long: branchlets thinly pubescent. China, Japan; hardy N. Var. **sempérvirens** is listed and may not be distinct from typical form.

pedunculàta: *U. lævis.*

Pitteùrsii: *U. hollandica* var.

procèra (*U. campestris. U. sativa*). English E. Very tall tree, to 150 ft. (whence the name *procera*, very tall), with more or less pubescent young shoots, usually suckering: lvs. 2–4 in. long, mostly relatively small, broadly oval or ovate, oblique at base, acuminate, roughish above and pubescent beneath: seed above the middle in the notched fr. W. and S. Eu.; in Britain supposed to be native only in S. England.—Popular tree in northeastern states; rarely produces seeds and is propagated by suckers. The continental form is var. **australis,** with thicker firm sharper-pointed lvs. Var. **argénteo-variegàta** (var. *variegata*), lvs. marked white. Var. **Berárdii,** small bushy tree with small rather narrow lvs. 1–2 in. long, coarsely notched. Var. **Dampièri** is *U. carpinifolia* var. Var. **monumentàlis** is *U. carpinifolia* var. *sarniensis.* Var. **nigréscens** (*U. nigricans, U. betulifolia*), lvs. elliptic or ovate, doubly serrate, dark colored. Var. **péndula** has drooping branches. Var. **purpuráscens,** lvs. small, usually 1 in. or less long, purplish. Var. **purpùrea,** lvs. dark purple, of ordinary size. Var. **supérba** is *U. hollandica* var. Var. **umbraculífera** is *U. carpinifolia* var. Var. **Vanhoùttei,** lvs. ovate, coarsely serrate, yellowish. Var. **végeta** is *V. hollandica* var. Var. **Whèatleyi** is *U. carpinifolia* var. *sarniensis.*

pùmila. Dwarf E. Small tree, sometimes shrub-like, with slender often drooping branches: lvs. 2–3 in. long, elliptic to oblong, long- or short-pointed, not deeply serrate, smooth above, mostly glabrous underneath or with axillary tufts: fr. about ½ in. long, from early spring fls.: branchlets glabrous or pubescent only when young: foliage not lustrous nor coriaceous. Turkestan to N. China; hardy N. Var. **arbòrea** (*U. turkestanica*). A tall tree with narrowly ovate or ovate-lanceolate lvs. shining above.

racemòsa: *U. Thomasii.*

rùbra: *U. fulva.*

satìva: *U. procera.*

scàbra: *U. glabra.*

sempérvirens: see *U. parvifolia.*

serótina. September E. Medium-sized tree with somewhat pendulous often corky branches, blooming in autumn: lvs. small, 2–3 in. long, oblong or somewhat obovate, acuminate, veins about 20 pairs, smooth and shining above, pubescent on veins underneath. Ky. south and west, planted in its region.—Sometimes called Red E., a name also used for *U. fulva.*

sibírica: *U. fulva.*

strícta: *U. carpinifolia* var. *cornubiensis.*

supérba: *U. hollandica* var.

Thòmasii (*U. racemosa* of cult.). Rock E. Large tree, with very corky branches and pubescent buds: lvs. large, to 4 or 6 in. long, elliptic to oblong-obovate, rather short-pointed, glabrous or nearly so above, pubescent underneath, coarsely serrate: fr. ½ in. or more long, notched, pubescent. Que. to Tenn. and Neb.

trìdens: *U. glabra* var. *cornuta.*

triserràta: *U. glabra* var. *cornuta.*

turkestánica: *U. pumila* var. *arborea.*

urticæfòlia: *U. glabra* var. *crispa.*

végeta: *U. hollandica* var.

vàseyi, the "vase elm," probably a form of *U. americana.*

viminàlis. Willow E. Slender tree with drooping spray and narrow oval or oblanceolate incised lvs., sometimes variegated: fr. not known. Eu., of doubtful origin, probably a form of *U. procera.*—Plants of another species have been grown in the U. S. under this name.

Webbìana: *U. carpinifolia* var.

Whèatleyi: *U. carpinifolia* var. *sarniensis.*

Wrèdei: *U. carpinifolia* var.

UMBEL: corymbose or indeterminate cluster with branches or rays arising from a common point and about equal in length, resembling framework of umbrella; umbels are characteristic of the Umbelliferæ.

UMBELLÍFERÆ. Parsley or Carrot Family. A large and widely distributed family, mostly in temp. and boreal regions, of about 250 genera, furnishing many plants grown for food, flavoring, medicinal products, and some for ornament. Commonly herbs, rarely somewhat shrubby, with alternate mostly compound lvs., small unshowy bisexual fls. in simple or compound umbels or sometimes heads, having 5-lobed calyx, 5 petals and stamens, inferior 2-celled ovary, and dry fr. of 2 ribbed carpels mostly bearing oil-tubes and splitting apart. They are mostly plants of strong or pungent odor, many of them with poisonous qualities, some of them yielding spices. The genera chiefly known to cult. are: Aciphylla, Actinotus, Ægopodium, Ammi, Anethum, Angelica, Anisotome, Anthriscus, Apium, Arracacia, Astrantia, Athamanta, Bupleurum, Carum, Chærophyllum, Cicuta, Conium, Coriandrum, Crithmum, Cuminum, Daucus, Erigenia, Eryngium, Ferula, Fœniculum, Hacquetia, Harbouria, Heracleum, Hydrocotyle, Laserpitium, Leptotænia, Levisticum, Ligusticum, Lomatium, Meum, Molopospermum, Musineon, Myrrhis, Oreoxis, Osmorhiza, Pastinaca, Petroselinum, Peucedanum, Phellopterus, Pimpinella, Pseudocymopteris, Selinum, Sium, Smyrnium, Taenidia, Trachymene, Zizia.

UMBELLULÀRIA. *Lauraceæ.* Evergreen tree to 80 ft. high, native in Calif. and Ore. **U. califórnica.** California-Laurel. Lvs. ovate-oblong to lanceolate, to 5 in. long, shining above: fls. yellowish-green, in many-fld. umbels: fr. a greenish or purplish drupe to 1 in. long.—It thrives in fairly moist soils. Propagated by seeds.

UMBÍLICUS. *Crassulaceæ.* Per. succulents with lvs. alternate, fleshy, peltate or cordate or orbicular, depressed in the center: sts. mostly simple, terminating in a raceme or panicle; fls. 5-parted, yellowish or greenish, with petals fused into a long cylindrical or campanulate tube. About 16 species in the Old World, in N. Afr., S. Eu., W. Asia. Cult. as for Sedum and Sempervivum; see *Succulents.*

chrysánthus: *Sedum chrysanthum.*

horizontàlis. Basal lvs. peltate, upper lvs. lanceolate to subulate, entire: floral bracts subulate; fls. standing out at right angles from axis of raceme, with cylindrical corolla, to ¼ in. long. Medit. region.

pendulìnus (*Cotyledon Umbilicus*). Navelwort. Pennywort. To 1 ft.: lvs. orbicular, peltate, coarsely toothed: fls. yellowish-green, drooping. W. Eu. to W. Asia and trop. Afr.

pérsicus: species of doubtful status, possibly a var. of *Sedum sempervivoides.*

Péstalozzæ: possibly to be referred to *Sedum sempervivoides.*

platyphýllus: *Sedum sempervivoides.*

spinòsus: *Sedum spinosum.*

Wínkleri: *Sedum Winkleri.*

UMBRELLA-LEAF: *Diphylleia cymosa.* **-Plant:** *Cyperus alternifolius, Peltiphyllum peltatum.* **-Tree:** *Magnolia tripetala.* **-Tree, Texas:** *Melia Azedarach* var. *umbraculiformis.* **-Wort:** *Allionia.*

UMKOKOLO: *Dovyalis caffra.*

UNAMIA ALBA: *Aster ptarmicoides.*

UNGNÀDIA. *Sapindaceæ.* Shrub or tree to 30 ft., native from Tex. to Mex. and occasionally planted in the S. **U. speciòsa.** Texan, Mexican or Spanish Buckeye. Lvs. alternate, of 5–9 ovate-lanceolate shining lfts. to 5 in. long, wavy-toothed: fls. rose, 1 in. across, in clusters in Apr.–May before the lvs.: fr. a leathery 3-valved caps. 2 in. across, with large black seeds. Not hardy in northern states.

UNICORN-PLANT: *Proboscidea.*

UNIFOLIUM: *Maianthemum.*

UNÌOLA. *Gramineæ.* N. American per. grasses with prominent flat 2-edged spikelets borne in panicles; one species grown for ornament. See *Grasses.*

latifòlia. To 5 ft.: lvs. to 9 in. long and 1 in. wide, rough on margins: spikelets to 1½ in. long, on slender hanging stalks, the panicles to 10 in. long and drooping. Pa. to Fla. and Tex.

UNISEXUAL: of one sex; staminate only or pistillate only.

UPAS-TREE: *Antiaris toxicaria.*

URBINIA: *Echeveria.*

URD: *Phaseolus Mungo.*

ÙRERA. *Urticaceæ.* Trop. shrubs or trees often armed with stinging hairs, having alternate simple lvs. and unisexual fls. in panicles; one species sometimes planted in S. Fla. and southward.

caracasàna. Shrub to 20 ft.: lvs. ovate, cordate at base, the largest to 1 ft. long and 10 in. wide: fls. in clusters from the branches: fr. vermilion-colored, very small. Trop. Amer.—See *Bœhmeria Urera.*

URGÍNEA. *Liliaceæ.* Bulbous herbs with basal lvs. and whitish, yellowish or rose fls. in racemes terminating the scapes, the perianth-segms. distinct; the bulbs are collected in the wild for their medicinal properties; also occasionally grown for ornament but only partially hardy.

marítima (*U. Scilla*). Sea-Onion. To 3 ft.: lvs. to 1½ ft. long and 4 in. wide: fls. whitish, ½ in. long, on racemes to 1½ ft. long. Canaries to Syria, S. Afr.

Scílla: *U. maritima.*

UROPÁPPUS. *Compositæ.* Low ann. herbs of W. N. Amer. with basal lvs. and solitary heads of yellow ligulate fls.; pappus of scales or awns. Sometimes seen in the flower-garden.

linearifòlius (*Microseris linearifolia*). To 1½ ft.: lvs. linear, to 6 in. long, entire, toothed or lobed: heads to 1¾ in. across, with white or brown pappus. Wash. to Calif. and New Mex.

UROSPÉRMUM. *Compositæ.* A small genus of usually ann. or bien. herbs from the Medit. region, having toothed or lyrately pinnatifid lvs. and long-peduncled yellow heads of both ray- and disk-fls., the former truncately 5-toothed at apex. Propagated by seed and may be grown in the border or for cutting.

Dalechámpii. Bien. or sometimes per. to 1½ ft.: lower lvs. runcinate, pinnatifid, pubescent, upper ones ovate to lanceolate, often entire: heads solitary, to 2 in. across, sulfur-yellow, involucre obconical, soft-pubescent.

UROSTIGMA: *Ficus microphylla.*

URSÍNIA. *Compositæ.* S. African ann. or per. herbs or subshrubs, strongly scented, the lvs. alternate and pinnately cut; heads daisy-like, solitary or loosely clustered; pappus of scales and bristles.

The annual flower-garden ursinias are grown from seed planted indoors or directly in the open.

anethoìdes (*Sphenogyne anethoides*). Shrubby per. to 2 ft., often webby-pubescent: lvs. pinnatisect, to 1½ in. long, segms. semi-terete: fls. bright golden-yellow, in solitary heads to 1 in. across, on peduncles to 8 in. long.—Confused with *U. anthemoides* from which it differs in its semi-terete lf.-segms. and uniformly colored ray-fls. Perhaps best treated as an ann.

anthemoìdes (*Sphenogyne anthemoides*). Ann. to 1 ft.: lvs. pinnate into flat linear acute lobes: heads solitary, on long drooping sts., rays yellow, purplish on the outside.—In the N. the plant does well in the cool greenhouse.

fœniculàcea (*Sphenogyne fœniculacea*). Ann. to 1 ft.: lvs. bipinnate into linear acute lobes: heads solitary on elongate naked peduncles, rays yellow on each side.

púlchra (*Sphenogyne speciosa*). Ann., branching, to 2 ft.: lvs. 2-pinnate into linear lobes: heads yellow or orange, 2 in. across, solitary, rays spotted brown-purple at the base.

URTÌCA. Nettle. *Urticaceæ.* Herbs with stinging hairs, opposite toothed or cut lvs. and very small unisexual fls. in axillary clusters or panicles; one species sometimes grown for medicinal properties and another for ornament. Propagated by seeds and cuttings.

diòica. Stinging N. Per. to 4 ft.: lvs. ovate, to 5 in. long and 3 in. wide, pubescent beneath: fls. in clusters in branched panicles. Eu., Asia; nat. in N. Amer.

pilulífera. Roman N. Ann. to 2 ft.: lvs. ovate or heart-shaped, to 3 in. long: staminate fls. in clusters, pistillate in globular heads. S. Eu.—Sometimes grown under glass N.

ùtilis: *Bœhmeria nivea.*

URTICÀCEÆ. Nettle Family. More than 40 widely distributed genera of herbs, shrubs or trees with simple lvs., small mostly unisexual fls. having 3–5-parted calyx, 3–5 stamens, superior 1-celled ovary and fr. an achene. Some of the kinds bear sharp stinging hairs. The plants are of minor importance horticulturally. A few genera are grown for ornament, for fiber, or as drug plants, as Bœhmeria, Debregeasia, Gesnouinia, Helxine, Parietaria, Pellionia, Pilea, Urera, Urtica.

UTRICLE: a small bladder; a bladdery 1-seeded fruit.

UTRICULÀRIA. Bladderwort, *Lentibulariaceæ.* Aquatic herbs or terrestrial epiphytes of wide distribution, of minor importance in hort. although several names persist in the literature. The group has been divided into several smaller genera; under such treatment *Utricularia vulgaris,* of Eurasia (with a thick blunt spur), remains in the genus, and there are similar North American plants that may be employed in aquaria, as *U. macrorhiza* (or *U. vulgaris* var. *americana*) with an awl-like spur on the fl., and *U. minor* a much smaller plant with sts. not free-floating but creeping on the bottom in shallow water. The other species most frequently mentioned in hort. literature pass into other genera although for the present purposes of the horticulturist they may well be retained in Utricularia: *U. bifida* and *U. prehensilis* are species of Stomoisia under recent treatment; *U. alpina* (*U. montana*), *U. Endresii* which is very much like *U. alpina* except in the smaller and thinner lvs. and lilac fls. with yellow palate, *U. janthina* and *U. reniformis,* are species of

Orchyllium; *U. longifolia* is Calpidisca. Two plants have been described as *U. longifolia;* both are species of Calpidisca. The *U. longifolia* of Gardner, 1843, is from Brazil; *U. longifolia* of Sander, 1893, is from Mt. Roraima, S. Amer. and *U. Forgetiana* may be the same.

alpìna (*U. montana* of old literature but now *Orchyllium alpinum*) is a trop. American plant with clusters of hollow tuber-like bladders on the roots at base of st.: lvs. elliptic-lanceolate, to 6 in. long: fls. orchid-like, 1½ in. across, white with yellow palate, 1-4 on a scape.—This plant is apparently in cult.

UVA-URSI: *Arctostaphylos.*

UVULÀRIA. Bellwort. *Liliaceæ.* Per. herbs from rootstocks, having alternate sessile or perfoliate lvs. and yellow bell-shaped drooping fls. mostly solitary at ends of branches.

Bellworts are sometimes grown in the wild-garden. Of easy cultivation in rich soil and shady locations. Propagated by division.

flàva: *U. perfoliata* var.

grandiflòra. To 1½ ft.: lvs. oblong to ovate, to 5 in. long, perfoliate, pubescent beneath: fls. lemon-yellow, to 1½ in. long. Que. to Ga. and Kans.

perfoliàta. To 1½ ft.: lvs. oblong to ovate, to 5 in. long, glabrous, perfoliate: fls. pale yellow, 1¼ in. long. Que. to Fla. and Miss. Var. **flàva** has deeper yellow fls.

pubérula (*Oakesia* and *Oakesiella puberula*). Differs from *U. sessilifolia* in its stiffer lvs. whose margins are rougher, and ovary and caps. not stipitate. N. B. to Ga. west to Minn. and Ark.

sessilifòlia (*Oakesia* and *Oakesiella sessilifolia*). To 1 ft.: lvs. oblong-lanceolate, to 3 in. long, sessile: fls. greenish-yellow, 1¼ in. long. N. B. to Ga. and Ark.

V

VACCARIA: *Saponaria Vaccaria.*

VACCÍNIUM. BLUEBERRY. CRANBERRY. *Ericaceæ;* by some authors placed in *Vacciniaceæ.* Shrubs with alternate deciduous or evergreen simple lvs. which often turn brilliant colors in autumn, cylindrical to wheel-shaped fls., and fr. a berry capped by the persistent calyx; native in the northern hemisphere and mts. of tropics. Some authors divide the group into several genera.

Some of the vacciniums are grown for ornament in borders or colonized in wild areas. Others are grown for the edible fruits. Most of them require peaty or sandy soils and do not thrive in limy lands. For culture see *Blueberry* and *Cranberry.*

angustifòlium (*V. pensylvanicum* var. *angustifolium*). Deciduous, to 1 ft.: lvs. lanceolate, to ¾ in. long, serrulate, with bristle-tipped teeth, glabrous or nearly so: fls. greenish-white, to ¼ in. long, in small clusters, Apr.-May: fr. bluish-black, bloomy, rarely white or reddish, to ½ in. across. Arctic Amer. south to mts. of N. H. and N. Y. Var. **lævifòlium** (*V. pensylvanicum*). LOWBUSH B. To 2 ft.: lvs. narrowly elliptic to oblong-lanceolate, to 1½ in. long. Newf. to Wis. and Va.—Grown for its fr. and now greatly improved with named hort. vars. available.

arbòreum (*Batodendron arboreum*). FARKLEBERRY. SPARKLEBERRY. To 30 ft., evergreen in the S. but deciduous northward: lvs. to 2 in. long, shining above: fls. white, ¼ in. long, in racemes to 2½ in. long, July–Aug.: fr. black, ¼ in. across. Va. to Fla. and Tex.; not hardy N.

atrocóccum: *V. corymbosum* var.

buxifòlium. Erect shrub 1½–4 ft. high, glabrous: lvs. oblong, to ⅜ in. long, obtuse, black dotted beneath, very thick and leathery: fls. white, about ⅛ in. long, in dense racemes. Borneo.

cæspitòsum. DWARF BILBERRY. Tufted deciduous shrub to 1 ft.: lvs. to 1½ in. long, obovate, crenate-serrulate, shining above: fls. white or pink, ⅕ in. long, solitary, May: fr. black, bloomy, ¼ in. across. N. Amer.

canadénse. Deciduous, twiggy, 1–2 ft., making colonies: lvs. narrow, 1 in. or more long, soft-pubescent both sides: fls. greenish-white to reddish, about ¼ in. long: fr. blue, more or less glaucous. Lab. to Man. and Va.

corymbòsum. HIGHBUSH or SWAMP B. or WHORTLEBERRY. Deciduous, to 15 ft.: lvs. to 3 in. long, ovate-lanceolate, glabrous to pubescent: fls. white or pinkish, to ⅓ in. long, in clusters in May: fr. blue-black, bloomy, ⅓ in. across. Me. to Fla. and La. Var. **atrocóccum** (*V. atrococcum*), lvs. and twigs densely pubescent. Intergrading forms between this and the type are known. Var. **glàbrum** (var. *pallidum*), lvs. pale beneath.

crassifòlium (*Herpothamnus crassifolius*), Sts. trailing to 3 ft.: lvs. persistent, broadly ovate to ovate-elliptic, to ½ in. long, minutely and distantly serrulate: fls. pink, ⅛ in. long, in small axillary clusters, in spring: fr. black, ⅛ in. across. N. C. to Ga.

Dunaliànum. Large shrub: lvs. to 4 in. long, leathery: fls. ⅕ in. long, in racemes to 3 in. long: fr. ⅙ in. across. Himalayas.

erythrocárpum (*Oxycoccus erythrocarpus*). Deciduous, to 6 ft.: lvs. to 3 in. long: fls. pink, ⅓ in. long, 4-parted, solitary, nodding, May: fr. red turning purplish, ¼ in. across. Va. to Ga.

hirsùtum. HAIRY HUCKLEBERRY. Deciduous, to 3 ft.: lvs. to 2½ in. long, pubescent: fls. white or pinkish, to ½ in. across, in short dense racemes, May–June: fr. purplish-black, ¼ in. across. N. C. to Ga.

hýbridum: listed name.

japónicum. To 3½ ft., twigs glabrous: lvs. ovate to oblong, to 2½ in. long, acute, base rounded, bright green above, glaucescent beneath, glabrous, margins bristly-serrulate: fls. pink, to ⅓ in. long: fr. scarlet, pendulous. Japan.

macrocárpon (*Oxycoccus macrocarpus*). LARGE or AMERICAN C. Evergreen, sts. creeping, to 3 ft. long: lvs. to ¾ in. long, whitish beneath: fls. pink, 4-parted, ⅓ in. long, in lateral clusters, June–Aug.: fr. red, to ¾ in. across. Newf. to N. C. and Minn.

membranàceum. To 4½ ft.: lvs. ovate to ovate-oblong, to 3 in. long, thin, glabrous, serrulate: fls. solitary on drooping pedicels to ⅝ in. long, becoming erect: fr. black. Mich. to B. C. and Ore.

microphýllum: *V. scoparium.*

Myrsinìtes (*V. nitidum. Cyanococcus Myrsinites*). Evergreen, to 2 ft.: lvs. to ¾ in. long, with bristly teeth, minutely hispid beneath: fls. white or pink, ¼ in. long, in umbel-like clusters: fr. black or glaucous, to ⅓ in. across. N. C. to Fla. and La.

Myrtíllus. WHORTLEBERRY. Deciduous, to 2 ft.: lvs. to 1¼ in. long: fls. pinkish, ¼ in. long, solitary, May: fr. black, bloomy, ⅓ in. across. Eu., N. Asia.

nítidum: *V. Myrsinites.*

ovàtum. To 12 ft., evergreen: lvs. to 1¼ in. long, sharply and finely serrate, glaucous, hispid beneath: fls. white or pink, ¼ in. long, in short racemes, July–Aug.: fr. black, ⅓ in. across. B. C. to Calif.—Sold for winter green.

Oxycóccus. SMALL or EUROPEAN C. Evergreen, sts. creeping, to 1 ft. long: lvs. to ⅓ in. long, ovate, acute, glaucous beneath: fls. pink, 4-parted, ¼ in. long, 1–4 in terminal clusters, May–July: fr. red, ⅓ in. across. N. Eu., N. Asia, E. N. Amer. Var. **intermèdium** has lvs. to ⅝ in. long, longer rachis with 2–10 fls., slightly larger fr.

pállidum (*V. vacillans*). DRYLAND B. Deciduous shrub to 3 ft., with green white-speckled and glabrous branchlets: lvs. oval to obovate, to 2 in. long, glaucous underneath: fls. white or tinged red, ¼ in. or more long, in dense clusters: fr. blue and glaucous. Me. to Ga. and Mo.

parvifòlium. Deciduous, to 10 ft., branchlets and twigs with decurrent ridges: lvs. to ½ in. long: fls. pinkish-white: fr. red, ¼ in. across. Alaska to Calif.

pensylvánicum: *V. angustifolium* var. *lævifolium.*

scopàrium (*V. microphyllum*). Shrub to 8 in.: lvs. ovate to elliptic-ovate, to nearly ½ in. long, serrulate: fls. white, to ⅛ in. long, urn-shaped: fr. red, about ¼ in. diam. Alta. to B. C. south to Colo. and Calif.

stamíneum (*Polycodium stamineum*). DEERBERRY. Deciduous, to 3 ft., branchlets hairy and not white-speckled: lvs. to 4 in. long, glaucous beneath: fls. white or purplish, ¼ in. long, in racemes to 2½ in. long, May–June; stamens exserted: fr. greenish, ⅓ in. across. Mass. to Fla. and La.

uliginòsum. BOG BILBERRY. Erect deciduous shrub to nearly 2 ft. with branchlets shredding: lvs. oval to obovate, to 1 in. long, glaucous, bright green and remotely pubescent beneath, margins entire: fls. pink or white: fr. blue-black and glaucous. N. Eu., N. Asia, N. Amer.

vacíllans: *V. pallidum.*

virgàtum. RABBITEYE B. Deciduous, to 12 ft.: lvs. to 2 in. long, pale beneath: fls. white or pink, ⅓ in. long, in short racemes, Apr.–May: fr. black, ¼ in. across. Va. to Fla and La.

Vìtis-idæa. COWBERRY. To 8 in., creeping, evergreen: lvs. to 1¼ in. long, obovate, minutely hispid beneath, margins entire, shining above: fls. white or pink, ¼ in. long, in short nodding racemes, May–June. Eu., N. Asia. Var. **màjus** has larger lvs. and fr. Var. **mìnus.** MOUNTAIN C. Dwarf forming mats: lvs. to ¾ in. long: fls. pink or red. Alaska to Mass.

VACHELLIA: *Acacia Farnesiana.*

VAGNERA: *Smilacina.*

VALERIAN: *Valeriana.* **African:** *Fedia Cornucopiæ.* **Greek:** *Polemonium cæruleum.* **Red:** *Centranthus ruber.*

VALERIÀNA. VALERIAN. *Valerianaceæ.* Per. herbs or shrubs of various habit in the north temp. zone, with strong-smelling roots, simple or pinnate lvs., small white or rose fls. in cymes or spikes, stamens mostly 3, calyx pappus-like, and fr. a flattened achene.

Valerians are of easy culture in the flower-garden or border. Propagated by seeds or division.

acutíloba. To 1½ ft., diœcious: basal lvs. obovate, entire; st.-lvs. pinnately divided into lanceolate to linear entire segms. Wyo. to New Mex.

álba: sometimes means *Centranthus ruber* var. *alba.*

alliariifòlia. Tall: lvs. cordate-ovate, toothed or wavy: fls. pink. E. Eu., W. Asia.

arizónica. To 6 in., with creeping rootstocks: basal lvs. ovate, entire; st.-lvs. 3–5-parted: fls. bisexual, whitish or pinkish, ½ in. long. Ariz.

coccínea: *Centranthus ruber.*

columbiàna. To 10 in.: basal lvs. ovate, entire; st.-lvs. 3-parted, the terminal segm. 3-lobed: fls. whitish, ½ in. long. Wash.

diòica (*V. palustris. V. sylvatica*). To 1 ft., usually diœcious: lvs. broad-ovate, lower st.-lvs. lyrate-pinnatifid, upper divided into linear lfts. Eu.

echinàta: *Valerianella echinata.*

edùlis. To 4 ft., with edible thick roots: basal lvs. thick, oblanceolate; st.-lvs. divided into linear segms.: fls. diœcious, yellowish-white. N. Amer.

excélsa. Bearing runners ending in rosettes: lvs. pinnately divided into 3–5 pairs of toothed lfts.: fls. bisexual, reddish or white. Eu.

micrántha. To 3 ft., with creeping rootstocks: basal lvs. entire or with 1–2 pairs of lfts.; st.-lvs. 5–7-parted: fls. unisexual, white, ⅛ in. long. Mts., Mont. to Utah.

montàna. To 1 ft., diœcious: lvs. ovate or the upper linear-lanceolate, entire or toothed: fls. bright rose. Eu., W. Asia.

officinàlis. COMMON V. GARDEN-HELIOTROPE. To 5 ft.: lvs. pinnately divided into 7–10 pairs of ovate-oblong to lanceolate segms., entire or toothed: fls. bisexual, whitish, pinkish or lavender, very fragrant. Eu., N. Asia; nat. in N. Amer. Var. **álba** has white fls. and **rùbra** red.

palústris: *V. dioica.*

Phù. To 3 ft.: basal lvs. ovate-oblong, entire or toothed at base; st.-lvs. pinnately divided into 3–4 pairs of oblong entire segms.: fls. bisexual, whitish or pinkish. Caucasus. Var. **aùrea,** young shoots golden-yellow.

pyrenàica. To 4 ft.: basal lvs. cordate-ovate, coarsely toothed; st.-lvs. 3-parted into toothed segms., the terminal largest: fls. bisexual, pale rose. Pyrenees.

ròsea: *Centranthus ruber* var.

rùbra: *Centranthus ruber.*

sitchénsis. To 2 ft.: basal lvs. ovate or oblong, entire or lobed; st.-lvs. 3–5-parted: fls. bisexual, white, fragrant, ⅓ in. long. Alaska to Ida.

supìna. To 6 in.: lvs. obovate or the upper lanceolate, entire or slightly toothed, ciliate on edges: fls. pink. Austria.

sylvática: *V. dioica.*

uliginòsa. To 2½ ft.: basal lvs. oblong, nearly entire: st.-lvs. pinnately divided into 3–15 lfts.: fls. pink to white. Que. to N. Y. and Mich.

VALERIANÀCEÆ. VALERIAN FAMILY. Widely distributed herbs or shrubs of about 9 genera: lvs. opposite, simple or pinnate: fls. small, bisexual or unisexual, with gamopetalous 5-lobed corolla, usually 1–3 stamens, and inferior 1–3-celled ovary: fr. an achene. Centranthus, Fedia, Patrinia, Plectritis, Valeriana and Valerianella are grown as flower- or vegetable-garden subjects.

VALERIANÉLLA. *Valerianaceæ.* Small ann. herbs mostly native in the Medit. region, with entire basal lvs., entire or toothed st.-lvs., small whitish, bluish or rose fls. in cymes, stamens usually 3, ovary 3-carpelled, and fr. with 2 empty cells and 1 fertile cell; two are grown as pot-herb or salad plants and others for ornament or interest.

Corn-salad is of easy cultivation in spring and fall. Successioned sowings may be made and it takes six to eight weeks for maturity. Plants should be thinned or transplanted to stand about 6 inches apart in the row.

congésta: *Plectritis congesta.*

echinàta (*Valeriana echinata*). To 1 ft.: st.-lvs. wavy-toothed or cut: fls. pink: fr. linear, 3-angled, with 3 reflexed teeth. S. Eu.

eriocárpa. ITALIAN CORN-SALAD. Very similar to *V. olitoria* but with lvs. to 5 in. long, and flattened frs. surmounted by truncate calyx-limb. S. Eu.

olitòria (*V. Locusta* var. *olitoria*). CORN-SALAD. To 1 ft.: st.-lvs. spatulate or oblong, to 3 in. long, toothed or entire: fls. light blue: fr. nearly spherical with 2-pointed beak. Eu.

VALERIANOIDES: *Stachytarpheta.*

VALLÀRIS. *Apocynaceæ.* Woody twining or clambering vines with milky juice, opposite lvs., and salver-shaped fls. in axillary clusters; trop. Asia and Malaya, one grown in S. Fla. as a tall veranda and arbor cover.

dichótoma: *V. Heynei.*

Hèynei (*V. dichotoma*). Tall climbing: lvs. oval to linear-oblong, to 4 in. long, strongly pinnately veined: fls. creamy-white or greenish-white, fragrant, ⅔ in. across, the tube shorter than lobes. Dec.–Apr. India.

VALLISNÈRIA. EEL-GRASS. TAPE-GRASS. *Hydrocharitaceæ.* Submerged grass-like aquatic per. herbs with linear lvs., staminate fls. on a short stalk or practically sessile near base of plant and pistillate on long spirally coiled scapes and coming to surface; occasionally grown in aquaria. Propagated by cuttings.

americàna. Formerly included in *V. spiralis* and differing chiefly in the longer and more slender scape of the staminate fl. and the smaller spathe. Me. to Fla. and Miss.

spiràlis. Lvs. from 6 in. to 6 ft. long and 1/12–⅓ in. wide: staminate fls. on short club-shaped scapes; pistillate fls. white. S. Eu., W. Asia.—The plant known to the trade as "Italian type" is probably *V. spiralis,* and is said to grow all winter while *V. americana* does not: the former is not hardy.

VALLÒTA. *Amaryllidaceæ,* S. African bulb grown in the greenhouse. **V. speciòsa** (*V.* and *Amaryllis purpurea*). SCARBOROUGH-LILY. Lvs. to 2 ft. long and 1 in. wide, with fls.: fls. scarlet, funnelform, to 3 in. across, in umbels terminating a hollow scape to 3 ft. high; summer and autumn. Var. **álba** has white fls.—The bulbs should be kept somewhat moist even during the resting period. The roots should be interfered with as little as possible and plants may be kept in the same pots several years if liquid manure is applied. Repotting should be done after flowering is over.

VALVE: a separable part of a pod; the units or pieces into which a capsule splits or divides in dehiscing.

VANCOUVÈRIA. *Berberidaceæ.* Per. herbs of W. N. Amer., having creeping rootstocks, ternately compound lvs. and small drooping fls. in panicles on leafless scapes; grown in the border in rich soil.

chrysántha. To 1 ft., evergreen: lfts. slightly 3-lobed, rather thick: fls. golden-yellow, larger than in *V. hexandra.* Ore.

hexándra. To 1½ ft.: lfts. ovate, to 1½ in. long, thin: fls. white, ½ in. long. Wash. to Calif., in forests.

parviflòra. INSIDE-OUT FLOWER. To 20 in., evergreen: lfts. oval, slightly 3-lobed, to 1½ in. long, with cartilaginous margins: fls. white or lavender, ⅓ in. long, in panicles to 7 in. long. Ore., Calif.

VÁNDA. *Orchidaceæ.* Old World epiphytic orchids with leafy sts. and fls. in axillary racemes or panicles, the sepals and petals similar and spreading, the lip 3-lobed, spurred or saccate, united with foot of column. See *Orchids* for cult.

Amesiàna. Sts. short: lvs. linear or almost cylindrical, to 12 in. long: infl. usually racemose, exceeding lvs., to about 20-fld.: fls. 1½ in. across; sepals and petals white; lip amethyst-purple and white. Dec.–Apr. Burma, Indo-China.

Bàtemanii: *Vandopsis lissochiloides.*

Bóschii. Hybrid between *V. tricolor* and *V. luzonica.*

Bóxallii: *V. lamellata* var.

cærùlea. To about 3 ft. high: lvs. to 8 in. long and 1 in. wide: racemes longer than lvs., loosely about 3–11-fld.: fls. to 4 in. across; sepals light blue reticulated with azure; lip dark blue. July–Jan. Himalayas, Burma.

cæruléscens. Sts. to 2 ft. long: lvs. to 8 in. long: infl. about 14 in. long, racemose, 9- many-fld.: fls. to 1½ in. across; sepals and petals similar, pale lilac-blue; lip dark blue. Mar.–July. Burma.

cristàta. Lvs. to 7 in. long and ¾ in. wide: infl. short, few-fld.; sepals and petals yellow-green; lip yellow streaked with dark purple and purple side lobes. Mar.–July. Himalayas, Burma.

Denisoniàna. Lvs. to 12 in. long and ¾ in. wide: infl. to 5 in. long, 5–6-fld.: fls. to 2½ in. across, white or creamy-white with orange spot at base of lip. Apr.–July. Burma.

densiflòra: *Anota densiflora.*

Faùstii. Hybrid between *V.* Phallax and Gil Triboulet.

gigantèa: *Vandopsis gigantea.*

Kimballiàna. Sts. short, to 6 in. long: lvs. subcylindric, to 12 in. long: infl. to about 15 in. long, racemose, 4–12-fld.:

fls. about 2¼ in. across; sepals and petals white; lip with side lobes yellow spotted with red and mid-lobe violet-purple. Aug.–Nov. Burma, China.

lamellàta. Sts. stout, to over 1 ft. high: lvs. ligulate, imbricating, to 16 in. long, conduplicate: infl. longer than lvs., 4–many-fld.: fls. to 2 in. across; sepals and petals yellow blotched with chestnut-brown; lip lilac with white keels. Aug.–Apr. Philippines. Var. **Bóxallii** (*V. Boxallii*) has longer lvs. and racemes and more brightly colored fls.

Lòwii: *Arachnis Lowii.*

luzónica. Fls. with white sepals and petals marked with purple, rose-purple lip and white spur. Philippines.

Párishii (*Vandopsis Parishii*). Sts. 7–9 in. long: lvs. to 10 in. long and 4 in. wide: infl. to about 15 in. long, racemose, up to 12–fld.: fls. about 2 in. across; sepals and petals greenish-yellow spotted with brown; lip violet-mauve edged with white. Spring and summer. Burma, Indo-China. Var. **Marriottiàna** has fewer-fld. racemes, sepals and petals rose tinged with brown.

Róxburghii: *V. tesselata.*

Sanderiàna (*Esmeralda* and *Euanthe Sanderiana*). Sts. relatively short, thickly covered with distichous lvs. to about 19 in. long and 1 in. wide: racemes 5–10-fld., generally shorter than lvs.: fls. 3–4 in. across; dorsal sepal and petals pale rose or lilac; lateral sepals larger, greenish or brownish-yellow with purple-red veining; lip with basal concave half tawny-yellow and anterior half reddish-brown. July–Dec., May. Philippines.

spathulàta. Sts. to 2 ft. high: lvs. to 4 in. long, shortly 2-lobed: peduncle to 1½ ft. tall, raceme few-fld.: fls. golden-yellow, 1¼ in. across. India, Ceylon.

suàvis: *V. tricolor* var.

tères. Sts. several ft. long: lvs. to 8 in. long: infl. racemose, few-fld., to 12 in. long: fls. to 4 in. across; sepals and petals pale rose-purple; lip with tawny-yellow side lobes with bands of red spots and mid-lobe yellow below and rose-purple near apex. May–Aug. Himalayas, Burma. Var. **Ándersonii** has larger brighter colored fls.

tesselàta (*V. Roxburghii*). Sts. to 2 ft. high: lvs. conduplicate, to 8 in. long: infl. to 8 in. long, to 10-fld.: fls. 2 in. across; sepals and petals greenish or bluish reticulated with brown; lip with white side lobes and violet-purple mid-lobe. Nov.–Aug. India, Ceylon, Burma, China.

trícolor. Sts. to 3 ft. long: lvs. to about 18 in. long and 1½ in. wide, imbricating below: infl. racemose, shorter than lvs., 7–many-fld.: fls. fleshy, very fragrant, to 3 in. across; sepals and petals white to yellow spotted with brown; lip with whitish side lobes and magenta mid-lobe. Feb.–July. Java. Var. **Pátersonii** has cream-white fls. densely spotted with chocolate-brown and lip bright magenta. Var. **planilábris** has larger brighter colored fls. with citron-yellow sepals and petals spotted with brown and rose lip margined with purple. Var. **suàvis** has longer racemes, sepals and petals white with fewer red-purple spots.

violàcea: *Anota violacea.*

VANDÓPSIS. *Orchidaceæ.* Orchids allied to Vanda and with similar habit but differing in the lip being without a spur and laterally compressed in front.

gigantèa (*Vanda gigantea*). Sts. stout, 20 in. high or more: lvs. to 28 in. long and 3 in. wide: infl. laxly racemose, to 14-fld.: fls. fleshy, to almost 3 in. across; sepals and petals yellow with brown ocellate spots inside and purplish outside; lip white and yellowish. Feb.–Apr. Burma, China.

lissochiloìdes (*Vanda Batemanii*). Sts. stout, to 6 ft. high: lvs. to 24 in. long and 2½ in. wide: infl. laxly racemose, much exceeding lvs., to 26–fld.: fls. fleshy, 2–3 in. across; sepals and petals inside golden-yellow spotted with crimson, outside violet-rose; lip with small yellowish side lobes and purplish mid-lobe. Apr.–Oct. Philippines, Malaya.

Lòwii: *Arachnis Lowii.*

Párishii: *Vanda Parishii.*

VANGUÈRIA. *Rubiaceæ.* Trop. and subtrop. trees or shrubs with usually opposite lvs., small white or greenish fls. in axillary clusters, and drupaceous fr. said to be edible; one species is planted in S. Fla.

infaùsta. Shrub to 10 ft. or small tree, rusty-tomentose: lvs. ovate or nearly orbicular, 2–9 in. long: fls. greenish, ¼ in. long: fr. globose, to 1 in. across, glabrous. Trop. Afr.

VANHEÉRDIA. *Aizoaceæ.* Dwarf succulents of the Mesembryanthemum group, with keeled lvs. united ½ or more their length, edges finely toothed, and 1–3 stalked orange or yellow fls.; stigmas 10. S. Afr.

Roòdiæ (*Rimaria Roodiæ*). Plant-body ovoid, to 1½ in. across, producing second pair of lvs. in fissure: fls. 1½ in. across.

VANIERIA: *Cudrania.*

VANÍLLA. *Orchidaceæ.* Leafy or leafless climbing orchids of both hemispheres, with commonly large fls. in short axillary racemes or spikes: sepals and petals similar; lip with lower part more or less united to column. Grown for ornament and chiefly for the elongated seed-pods which, in some species, yield the vanilla extract of commerce.

Vanilla vines are grown commercially in semi-tropical regions where temperature and humidity are high, the soil rich in organic matter and with constant shade. The vines are supported on poles or trunks of the shade trees. Increased primarily by root-cuttings, but propagation by seed in nutrient culture has been developed recently. See *Orchids.*

aromática: a name of uncertain botanical application, probably referable to *V. fragrans.*

fràgrans (*V. planifolia*). COMMON VANILLA. Lvs. to 9 in. long and 3 in. wide: fls. greenish to yellowish, to about 2½ in. long, in short many-fld. racemes, Dec.–June: pods 3-angled, 6–9 in. long. Trop. Amer.; intro. elsewhere. Var. **variegàta** (*V. planifolia* var. *variegata*) has lvs. variegated with white.

planifòlia: *V. fragrans.*

VANILLA, CAROLINA: *Trilisa odoratissima.*

VARIETY. A group or class of plants subordinate to a species. Thus, *Lycopersicon esculentum,* tomato, is a species in nature; a race or form is described as var. (variety) *cerasiforme.* It is essential to clearness in speaking or writing about plants to keep these categories distinct, yet they are commonly not carefully recognized and here arises one of the causes of confusion in nomenclature. To speak of all kinds of plants as different varieties, which is a prevailing popular practice, is failure to understand the subject.

There are two classes or ranges of varieties—those displaying rather marked differences in nature, and those presenting only small more or less temporary or artificial differences useful to the gardener. The former class is entitled to Latin botanical names, as *Rosa carolina* var. *glandulosa,* whereas the horticultural varieties of roses mostly (and properly) receive vernacular names. What constitutes a variety is a question of personal opinion or judgment; but to name such a variation as if it were a species (as *Salvia compacta* rather than *S. splendens* var. *compacta*) is to introduce confusion in the identities of plants; and clear identification is an essential to the best horticulture.

VARNERIA AUGUSTA: *Gardenia jasminoides.*

VARNISH-TREE: *Aleurites moluccana, Rhus verniciflua.*

VEGETABLE-GARDENING is that branch or department of horticulture that is concerned with the growing of oleraceous or esculent herbs, or of the class of cultivated plants known by custom and tradition as "vegetables." Its formal or Latin equivalent is the term olericulture. The terms are impossible of close definition because the plants that fall within their scope are so various. The best definition is an enumeration of the plants. These plants are prevailingly annual, the marked exceptions being asparagus and rhubarb and also some of the sweet herbs. There are several kinds of vegetable-gardening, as home- or kitchen-gardening, market-gardening, truck-gardening. See *Market-Gardening.*

VEGETABLE MARROW: a form of *Cucurbita Pepo;* see *Pumpkin.* **-Oyster:** *Tragopogon porrifolius.* **-Sponge:** see *Luffa.*

VEÏTCHIA. *Palmaceæ.* Monœcious unarmed feather-palms from Fiji and the New Hebrides, one of which is sometimes grown under glass and may be possible in S. Fla.: trunk closely ringed: spadices at apex of trunk or base of long lf.-column, short and branched, the lower fls. pistillate; stamens 6: fr. large, ellipsoid or ovoid, with terminal stigmatic point, the exterior fibrous. For cult. see *Palm.*

Joánnis (*Kentia Joannis*). Tall tree with single trunk and crown suggesting Dictyosperma: lvs. arching, several ft. long; pinnæ 80–100, close together and drooping, 2¼ in. or less broad, strongly many-nerved, oblique or truncate and somewhat toothed at apex: fr. long-cartridge-shaped and narrowed at apex, 2 in. long. Fiji.

VELTHEÌMIA. *Liliaceæ.* S. African bulbous herbs with basal lvs. and tubular drooping fls. in dense terminal racemes; rarely grown but of easy cult.; spring and summer.

glaùca. Lvs. to 1 ft. long and 1½ in. across, oblanceolate, acute, glaucous: fls. various, white dotted red or reddish-purple dotted yellow.

viridifòlia. Lvs. to 1 ft. long and 3 in. wide: fls. yellow or tinged with red, 1½ in. long, in racemes to 6 in. long on stalks 1½ ft. high.

VELVET-PLANT: *Gynura aurantiaca.*

VENATION: veining; arrangement or disposition of veins.

VENÍDIUM. *Compositæ.* Herbaceous annuals or perennials of S. Afr. with solitary heads of ray- and disk-fls.; pappus none or of scales.

Venidiums are usually treated as annuals, but sometimes grown as perennials under glass. Propagated by seeds sown under glass and transplanted.

calendulàceum: *V. decurrens.*

decúrrens (*V. calendulaceum*). Spreading tomentose per. with sts. to 2 ft. long: lvs. mostly lyrate, the terminal lobe to 1½ in. long: heads golden-yellow with dark center, to 2½ in. across.

fastuòsum. Ann. to 1½ ft. or more, cobwebby when young: lvs. irregularly lobed or nearly lyrate, to 3½ in. long: fls. bright orange with dark purple-brown base, to 4 in. across.

VENTRAL: front; relating to the anterior or inner face or part of an organ; opposite the back or dorsal part.

VENUS FLY-TRAP: *Dionæa muscipula.* **-Hair:** *Adiantum Capillus-Veneris.* **Looking-Glass:** *Specularia Speculum-Veneris.*

VÈPRIS. *Rutaceæ.* Trees or shrubs native in Mauritius, Bourbon and S. Afr., with alternate lvs. of 3 lfts., small unisexual fls. in terminal panicles, and drupaceous fr.; grown out-of-doors in warm regions and under glass in the N. Propagated by cuttings over heat, and by seeds when available.

lanceolàta (*Toddalia lanceolata. Boscia undulata*). Shrub or small tree: lfts. oblong-lanceolate, to 2½ in. long and narrow, wavy margined: fls. white: fr. size of pea.

VERÀTRUM. False Hellebore. *Liliaceæ.* Stout per. herbs with thick rootstocks, broad clasping lvs. and polygamous whitish, greenish or purplish fls. in terminal panicles; sometimes planted in the border or wild-garden. Of easy cult. and hardy. Propagated by division and seeds. The species yield poisonous principles.

álbum. European White H. To 4 ft.: lvs. to 1 ft. long and 6 in. wide: fls. greenish outside, whitish inside, wavy-toothed, in panicles to 2 ft. long. Eu., N. Asia.

califórnicum. To 6 ft.: lvs. to 20 in. long and 8 in. wide, narrower toward top of plant: fls. white marked with green, to ¾ in. long, in panicles to 1½ ft. long. Wash. to Lower Calif.

nìgrum. To 4 ft.: lvs. to 1 ft. long and 8 in. wide: fls. blackish-purple, in narrow panicles. Eu., Asia.

speciòsum. To 6 ft.: lvs. to 1 ft. long and 8 in. wide, soft-pubescent beneath: fls. yellowish-white, ⅓ in. long. Wash. to Mont. and Calif.

tenuipétalum. To 9 ft.: lvs. to 1 ft. long and 8 in. wide: fls. yellowish-white. Colo.

víride. American White H. To 8 ft.: lvs. to 1 ft. long and 6 in. wide, narrower toward top: fls. yellowish-green, to 1 in. across, in panicles 2 ft. long. N. B. to Minn., south to Ga.

VERBÁSCUM. Mullein. *Scrophulariaceæ.* Commonly tall and erect hardy mostly bien. herbs, with alternate simple but sometimes pinnatifid lvs., yellow, tawny, red or purple, rarely white fls. in terminal racemes or spikes; native in Eu. and Asia, several nat. or escaped in N. Amer.

Several kinds are grown in the border where their columnar habit and gray-green foliage give a pleasing contrast. There are named garden kinds, said to be hybrids. Verbascum also hybridizes with Celsia. The species listed here are biennial, or so treated. Mulleins grow well in any soil except a cold wet one. Propagated by cuttings, division or by seed; they often self-sow freely, blooming the following year.

abietìnum (*V. vernale*). Differs from *V. nigrum* in sts. sparsely lvd., paniculately branched with branches suberect or ascending. Balkan region.

Báldaccii. Bien. to 7 ft. or more, green and sticky-glandular throughout: lvs. of basal rosette obovate to oblong-elliptic, st.-lvs. ovate-oblong to ovate, sessile, base truncate to cordate, margins toothed: fls. yellow, 1¼–2 in. across, petals tomentose outside. Greece, Yugoslavia.—A parent of both wild and hort. hybrids.

Blattària. Moth M. To 6 ft., glabrous: lvs. to 2½ in. long, toothed or cut: fls. yellow with lilac throat, 1 in. across, the stamens lilac-pubescent, on solitary pedicels. Eu., Asia; nat. in N. Amer. Var. **albiflòrum** (var. *album*) has white fls.

Boerhàvii. Bien. to 3 ft., robust, densely white-tomentose: lvs. oval to elliptical, margins wavy or toothed: fls. yellow with violet throat, to 1¼ in. across, nearly sessile. Medit. region.

Chàixii. To 3 ft., white-tomentose: lvs. to 6 in. long, coarsely toothed: fls. yellow with purple-woolly stamens, pedicelled, the racemes panicled. S. Eu. Var. **álbum** has white fls.

crassifòlium: *V. lusitanicum.*

densiflòrum: *V. thapsiforme.*

floccòsum: *V. pulverulentum.*

gigantèum: *V. simplex.*

hýbridum: botanically a hybrid between *V. pulverulentum* and *V. sinuatum,* but material in trade may not be of this parentage.

lanàtum. Bien. to 4 ft.: lvs. broadly ovate to elliptical, densely white-woolly beneath and less so above: fls. dull yellow, to ¾ in. across, stamens purple-woolly. Cent. Eu.

leiánthum. To 14 ft., densely white-tomentose: basal lvs. to 4 ft. long and 2 ft. across, st.-lvs. smaller, coarsely toothed: fls. bright yellow, ¾ in. across, clustered in panicled racemes to 7 ft. long, the stamens woolly. Asia Minor.

libàni: a hort. form to 5 ft. high, with large yellow fls.

longifòlium. To 4 ft., white- or yellowish-tomentose: lower lvs. to 2 ft. long, wavy: fls. golden-yellow, 1 in. across, pedicelled, in densely fld. racemes 1 ft. long, longer stamens glabrous. S. Eu. Var. **pannòsum** (*V. pannosum*) is more woolly and the fls. usually larger.

lusitánicum (*V. crassifolium*). To 4 ft., yellow-tomentose: lvs. to 8 in. long, toothed: fls. yellow, the stamens glabrous, in clusters in the raceme. Portugal.

Lychnìtis. Bien. to 3 ft.: lvs. ovate to lanceolate, margins entire, pubescent: fls. bright yellow, about ½ in. across, stamens white-woolly. Cent. and W. Eu.

macedónicum. Bien. to 5 ft., densely white-tomentose to white-woolly throughout: lvs. broadly elliptic- to obovate-oblong and suborbicular at top of st., to 10 in. long, st.-lvs. strongly decurrent: fls. yellow, to 1 in. across, densely pellucid-punctate and corolla white-hairy on outside, stamens versatile. Yugoslavia.

nìgrum. To 3 ft., sts. erect, unbranched, very leafy: lvs. green above, tomentose beneath: fls. small, yellow with purple throat, clustered in the raceme, the stamens violet-woolly. Eu., Asia. Var. **álbum** has white fls.—Sometimes confused with *V. abietinum* which see.

olýmpicum. To 5 ft., densely white-tomentose: lvs. entire, to 6 in. long: fls. 1 in. across, bright yellow, clustered in very long many-fld. racemes, stamens white-woolly. Greece.

pannòsum: *V. longifolium* var.

phœníceum. Purple M. To 5 ft.: lvs. glabrous above, pubescent beneath, toothed: fls. purple or red, in a simple slender raceme, nearly glabrous, stamens purple-woolly. S. E. Eu., Asia.

plicàtum: *V. undulatum.*

pulveruléntum (*V. floccosum*). To 9 ft., loosely white-tomentose: lvs. mostly entire: fls. yellow, small, in clusters in panicled racemes, stamens white-woolly. Eu.

pyramidàle. Hybrid between *V. speciosum* and *V. Chaixii:* to 4 ft., white-pilose: lvs. wrinkled, coarsely toothed: fls. small, yellow, in clusters, stamens white- or purple-woolly. Austria.

símplex (*V. giganteum*). A species of S. W. Eu. allied to *V. Thapsus* and *V. lusitanicum*, but differing in the much slenderer style whose stigma is small and depressed-hemispherical, not large and reniform-hemispherical.

sinuàtum. To 3 ft., yellow- or gray-tomentose: lower lvs. deeply cut, upper lvs. entire: fls. yellow or rarely white, small, in nearly sessile clusters in panicled racemes, the stamens purple-woolly. Medit. region.

thapsifórme (*V. densiflorum*). To 5 ft., densely yellowish-tomentose: lvs. toothed: fls. yellow, in sessile clusters in a long spike. Eu.

Thápsus. Common M. To 6 ft., yellowish-tomentose: lvs. to 1 ft. long, toothed, soft: fls. yellow, 1 in. across, in sessile clusters in dense erect spikes, 2 lower stamens glabrous, all basifixed. Eu., Asia; extensively nat. in N. Amer. in old dry fields.

undulàtum (*V. plicatum*). Plant white- or yellow-tomentose: lvs. wavy-plicate, pinnatifid into round lobes: fls. sessile, in clusters on long interrupted racemes, stamens yellow-pubescent. Greece.

vernàle: *V. abietinum.*

virgàtum. To 4 ft.: lvs. to 3 in. long or the lower to 1 ft., toothed or lobed, pubescent and green: fls. yellow or white, 1 in. across, in short-stalked clusters, the stamens purple-woolly. Eu.; nat. in W. N. Amer.

Wiedemanniànum. To 3 ft., woolly: lvs. to 5 in. long, toothed: fls. blue or purplish-lilac, to 1¼ in. across, the pedicels solitary, stamens purple-woolly. Caucasus.

Wíllmottiæ: hort. name.

Wílsonii: listed name.

VERBÈNA. *Verbenaceæ.* Mostly per. herbs, some of them prized in the flower-garden for their profuse continuous bloom, and other species somewhat shrubby and some ann., not in cult., most of them native in Amer. The lvs. in the garden kinds are opposite, toothed, lobed or divided: fls. pink, red, lilac, white, in mostly rather broad corymb-like clusters that soon elongate into spikes, corolla tubular and salverform.

The plants of garden verbenas are treated as annuals in the North, the seeds being started under glass in the window and planted out to 1 foot or so apart; or they may be propagated by cuttings from over-wintered plants. The garden kinds are hardy in the open in the southernmost states and give early and brilliant bloom in spring. Verbenas need open sunny exposure. The named verbenas of Teas are reputed hybrids between the common garden verbena (*V. teucrioides*) and the moss verbena (*V. pulchella*).

There are wild native verbenas in many parts of the United States and Canada but they are rarely known as cultivated subjects, except forms of *V. canadensis.* Many of them are erect weedy plants with small not showy flowers in close mostly long spikes. They are known as vervains.

alpìna of hort. is *V. pulchella* var. *Maonettii.*

Aublètia: *V. canadensis.*

bipinnatífida. More or less prostrate per. with ascending sts.: lvs. divided into narrow or linear parts: fls. lilac-purple, ½ in. or less across, in head-like clusters that soon elongate, the bracts as long as calyx. S. D. to Mex. and Ariz.—A showy plant, sometimes transplanted.

bonariénsis. One of the S. American ann. or per. vervains that is sometimes known as a cult. plant and has also run wild in the S.: to 4 ft., erect, branched, st. square: lvs. long and narrow, toothed: fls. lilac, in dense spikes 1½ in. or less long in clusters.

bracteàta (*V. bracteosa*). Per., prostrate or ascending, hairy: lvs. irregularly cut-toothed or pinnatifid: fls. small, purplish, obscured by large bracts in terminal spikes. Cent. and S. U. S.

bracteòsa: *V. bracteata.*

canadénsis (*V. Aubletia. V. Drummondii. V. montana*). Clump V. Ascending and branching per. to 18 in.: lvs. 1–4 in. long, ovate-oblong, truncate or broadly cuneate at base, toothed and cut: fls. reddish-purple, lilac, rose, white, to ⅔ in. across, in an elongating head or spike, bracts shorter than calyx. Va. south and west. Var. **compácta** is offered as of more dense and lower habit.—Somewhat grown in gardens, in the N. as an ann.

candidíssima: garden name for white-fld. form.

chamædryfòlia: *V. peruviana.*

ciliàta. Per. or ann., depressed or low, to 10 in., pubescent: lvs. about 1 in. long, cut-lobed and cleft, petiole margined: fls. purple or bluish, ⅓ in. or less across, in lengthening clusters. W. Tex. to Colo. and Ariz., Mex.

citriodòra: *Lippia citriodora.*

coccínea: garden name for hort. form.

colóssea: garden name.

compácta: *V. canadensis* var.

corymbòsa. Per. to 3 ft., spreading by subterranean rhizomes: lvs. ovate, to 1¼ in. long, coarsely serrate or sometimes pinnately lobed, hispidulous on both surfaces: fls. reddish-purple to lavender, about ¼ in. across, in dense imbricate spikes to ¾ in. long collected into a terminal corymbose panicle. Chile.—Distinguished from *V. rigida* by its larger size and by the lvs. having 2 small toothed or entire lobes toward the base. Does best in moist sunny location.

dissécta: see *V. pulchella.*

Drúmmondii: *V. canadensis.*

erécta compácta: garden name.

erinoìdes: *V. laciniata;* see also *V. pulchella.*

gigantèa: garden name.

grandiflòra: hort. name.

hastàta. Erect vervain, per., st. 4-sided, to 4–5 ft. or more: lvs. lanceolate or oblong-lanceolate, serrate or dentate, to 6 in. long: fls. small, blue, in narrow spikes. Weedy plant, N. S. across the continent and to Fla.

híspida. Per. vervain with erect or ascending rigid hispid st.: lvs. oblong or lanceolate, acuminate, sessile, sharp-serrate, sometimes 3-lobed or cut: fls. small, in long dense terminal spikes. Peru, Bolivia, Chile.

horténsis (*V. hybrida*). Garden V. Soft decumbent plant, more or less rooting, per. but mostly grown as ann.: lvs. soft to the hand, oblong to ovate-oblong, 2–4 in. long, broadened and truncate or truncate-cuneate at base, obtusely dentate, with short margined petiole: fls. in a broad corymb that lengthens in fr. to 2 or 3 in., pink, red, yellowish, white. Cultigen; commonly pronounced a multiple hybrid but this origin is undetermined; nearly allied to *V. teucrioides.*

hýbrida: *V. hortensis.*

incìsa. Erect, to 3 ft., pubescent, but weak: lvs. oblong with rather broad base, deeply lobed and cut with rather broad sinuses and lobes nearly obtuse: head or corymb remaining short, or not elongated, rose-crimson and mostly with an eye. S. Brazil, Paraguay, Argentina.—Perhaps sometimes cult.

laciniàta (*V. erinoides*). Grown as an ann. but per. in mild climates, the branches decumbent and rooting, more or less hairy: lvs. ovate in general outline, deeply 3-parted and the divisions pinnatifid into narrow somewhat revolute lobes: fls. lilac, in short close often somewhat clover-like heads, the corolla bearded inside. Argentina, Chile.—See *V. pulchella.*

luminòsa: garden name.

Mahonéttii, Maonéttii: a form of *V. pulchella.*

montàna: *V. canadensis.*

officinàlis. Erect per. vervain, to 2 ft., rather stiff, wiry-branched above: lvs. oblong, pinnatifid or 3-parted or sometimes only coarsely toothed: fls. small, lilac, in a slender elongating spike. Eu., Asia, escaped in this country and weedy.—Sometimes cult. and once an object of superstition.

peruviàna (*V. chamædryfolia*). Grown as an ann., more or less prostrate and rooting: lvs. 1–2 in. long, oblong or lance-oblong and pointed, rather sharply serrate or dentate and tapering at base, very scabrous: spike remaining rather short, on slender peduncle, fls. scarlet or crimson. S. Brazil, Uruguay, Peru.—Sometimes seen in botanic gardens.

phlogiflòra. Prostrate, with ascending ends: lvs. short, ovate-lanceolate, notched and toothed: fls. rosy or purple, in dense umbel-like clusters that do not elongate. S. Brazil, Uruguay.—Probably not in cult. with us.

pulchélla. Per., somewhat woody at base, but grown often as ann. from seed, decumbent, rooting, somewhat hairy to nearly smooth, sts. to 20 in. long: lvs. dissected into linear acute lobes: fls. blue or lilac, in terminal rather dense heads that elongate in fr. S. S. Amer., and now widely nat.—This is apparently the plant commonly known as *V. erinoides* and sometimes as *V. dissecta* and *V. tenera*. Var. **Maonéttii**, fls. rose-pink to carmine with white-margined corolla-lobes. Italy.

radicans. Sts. procumbent, rooting at nodes: lvs. divided, segms. almost filiform, glabrous: fls. lilac, in compressed head-like spikes, fragrant. Andes Mts., S. Amer.

rígida (*V. venosa. V. bonariensis* var. *rigida*). Erect stiff per. vervain, 1–2 ft., simple or branched, st. 4-angled, making rhizomes: lvs. narrow-oblong and pointed, 2–3 in. long, sharply toothed, base wedge-shaped: fls. purplish, in dense spikes 1–3 in. long. S. Brazil, Argentina, sometimes spontaneous in warm regions. Var. **álba,** fls. white. Var. **lilácina,** fls. lilac.—Blooms first year from seed.

ròsea stellàta: garden name.

strícta. Per. soft-pubescent vervain, strict and leafy, to 30 in. high: lvs. ovate to oblong, to 4 in. long, nearly sessile, sharp-serrate or cut: fls. purple, in long close spikes. Ont. to New Mex.

ténera. Somewhat shrubby at base and cespitose, sts. decumbent and rooting: lvs. laciniate-pinnatifid, more or less hairy: fls. purplish, in an elongating spike. S. Brazil and south.—Doubtfully in cult. with us; see *V. pulchella*.

teucrioìdes. Per., rooting at base but sts. ascending, hairy: lvs. ovate to oblong with triangular base, nearly or quite sessile, obtusely serrate, margins more or less revolute, glandular-pubescent above: fls. yellowish-white or pinkish, in elongating terminal spikes, fragrant. S. Brazil and southward, Peru, Chile.—Probably chief source of the common garden verbenas.

venòsa: *V. rigida*.

violàcea stellàta: garden name.

VERBENÀCEÆ. Vervain Family. About 70 genera of herbs, shrubs or trees in the tropics, subtropics and temperate zones, characterized by irregular bisexual fls. having 4–5-lobed calyx and corolla, 4 (rarely 2 or 5) stamens, superior 2–8-celled ovary, and fr. a drupe or berry or nutlets. The family furnishes many showy garden and greenhouse subjects, and Tectona yields the teak-wood of commerce: Amasonia, Baillonia, Callicarpa, Caryopteris, Citharexylum, Clerodendrum, Congea, Duranta, Gmelina, Holmskioldia, Lantana, Lippia, Oxera, Petrea, Premna, Rhaphithamnus, Stachytarpheta, Tectona, Verbena, Vitex.

VERBENA, LEMON-: *Lippia citriodora*. **Sand-:** *Abronia*.

VERBESÌNA. *Compositæ*. American herbs and shrubs with opposite or alternate lvs. and yellow, orange or white solitary or panicled heads, with or without ray-fls.; pappus of awns. Sometimes grown for ornament.

crocàta. Shrub to 15 ft., the sts. 4-winged: lvs. opposite, ovate, to 9 in. long, the lower deeply pinnatifid: heads orange-red, about 1 in. across, without rays. Mex.

encelioìdes (*Ximenesia encelioides*). Ann to 3 ft.: lvs. alternate, triangular-ovate, to 4 in. long, toothed, pale beneath: heads to 2 in. across, with golden-yellow rays. Fla. to Mex.

virgínica (*Phæthusa virginica*). Per. to 6 ft., sts. densely puberulent: lvs. alternate, elliptic-lanceolate to ovate, to 10 in. long, usually distantly serrate, petiole winged: heads about 1 in. across, in corymbose panicles, ray-fls. white, usually 3–5. Va. to Fla. west to Ill. and Tex.

VERNÒNIA. Ironweed. *Compositæ*. Herbaceous perennials or in the tropics shrubs and trees, with alternate lvs. and showy purple, pink or white heads of disk-fls. usually borne in terminal clusters in late summer and autumn; pappus of scales and bristles.

Vernonias are sometimes grown in the border or wild-garden. They are easily cultivated in any good rich soil. Increased usually by division; also by seeds and cuttings.

altíssima (*V. maxima*). To 10 ft.: lvs. lanceolate, to 1 ft. long, finely toothed: heads purple, ½ in. across. N. Y. to Fla. and La.

arkansàna: *V. crinita*.

Báldwinii. To 7 ft., tomentose: lvs. oblong to ovate-lanceolate, to 8 in. long, toothed: heads purple, ½ in. across. Mo. to Tex.

crinìta (*V. arkansana*). To 12 ft.: lvs. linear-lanceolate, to 1 ft. long, finely toothed: heads purple, 1 in. across, pappus purplish. Mo. to Tex.

fasciculàta. To 6 ft.: lvs. linear to lanceolate, to 6 in. long, toothed: heads crowded, purple, about ¼ in. across. Ohio to Tex.

intèrior. To 8 in.: lvs. elliptic or elliptic-lanceolate, to 8 in. long, toothed, tomentose beneath: heads purple. Ia. to Tex.

marginàta. To 2½ ft.: lvs. linear or linear-lanceolate, to 6 in. long, entire or slightly toothed, punctate: heads purple. Neb. to Tex.

máxima: *V. altissima*.

noveboracénsis. To 9 ft.: lvs. oblong or lanceolate, to 10 in. long, finely toothed: heads deep purple, ½ in. across, pappus purplish. Mass. to N. C. and Miss.

VERÓNICA. Speedwell. *Scrophulariaceæ*. Many ann. and per. herbs of wide distribution, with at least lower lvs. opposite or seldom whorled, small white or blue fls. in axillary or terminal racemes or sometimes solitary, and capsular frs. The New Zeal. shrubby evergreen kinds, much planted on the Pacific coast, are now referred to the genus Hebe and they should not be called Veronicas.

Speedwells are grown in the flower-garden and border and the low or dwarf kinds in the rock-garden. They are of easy culture in good soil. Propagated by seeds and division.

álbicans: *Hebe albicans*.

Állionii (*V. pyrenaica*). Per. with prostrate sts.: lvs. oblong, fine-toothed: fls. violet, in spike-like racemes. S. Eu.

alpéstris: *V. serpyllifolia*.

alpìna. Per. to 6 in.: lvs. oblong, to 1 in. long, entire or toothed: fls. blue or violet, in dense racemes. Eu., Asia, N. N. Amer.

amábilis: *Hebe amabilis*.

amethýstina: *V. spuria*.

amplexicaùlis: *Hebe amplexicaulis*.

Ándersonii: *Hebe Andersonii*.

angustifòlia: *Hebe angustifolia*.

anítida: listed name.

anómala: *Hebe anomala*.

aphýlla. Per. to 4 in.: lvs. obovate to suborbicular, in loose rosette, to ⅝ in. long, denticulate to entire: fls. blue or pink, usually 2–5 in terminal cluster, small. Cent. Eu.

argùta. Per. with creeping rootstocks: lvs. ovate to ovate-lanceolate, to ¾ in. long, toothed: fls. small, in few-fld. racemes. Australia.

armèna. Per. to 4 in., tufted: lvs. pinnate into linear segms. ¼ in. long: fls. deep blue, in few-fld. racemes. Armenia.

austràlis: *V. spicata*.

austrìaca (*V. prenja*). Per. to 2 ft.: lvs. pinnately cut into oblong or linear segms.: fls. blue, large, in long racemes. S. E. Eu., Asia Minor.

Bachofènii. White-pubescent per. to 2 ft.: lvs. oblong, to 2 in. long, cordate at base, coarsely toothed: fls. blue, in long racemes. Hungary.

Baileyàna: listed as a shrubby plant with large blue fls.

Balfourìàna: *Hebe Balfouriana*.

Bárkeri: *Hebe Barkeri*.

Beccabúnga. European Brooklime. Per. with prostrate sts.: lvs. oval, toothed: fls. deep blue, rarely pink, small. Eu., N. Afr.

bellidioìdes (*V. Townsendii*). Hairy per. to 6 in.: lvs. obovate, slightly toothed: fls. bluish, in short few-fld. racemes. S. Eu.

Bídwillii. Per. to 9 in., with prostrate rooting sts.: lvs. leathery, oblong or ovate, ¼ in. long, entire or with few notches: fls. white, ⅓ in. across. New Zeal.

Bóllonsii: *Hebe Bollonsii*.

Bonaròta. Per. to 6 in.: lvs. orbicular, to 1 in. long, or upper ones lanceolate, toothed or cut: fls. blue, ⅓ in. across, in spikes to 2 in. long. S. Eu.

Buchánanii: *Hebe Buchananii*.

buxifòlia: *Hebe buxifolia*.

cæspitòsa. Tufted per. to 3 in.: lvs. linear-spatulate, ⅓ in. long, entire, margins revolute: fls. rose, in few-fld. racemes. Greece, Asia Minor.

cándida: *V. incana*.

canéscens. Per. with creeping matted sts. to 4 in. long:

lvs. to ⅒ in. long, entire: fls. solitary, pale blue, ⅓ in. across. New Zeal.

cárnea: *Hebe carnea.*

carnósula: *Hebe carnosula.*

catarráctæ. Per. to 2 ft. or sometimes prostrate: lvs. lanceolate to 4 in. long, coarsely toothed: fls. white or pink, in racemes to 9 in. long. New Zeal.

caucásica. Per. to 6 in., pubescent: lvs. 1–2-pinnately cut into oblong or linear segms.: fls. white veined with violet, in loose racemes. Causasus.

Chamædrys (*V. pulchella*). GERMANDER S. Per. to 1½ ft.: lvs. broad-ovate, to 1½ in. long, toothed: fls. blue, ⅓ in. across, in racemes to 6 in. long. Eu., Asia; nat. in N. Amer.

chathámica: *Hebe chathamica.*

cinèrea. Tufted per. to 4 in., gray-pubescent, with prostrate rooting sts.: lvs. oblong or oblong-linear, toothed: fls. pink, in axillary racemes. Asia Minor.

circæoìdes: confused name.

coeléstis: listed name.

Colensòi: *Hebe Colensoi.*

corymbòsa: *V. spicata* var.

crassifòlia: *V. spicata.*

crixifòlia: hort. name for *Hebe buxifolia.*

cupressoìdes: *Hebe cupressoides.*

Cùsickii. Per. to 9 in.: lvs. nearly orbicular to oblong, to ¾ in. long, entire: fls. blue or violet, ⅓ in. across, in few-fld. racemes. Ore., Calif.

Darwiniàna: *Hebe Darwiniana.*

decúmbens: *Hebe decumbens.*

decussàta: *Hebe elliptica.*

Dieffenbáchii: *Hebè Dieffenbachii.*

diosmæfòlia: *Hebe diosmæfolia.*

Dorrien-Smíthii: *Hebe Dorrien-Smithii.*

elàtior: *V. latifolia.*

élegans: *V. spuria* var.

elegantíssima: hort. name of uncertain application.

ellíptica: *Hebe elliptica.*

epacrídea: *Hebe epacridea.*

Erìca: *V. spicata* var.

exaltàta. Per. to 4 ft.: lvs. toothed: fls. blue, in long spikes. Siberia.

excélsa: *V. maritima.*

fasciculàta: listed name.

filicaùlis: catalogue name for *V. filiformis.*

filifòlia. Per. to 1 ft., pubescent: lvs. 2-pinnate into nearly filiform segms.: fls. white veined with blue. Caucasus.

filifórmis. Ann. or per., with prostrate rooting sts.: lvs. ovate, small: fls. blue, on thread-like stalks. Asia Minor.

flexuòsa nàna: listed name.

formòsa: *Hebe formosa.*

frùticans (*V. saxatilis*). Shrubby per. to 6 in., much branched: lvs. oblong, to ½ in. long, nearly entire: fls. blue, in short racemes. Eu.

fruticulòsa. Differs from *V. fruticosa* in larger crenulate lvs. and pink fls. S. Eu. Vars. **álba** and **ròsea** are listed.

gentianoìdes (*V. glabra*). Per. to 2 ft.: lvs. oblong-lanceolate, to 3 in. and more long, entire or slightly toothed: fls. pale blue veined with darker, in long loose racemes. S. E. Eu. Vars. **angustifòlia** and **stenophýlla** have narrower lvs. Var. **pállida** (*V. pallida*), fls. pale porcelain-blue. Var. **variegàta** is listed.

Gíbbsii: *Hebe Gibbsii.*

gigantèa: *Hebe gigantea.*

glàbra: *V. gentianoides.*

glaùca. Nearly erect ann.: lvs. broadly ovate, to ¾ in. long, wavy-toothed, pubescent: fls. bright blue with white throat, to ¾ in. across. Greece.—Plants under this name may also be glaucous-foliaged forms of *V. incana* or *V. latifolia*, or even of *Hebe glaucophylla.*

glaucophýlla: *Hebe glaucophylla.*

glomeràta: hort. name for *Hebe buxifolia.*

Gòldenii: listed name.

gracíllima: *Hebe gracillima.*

grándis (*V. Koenitzeri*). Per. to 2 ft. or more, pubescent: lvs. oblong-lanceolate to oblong, to 3 in. long, petioled, subcordate, incised-dentate to serrate, with lower lvs. sometimes pinnatifid: fls. white, in terminal racemes to 6 in. long. Siberia.

Grièvei: a form of *V. fruticans* usually known to the trade as *V. saxatilis Grievei.*

Guthrieàna. Garden hybrid to 9 in. with blue fls.

Héctori: *Hebe Hectori.*

himalénsis. Per. to 2 ft.: lvs. ovate, to 2 in. long, coarsely toothed: fls. blue, to 1 in. across, in racemes to 5 in. long. Asia.

Hookeriàna (*V. nivalis*). Prostrate per. with sts. to 10 in. long: lvs. ovate, to ½ in. long, coarsely toothed, leathery and stiff: fls. purplish or white, in corymbose racemes. New Zeal.

Hulkeàna: *Hebe Hulkeana.*

hýbrida: *V. spicata.*

imperiàlis: a garden name for *Hebe speciosa.*

incàna (*V. candida*). White-pubescent per. to 2 ft.: lvs. oblong or lanceolate, to 3 in. long, toothed: fls. blue, in racemes to 6 in. long. N. Asia, Russia. Var. **glaùca,** foliage glaucous-blue, fls. purple. Var. **nàna** is listed. Var. **ròsea** is listed with rose-pink fls.

Koenítzeri: *V. grandis.*

lævis: *Hebe lævis.*

latifòlia (*V. elatior. V. Teucrium*). Per. to 2 ft.: lvs. ovate, cordate at base, toothed: fls. blue or reddish, in panicled racemes. Eu. Listed vars. include **dùbia, prostràta, ròsea.**

latisépala: *Hebe macrocarpa* var. *latisepala.*

leiophýlla: *Hebe leiophylla.*

Lèwisii: *Hebe Lewisii.*

linifòlia. Procumbent per., sts. to 9 in. long, ascending at tips, glabrous: lvs. linear, to 1 in. long, obtuse, entire, petiole ciliate: fls. white to pale rose, to ½ in. across, in racemes. New Zeal.

lobelioìdes: advertised as a low small-lvd. plant with small spikes of bright blue fls.; probably a Hebe.

Lòbicæ ròsea: listed name.

loganioìdes: *Hebe loganioides.*

longifòlia: *V. maritima.*

Lỳallii. Per. with prostrate rooting sts. to 1½ ft. long: lvs. broad-ovate, to ½ in. long, coarsely toothed: fls. white veined with pink, ⅓ in. across, in racemes to 6 in. long. New Zeal.

macrántha: *Hebe macrantha.*

macrocárpa: *Hebe macrocarpa.*

macrostàchya (*V. polifolia*). Tufted per. to 4 in.: lvs. oblong to linear-spatulate, small, obtusely pectinate-crenate, revolute: fls. pink, in short dense racemes: caps. minute and woolly. Syria.

macroùra: *Hebe macroura.*

marítima (*V. longifolia. V. excelsa*). Per. to 2 ft.: lvs. lanceolate or oblong, to 4 in. long, toothed: fls. lilac, in dense racemes. Eu., Asia, nat. in E. N. Amer. Var. **álba,** fls. white. Var. **Héndersonii nàna** is semi-dwarf with dark blue fls. Var. **ròsea,** fls. pink. Var. **subséssilis** (*V. subsessilis*) has larger deep blue fls. and nearly sessile lvs.

Michaùxii. Per. to 5 ft., pubescent: lvs. ovate, toothed: fls. pale blue, in dense racemes. Persia.

multífida. Per. with decumbent sts.: lvs. pinnately cut into linear segms.: fls. pale pink or blue. Asia.

nivàlis: *V. Hookeriana.*

Nummulària. Per. with creeping sts.: lvs. ovate-orbicular, ⅙ in. long, entire, rather thick, the lowest scale-like: fls. blue or pink. Pyrenees.

obovàta: a name of uncertain application, perhaps a hybrid; properly belonging to genus Hebe.

obtusàta: *Hebe obtusata.*

officinàlis. Per. with prostrate or ascending sts. to 1½ ft. long: lvs. oblong, to 2 in. long, toothed: fls. pale blue, to ¼ in. across, in racemes much longer than lvs. Eu., Asia, N. Amer.

Òlsenii. Prostrate per.: lvs. ovate or orbicular, to ½ in. long, coarsely toothed, thick and leathery: fls. white veined with pink, in many-fld. racemes. New Zeal.

orchídea. Per. to 1½ ft.: lvs. ovate or oblong, toothed, shining above: fls. pale blue or pinkish. S. E. Eu.—Probably only a variant of *V. spicata*, differing in the lvs. glabrescent above and corolla revolute in bud.

orientàlis. Per. with decumbent or prostrate sts.: lvs. cuneate-oblong or lanceolate, toothed: fls. pink or pale blue, in one-sided racemes. Asia Minor. Var. **tenuifòlia** (*V. taurica*), lvs. narrowly linear, margins often revolute and sometimes remotely toothed. S. Armenia and Persia.

pállida: *V. gentianoides* var.

paniculàta: *V. spuria.*

parviflòra: *Hebe parviflora.*

pectinàta. White-pubescent prostrate per.: lvs. obovate, ½ in. long, toothed or sometimes cut: fls. deep blue with white center, in many-fld. racemes. Asia Minor. Var. **álba,** fls. white. Var. **ròsea,** fls. rose.

pedunculàris. Per. with prostrate or ascending sts.: lvs. ovate or oblong, coarsely toothed or cut: fls. white veined with pink. Asia Minor.

pérsica: *V. Tournefortii.*

pimeleoìdes: *Hebe pimeleoides.*

pinguifòlia: *Hebe pinguifolia.*

pinnàta. Per. to 3 ft.: lvs. pinnate, shining, rather thick: fls. blue, in many-fld. racemes. Russia.

polifòlia: *V. macrostachya.*

polìta. Ann. with weak sts. to 10 in. long: lvs. oval, deeply toothed: fls. blue, ¼ in. across, solitary. Eu., N. Afr.; nat. in N. Amer.

prénja: *V. austriaca.*

procúmbens: a name without botanical standing.

prostràta: *V. latifolia* var.

pulchélla: *V. Chamædrys.*

pùmila. Low ann., sticky-pubescent: lvs. ovate or rhomboid, deeply lobed: fls. ½ in. across. S. E. Eu.

pyrenàica: *V. Allionii.*

Quateriàna: listed as a fine blue-fld. form.

rakaiénsis: *Hebe rakaiensis.*

Reèvesii: advertised as having lavender-pink fls.

rèpens. Creeping moss-like per.: lvs. ovate, to ½ in. long, shining: fls. rose or bluish, in few-fld. racemes. Corsica. Var. **álba,** fls. white. Var. **ròsea,** fls. rose.

rotundàta: *Hebe rotundata.*

rùbra: listed name, possibly a var. of *Hebe speciosa* or of *V. spicata.*

rupéstris: hort. name, probably for a dwarf variant of *V. latifolia* which is usually densely tufted and has lvs. narrowly lanceolate, entire or remotely toothed.

rupícola: *Hebe rupicola.*

salicifòlia: *Hebe salicifolia.*

saturejoìdes. Creeping per. to 3 in.: lvs. oblong, ⅛ in. long: fls. blue, in short dense racemes. Dalmatia.

saxátilis: *V. fruticans.*

scutellàta. Prostrate glabrous per., st. tips ascending: lvs. linear-lanceolate, remotely denticulate or entire: fls. white, bluish or pinkish, in lax racemes. S. Balkan region.

senanénsis. Suffrutescent, pilose at base: lvs. ovate to lanceolate, to 1 in. long, petioled, base wedge-shaped, sharply toothed: fls. lilac, to ⅜ in. diam., calyx pilose, segms. oblong and acute: caps. narrow, obcordate. Japan.

serpyllifòlia (*V. alpestris*). Per. to 1 ft.: lvs. ovate or oblong, to ½ in. long, toothed or entire: fls. pale blue with darker stripes, ⅓ in. across, in few-fld. racemes. Eu., Asia, N. and S. Amer.

speciòsa: *Hebe speciosa.*

spicàta (*V. australis. V. crassifolia. V. hybrida*). To 1½ ft.: lvs. lanceolate, to 2 in. long, toothed: fls. blue or pink, in long dense racemes. N. Eu., Asia. Var. **álba,** fls. white. Var. **corymbòsa,** to 1 ft., fls. pale blue. Var. **Erìca,** heather-like, fls. pink. Var. **nàna,** to 9 in., fls. blue. Var. **ròsea,** fls. purplish-pink. Var. **rùbra,** fls. purplish-red.

spùria (*V. amethystina. V. paniculata*). Per. to 2 ft., densely pubescent: lvs. linear, 1 in. long, toothed above: fls. blue, in panicled racemes. S. E. Eu., S. Asia. Var. **élegans** (*V. elegans*) is more branched and pubescent.

stenophýlla: *V. gentianoides* var.

subséssilis: *V. maritima* var.

surculòsa. Per., sts. mostly prostrate or somewhat ascending, sticky-hairy: lvs. oblong to oblong-lanceolate, to ⅝ in. long, usually with 2–3 rounded teeth: fls. pale blue, in terminal and axillary racemes, peduncles densely glandular-hispid. E. Eu.

taùrica: *V. orientalis* var. *tenuifolia.*

tenuifòlia: *V. orientalis* var.

Teùcrium: *V. latifolia.*

Tournefórtii (*V. persica*). Prostrate ann.: lvs. ovate, ¾ in. long, coarsely toothed: fls. blue, in axillary racemes. Eu., Asia; nat. in N. Amer.

Tòwnsendii: *V. bellidioides.*

Tòwnsonii: *Hebe Townsonii.*

Tràversii: *Hebe Traversii.*

Trèhanii: one of the many forms of the plant passing as *V. rupestris.*

triphýllos. Ann., often prostrate, pubescent: lvs. palmately cut into 3–5 oblong segms.: fls. blue, in loose racemes. S. Eu., N. Afr.

vernicòsa: *Hebe vernicosa.*

versícolor: a listed name, perhaps a hybrid.

virgínica: *Veronicastrum virginicum.*

Wáldsteinii: hort. form with blue fls. in very late summer.

wardiénsis: listed as an evergreen shrub to 1 ft. with gray-green lvs. and blue fls.

Wormskjòldii. Per. to 1 ft.: lvs. ovate or elliptic, to 1 in. long, entire or slightly toothed: fls. dark blue, ⅕ in. across, in terminal racemes. Mts., N. Amer.

VERONICÁSTRUM. *Scrophulariaceæ.* Variable per. herb native from Vt. to Tex. **V. virgínicum** (*Veronica virginica. Leptandra virginica*). Culvers-Root. To 7 ft.: lvs. mostly whorled, lanceolate, to 6 in. long and 1 in. across, toothed: fls. white or pale blue, ⅙ in. long, in racemes to 9 in. long. Var. **álbum** is listed.—Sometimes transplanted from the wild.

VERRUCIFERA: *Titanopsis.*

VERSCHAFFÉLTIA. *Palmaceæ.* One monœcious more or less armed tree with brace roots at base of trunk and large pinnate-ribbed lvs. not parted to rachis, native in the Seychelles in the Indian Ocean: spadix among lower lvs., drooping, spathes 3; fls. in 3's, spirally disposed on slender side branches, the middle one pistillate; stamens 6, on very short filaments: fr. globular, with hard shell, nearly or quite 1 in. diam.; seed grooved; albumen strongly ruminate.

spléndida. To 80 ft., slender, when young the st., lf.-sheaths and petioles spiny but losing the spines with age: lvs. oval or obovate, cuneate at base, blade several ft. long, deeply bifid at apex and the sides cut deeply or nearly to midrib at base, strongly ribbed. Sometimes seen under glass and in test in the open far S.

VERTICILLATE: whorled; arranged in a circle about the stem, as leaves, bracts, flowers.

VERTICÓRDIA. *Myrtaceæ.* Australian usually heath-like shrubs with mostly small opposite entire lvs. and fls. in corymbs, spikes or racemes, the calyx-lobes plumose and radiating; one species intro. in Calif.

densiflòra. To 3 ft.: lvs. linear, to ½ in. long, cylindrical or 3-angled: fls. white or pink, to ⅙ in. long, petals fringed, in dense terminal corymbs.

VERVAIN: *Verbena.*

VESICÀRIA. Bladder-Pod. *Cruciferæ.* Per. herbs of Cent. Eu. and Medit. region, *V. utriculata* grown for the large inflated pods or silicles as well as for the yellow fls. Distinguished from Lunaria and Alyssum by the fr. inflated and sac-like, not flattened and compressed; the fls. differ from the latter genus in their larger size and in having unequal sepals with the lateral ones saccate at the base.

græca. Differs from *V. utriculata* in basal lvs. stellate-hairy, st.-lvs. glabrescent and entire, petals more orbiculate and orange-yellow, longer fr.-pedicels and narrower seeds. E. Italy and Greece.

sinuàta: *Alyssum sinuatum.*

utriculàta. To 1½ ft. high, somewhat woody at base: lvs. many and entire, the lowest obovate and crowded, upper lanceolate: pods subglobose, to about ½ in. diam., the thin dissepiment persistent.

VETCH: *Vicia.* **Crown:** *Coronilla varia.* **Kidney:** *Anthyllis Vulneraria.* **Ladys-Finger:** *Anthyllis Webbiana.* **Milk:** *Astragalus.*

VETCHLING: *Lathyrus.*

VETIVÈRIA. *Gramineæ.* Per. grasses with aromatic roots from which perfumery and medicines are made, narrow lvs. and spikelets borne in narrow terminal panicles. See *Grasses.*

zizanioìdes (*Anatherum zizanioides*). Vetiver. Khus-Khus. To 8 ft.: lvs. to 3 ft. long and ⅓ in. wide, rough on edges: panicles to 1 ft. long, the branches ascending. Asia, E. Indies; escaped in La.—Sometimes planted far S. along divisions between areas.

VIBÚRNUM. *Caprifoliaceæ.* Many shrubs and small trees with opposite simple deciduous or persistent lvs., small white or pinkish fls. in showy terminal panicles or umbel-like cymes, and fr. a 1-seeded drupe which often persists into winter; native in Amer., Eu., and Asia. Some of the viburnums are known as haws.

Viburnums are amongst the most popular ornamental shrubs, and many of them assume attractive autumn colors; they make good bird refuges because of their autumn and winter fruits. They are deciduous unless otherwise stated. Most of the deciduous species are hardy as far north as New England. They are not particular as to soil. Propagated by stratified seeds, by hardwood cuttings or cuttings of green wood under glass, by layers and grafting. A few of the snowballs are forced in the greenhouse for early bloom.

acerifòlium. Dockmackie. To 6 ft.: lvs. 3-lobed, maple-like, coarsely toothed, to 5 in. long: fls. white, in long-stalked cymes to 3 in. across, May–June: fr. purple-black. N. B. to N. C. and Minn.

affìne: *V. Rafinesquianum* var.

alnifòlium (*V. lantanoides*). Hobble-Bush. American Wayfaring-Tree. To 10 ft.: lvs. nearly orbicular, to 8 in. long, cordate at base, irregularly toothed: fls. white, in sessile cymes 5 in. across, the marginal fls. sterile and 1 in. across, May–June: fr. red, becoming purple-black. N. B. to N. C. and Mich. Var. **prǽcox** flowers earlier.

americànum: *V. trilobum.*

betulifòlium. To 12 ft.: lvs. ovate, to 3 in. long, toothed: fls. in short-stalked cymes 4 in. across, June–July: fr. red. China

bitchiuénse. Similar to *V. Carlesii* but more straggling, with smaller lvs. and cymes. Japan.

bracteàtum. To 10 ft.: lvs. orbicular, to 5 in. long, wavy-toothed, cordate at base: fls. in cymes to 3 in. across, conspicuously bracted: fr. bluish-black. Ga.

buddleifòlium. To 6 ft.: lvs. oblong-lanceolate, to 6 in. long, slightly toothed, gray-tomentose beneath: fls. in dense cymes 3 in. across: fr. black. China.

burejaéticum. To 15 ft.: lvs. ovate or oval, to 4 in. long, wavy-toothed: fls. white, in dense cymes 2 in. across, May: fr. bluish-black. Manchuria, China.

Búrkwoodii. Hybrid between *V. Carlesii* and *V. utile:* partially evergreen: lvs. shining: fls. white, fragrant.

Cánbyi: *V. pubescens* var.

Cárlesii. To 5 ft.: lvs. ovate or oval, to 4 in. long, toothed, pubescent on both sides: fls. white, fragrant, in dense cymes to 3 in. across, Apr.–May: fr. blue-black. Korea.

cassinoìdes. Withe-Rod. To 12 ft.: lvs. ovate or oval, to 4 in. long, finely toothed: fls. white, in short-stalked cymes to 5 in. across, June–July: fr. blue-black. Newf. to N. C. and Minn.

cinnamomifòlium. To 20 ft., evergreen: lvs. elliptic-oblong, to 5 in. long, nearly entire: cymes to 7 in. across: fr. blue-black. China.

corylifòlium. Similar to *V. dilatatum* but distinguished by the long pubescence of petioles, infl. and young branchlets. China.

cylíndricum. To 40 ft., evergreen: lvs. elliptic or oblong, to 7 in. long, entire or slightly toothed, waxy above: fls. white, in stalked cymes to 4½ in. across, July–Sept.: fr. black. China, Himalayas.

Dàvidii. To 3 ft., evergreen: lvs. elliptic, to 5½ in. long, slightly toothed, pale beneath: fls. white, in dense stalked cymes to 3 in. across, June: fr. blue. China.

dentàtum. Arrow-Wood. To 15 ft.: lvs. orbicular or ovate, to 3 in. long, coarsely toothed: fls. white, in long-stalked cymes 3 in. across, May–June: fr. blue-black. N. B. to Ga. and Minn.

dilatàtum. To 10 ft.: lvs. orbicular or ovate, to 5 in. long, coarsely toothed, hairy on both sides: fls. white, in stalked cymes to 5 in. across, May–June: fr. scarlet. Japan.

ellípticum. To 8 ft.: lvs. oval, to 3 in. long, coarsely toothed above middle: fls. in long-stalked cymes 2 in. across: fr. black. Wash. to Calif.

eròsum. To 6 ft.: lvs. ovate, to 3 in. long, sharply toothed: fls. in loose cymes to 3 in. across, May–June: fr. red. Japan.

fœ́tidum. To 10 ft., semi-evergreen: lvs. obovate or oval, to 2½ in. long, toothed above middle: fls. in cymes to 3 in. across, June: fr. scarlet. Himalayas, China. Var. **rectángulum** (*V. rectangulum*) is taller with branches often drooping.

fràgrans. To 10 ft.: lvs. oval, to 3 in. long, toothed, slightly pubescent: fls. white or pinkish, fragrant, in panicles 2 in. long, Apr.–May: fr. black or purple. China.

furcàtum. Very similar to *V. alnifolium* but of more upright habit: lvs. narrower, finely serrate. Japan.

grandiflòrum. To 6 ft.: lvs. oval-oblong, to 4 in. long: fls. in short dense panicles: fr. blue-black or purple. Himalayas.

Harryànum. To 10 ft., evergreen: lvs. orbicular-ovate or obovate, to 1 in. long, nearly entire: cymes to 1½ in. across: fr. black. China.

Hénryi. To 10 ft., evergreen: lvs. oblong, to 5 in. long, toothed, shining above: fls. in broad panicles to 4 in. long, Aug.: fr. red turning black. China.

hupehénse. To 6 ft.: lvs. ovate, to 3 in. long, coarsely toothed, pubescent on both sides: fls. in cymes 2 in. across, June: fr. red. China.

ichangénse. To 6 ft.: lvs. ovate to ovate-lanceolate, to 2½ in. long, pubescent beneath: fls. in cymes to 1½ in. across: fr. red. Cent. and W. China.—Similar to *V. erosum.*

japónicum (*V. macrophyllum*). To 6 ft., evergreen: lvs. ovate, to 6 in. long, slightly toothed above middle, shining above: fls. white, fragrant, in short-stalked cymes to 4 in. across, June: fr. red. Japan.

Keteleèri: *V. macrocephalum* var.

lævigàtum: *V. obovatum.*

Lantàna. Wayfaring-Tree. To 15 ft.: lvs. ovate, to 5 in. long, finely toothed, pubescent on both sides: fls. white, in cymes to 4 in. across, May–June: fr. red turning black. Eu., W. Asia. Var. **rugòsum** has more wrinkled lvs.

lantanoìdes: *V. alnifolium.*

latifòlium: *V. rigidum.*

Lentàgo. Sheep-Berry Nanny-Berry. To 30 ft.: lvs. ovate, to 4 in. long, finely toothed: fls. white, in sessile cymes to 5 in. across, May–June: fr. blue-black, pruinose. Hudson Bay to Ga. and Miss.

lobophýllum. To 15 ft.: lvs. broad-ovate or obovate, to 4½ in. long, toothed, pubescent only on veins: fls. in long-stalked cymes to 4 in. across, June–July: fr. bright red. China.

lùcidum: *V. Tinus* var.

macrocéphalum. To 12 ft., semi-evergreen: lvs. ovate or oval, to 4 in. long, finely toothed, pubescent on both sides: fls. white, in stalked cymes to 5 in. across, the marginal ones sterile and 1 in. across. May–June. China. Var. **Keteleèri,** the wild form, having only the marginal fls. sterile and enlarged. Var. **stérile,** Chinese Snowball, has all fls. sterile, forming a globose ball to 8 in. across.

macrophýllum: *V. japonicum.*

mólle. To 12 ft.: lvs. nearly orbicular, to 5 in. long, cordate at base, coarsely toothed, pale and pubescent beneath: fls. white, in long-stalked cymes to 3 in. across, June: fr. blue-black. Ia. to Ky. and Mo.

mongólicum. To 7 ft., twigs stellate-pubescent: lvs. broadly ovate to elliptic, to 2¼ in. long, usually obtuse, somewhat hairy, subdentate, base rounded: fls. in flat umbel-like cymes: fr. black. N. E. Asia.

nítidum: *V. nudum* var. *angustifolium.*

nùdum. Smooth Withe-Rod. To 15 ft.: lvs. ovate to oval-lanceolate, to 5 in. long, nearly entire, pubescent beneath: fls. white or yellowish, in long-stalked cymes to 5 in. across, June–July: fr. blue-black. L. I. to Fla. and La. Var. **angustifòlium** (*V. nitidum*), vs. smaller and more glossy, usually narrower.

obovàtum (*V. lævigatum*). To 8 ft., semi-evergreen: lvs. obovate, to 1½ in. long, nearly entire, shining and leathery: fls. white, in sessile cymes 2 in. across, Apr.–June: fr. black. Va. to Fla.

odoratíssimum. To 10 ft., evergreen: lvs. oval, to 6 in. long, nearly entire, shining above: fls. white, fragrant, in panicles 4 in. high, May–June: fr. red turning black. India to Japan. Var. **nànum,** a dwarf form, and var. **variegàtum** with variegated foliage, are listed.

Ópulus. European Cranberry-Bush. To 12 ft.: lvs. 3–5-lobed, maple-like, to 4 in. long, pubescent beneath: fls. white, in stalked cymes to 4 in. across, the marginal fls. sterile and ¾ in. across, May–June: fr. scarlet. Eu., N. Afr., N. Asia. Var. **nànum** is a very dwarf form with small lvs. Var. **ròseum** (var. *sterile*), Snowball, Guelder-Rose, has all fls. sterile and forming a round rose-like head. Var. **xanthocárpum** has yellow fr.—See *V. trilobum.*

ovatifòlium. Shrub: lvs. ovate or oblong-ovate, to 3 in. long, toothed: fls. in cymes 3 in. across. China.

Oxycóccus: *V. trilobum.*

pauciflòrum. To 5 ft.: lvs. nearly orbicular, to 3 in. long, 3-lobed at apex, toothed: fls. in heads 1 in. across, May: fr. red. N. N. Amer., N. E. Asia.

plicàtum: *V. tomentosum* var. *sterile.*

propínquum. Evergreen, with shining red-brown branchlets: lvs. elliptic to ovate-lanceolate, to 3½ in. long, slightly toothed, shining above: fls. greenish-white, in stalked cymes to 2½ in. across: fr. black. China.

prunifòlium. Black-Haw. To 15 ft.: lvs. ovate or broad-oval, to 3 in. long, finely toothed: fls. white, in sessile cymes to 4 in. across, Apr.–May: fr. blue-black, pruinose. Conn. to Fla. and Tex.

pubéscens (*V. venosum*). To 10 ft.: lvs. ovate to nearly orbicular, to 4 in. long, coarsely toothed, pubescent beneath: fls. white, in long-stalked cymes to 4 in. across, June–July: fr. blue-black. Mass. to Va. Var. **Cánbyi** has larger wider lvs. Var. **longifòlium** (*V. dentatum* var. *longifolium*) has longer narrower lvs.—Recent studies indicate that *V. pubescens* and its variants represent forms of *V. dentatum* differing primarily in degree of hairiness.

Rafinesquiànum (*V. affine* var. *hypomalacum*). To 6 ft.: lvs. to 3 in. long, coarsely toothed, densely pubescent beneath: fls. white, in dense short-stalked cymes to 3 in. across, May–June: fr. bluish-black. Mo. Var. **affine** (*V. affine*) has lvs. glabrous beneath or nearly so. Que. to Ga. and Ill.

rectángulum: *V. fœtidum* var.

rhytidophýllum. To 10 ft., evergreen: lvs. ovate-oblong, to 7 in. long, nearly entire, shining and deeply wrinkled above, gray- or yellow-tomentose beneath: fls. yellowish-white, in cymes to 8 in. across, May–June: fr. red turning black. China.

rígidum (*V. latifolium*). To 6 ft.: lvs. ovate or ovate-oblong, to 6 in. long, wrinkled above, pubescent beneath: fls. white, in cymes 4 in. across, May–July: fr. bluish-black. Canary Isls.

robústum: listed name.

rotundifòlium: confused name; the material so listed may be *V. tomentosum* var.

rufídulum (*V. rufotomentosum*). Southern Black-Haw. To 30 ft.: lvs. oval, to 4 in. long, finely toothed, shining above, rusty-tomentose beneath: fls. white, in cymes 5 in. across, May–June: fr. dark blue, pruinose. Va. to Fla. and Tex.

rufotomentòsum: *V. rufidulum.*

Sárgentii. To 12 ft.: lvs. 3-lobed or sometimes oblong-lanceolate and unlobed, 4 in. or more long: fls. in long-stalked cymes to 4 in. across, the marginal fls. sterile and 1 in. across, May–June: fr. scarlet. N. E. Asia. Var. **flàvum,** lvs. hairy on veins beneath, anthers and fr. yellow. Var. **xanthocárpum** is listed with yellow fr. and may not be distinct from preceding form.

scabréllum. To 6 ft.: lvs. ovate to oblong, to 4 in. long, smooth above, hairy on veins beneath, remotely or shallowly toothed: fls. in stellate-pubescent cymes to 3 in. across: fr. blue-black. S. E. U. S.

setígerum (*V. theiferum*). To 12 ft.: lvs. ovate-oblong, to 5 in. long, slightly toothed, dark green above: fls. in stalked cymes 2 in. across, May–June: fr. red. China.

Sièboldii. To 10 ft.: lvs. oval or obovate, to 6 in. long, coarsely toothed, shining above, paler and pubescent beneath: fls. creamy-white, in panicles 4 in. long, May–June: fr. pink turning blue-black. Japan.

suspénsum. To 6 ft., evergreen: lvs. oval, to 4 in. long, toothed toward apex, shining above, paler beneath: fls. pinkish, in dense panicles 1½ in. across, June–July: fr. red. Liu-Kiu Isl.

theíferum: *V. setigerum.*

Tìnus. Laurestinus. To 10 ft., evergreen: lvs. ovate-oblong or oblong, to 3 in. long, entire, dark green above: fls. white or pinkish, in cymes 3 in. across, in summer, often flowered in greenhouse: fr. black. Medit. region. A few of the hort. vars. are **hírtum** with lvs. pubescent beneath, **lùcidum** (*V. lucidum*) with larger lvs., **stríctum** of more upright habit, and **variegàtum** with variegated lvs.

tomentòsum. To 10 ft.: lvs. ovate, to 4 in. long, toothed, pubescent beneath: fls. white, in long-stalked cymes to 4 in. across, the marginal fls. sterile and 1 in. or more across, May–June: fr. red turning blue-black. Japan, China. Var. **lanceàtum** has narrower lvs., var. **Marièsii** larger sterile fls. and cymes, var. **parvifòlium** lvs. to 2 in. long, and var. **rotundifòlium** broader lvs. and blooms earlier. Var. **stérile** (var. *plenum,* var. *plicatum*), Japanese Snowball, has all sterile fls. in round heads.

trílobum (*V. americanum. V. Oxycoccus*). Cranberry-Bush. To 12 ft.: lvs. broad-ovate, to 5 in. long, 3-lobed and coarsely toothed: fls. white, in short-stalked cymes to 4 in. across, the marginal fls. sterile, May–June: fr. scarlet. N. N. Amer.—The American representative of *V. Opulus,* and formerly not distinguished from it.

urceolàtum. Rather straggling shrub to 3 ft., sts. procumbent and rooting: lvs. ovate to ovate-lanceolate, to 5 in. long, acuminate, glabrous above, veins scurfy beneath, crenate-serrate: fls. in flat umbel-like cymes to 2½ in. across: fr. black. Japan.

ùtile. To 6 ft., evergreen: lvs. ovate to oblong, to 3 in. long, entire, shining above, whitish-tomentose beneath: fls. white, in dense cymes to 3 in. across, May: fr. bluish-black. China.

Veìtchii. To 6 ft.: lvs. ovate, to 5 in. long, slightly toothed, densely pubescent beneath: fls. white, in dense cymes to 5 in. across, May–June: fr. red turning black. China.

venòsum: *V. pubescens.*

ventricòsum: listed as a loose spreading shrub to 8 ft. with glossy dark lvs. and white fls. in small clusters.

Wrìghtii. To 10 ft.: lvs. broad-ovate, to 6 in. long, coarsely toothed: fls. white, in short-stalked cymes 4 in. across, May–June: fr. red. Japan.

VÍCIA. Vetch. *Leguminosæ.* Mostly tendril-climbing herbaceous vines with pinnate lvs., papilionaceous fls., and flat pods; several species are grown for food, forage and green-manure crops and a few for ornament.

Seeds of vetches used for cover-crops (as *V. sativa* and *V. villosa*) are sown broadcast; those of *V. Faba* in drills 21 to 35 inches apart. Vetches are not particular as to soil.

americàna. Per., with trailing or climbing sts. to 3 ft. long: lfts. elliptic or oblong: fls. purplish, in few-fld. racemes: pods to 1¼ in. long. N. Amer.

angustifòlia. Ann. or bien.: lfts. linear-oblong: fls. purplish, usually 2 in the axils: pods black, to 3 in. long. Eu.

atropurpùrea. Purple V. Ann., white-hairy: lfts. linear-oblong: fls. purple, white at base, in racemes: pods to 1½ in. long, pubescent. S. Eu.

calcaràta. Ann.: lfts. linear-lanceolate: fls. purplish, solitary: pods 1½ in. long. Medit. region.

Crácca. Cow V. Per.: lfts. linear to oblong: fls. purplish, varying to white, in one-sided many-fld. racemes: pods to 1 in. long. Eu., Asia, N. Amer. Var. **Gerárdii** is more pubescent, has more lfts. and violet fls.

Ervília. Ervil. Bitter V. Ann., erect, 2 ft. or more, without tendrils: lfts. linear: fls. rose-colored, 2–4 in the axils: pods to 1 in. long. S. Eu.

Fàba. Broad Bean. Horse Bean. Ann., erect, to 6 ft., without tendrils: lfts. oval to oblong: fls. white with purple blotch, solitary or several in the axils: pods sometimes to 1 ft. long. N. Afr., S. W. Asia.—Grown for forage, also for human food; bean of history.

Gerárdii: *V. Cracca* var.

gigantèa. Per., climbing to several ft.: lfts. narrow-oblong: fls. reddish-purple, in racemes: pods 1½ in. long. Calif. to Alaska.

hirsùta. Ann., sts. to 3 ft., hairy: lfts. ovate to lanceolate: fls. white or pale blue, in 1–6-fld. clusters: pods ⅓ in. long. Eu., N. Afr., Asia.

hýbrida. Ann.: lfts. obovate: fls. pale yellow striped with violet, solitary. Medit. region.—Probably some of the material cult. under this name belongs to other species.

narbonénsis. Narbonne V. Ann.: lfts. oval to oblong: fls. purplish, solitary or few in the axils: pods to 2 in. long. S. Eu.

onobrychioìdes. Ann.: lfts. linear: fls. purplish turning to yellow, several in loose clusters: pods 1 in. or more long. S. Eu.

oroboìdes (*Orobus lathyroides*). Per. to 2 ft., without tendrils: lfts. ovate to oblong: fls. whitish or yellow, 3–7 in the axils: pods to 1½ in. long. S. Eu.

Pseùdo-crácca. Ann.: fls. purplish with yellowish wings, in short racemes: pods to 1¼ in. long. S. Eu.

pyrenàica. Prostrate or ascending per., sts. to 1 ft. long, angular: lfts. 2–12: fls. purple-violet, solitary, large: pods glabrous. S. W. France.

ròsea: probably *Lathyrus roseus.*

satìva. Common or Spring V. Tare. Ann. or bien.: lfts. oblong: fls. purplish, usually 2 in the axils: pods to 3 in. long. Eu.; nat. in N. Amer. Var. **álba** has white fls., var. **fúlgens** scarlet fls. and var. **macrocárpa** large fls. and seeds.

semicíncta. Per., sts. to 4 ft.: lfts. linear: fls. blue-purple, in dense racemes: pods ¾ in. long. Calif., S. Ore.

vérna: probably *Lathyrus vernus.*

villòsa. Hairy or Winter V. Ann. or bien.: lfts. linear-oblong: fls. violet-blue, in long one-sided racemes: pods to 1 in. long. Eu., Asia.

VICTÒRIA. *Nymphæaceæ.* Very large per. aquatics with erect rhizomes, prickly: lvs. large, circular, with great bars and cross ribs filled with air spaces, the margins turned up straight 3–8 in.: fls. fragrant, floating, 6–18 in. across when spread, opening late in the afternoon and remaining till the second day, changing from white to pink and even red: fr. a large more or less berry-like body: probably 3 species in S. Amer., sometimes grown in large aquaria.

Under cultivation in temperate regions victorias are treated as annuals, and require the same treatment as tender nympheas. They are raised from seeds, those of *V. regia* requiring a water temperature of 85–90° for germination, and *V. Cruziana* 65–70°. They are sown in February or March in pots or seed-pans that are set in shallow water. The young seedlings are transferred to small pots and kept growing continuously until transferred to their permanent quarters in tanks. If grown outside in the summer, steam pipes through the water keep this at the correct temperature till the season is warm enough.

Cruziàna (*V. Trickeri*). Santa Cruz Water-Lily. Lvs. densely soft-hairy beneath, the upturned margins green, 6–8 in. high: fls. turning deep red-pink second day; sepals prickly only at base. Paraguay.—This is the species usually grown in this country.

règia. Royal Water-Lily. Lvs. 3–6 ft. across, in the larger forms turned up 2–4 in. at the edges, reddish beneath: fls. turning dull crimson second day; sepals prickly. British Guiana and Amazon. Var. **Rándii,** the usual form in cult., has lf.-rim 5–6 in. and under side deeper red, fls. turning deep crimson.

Tríckeri: *V. Cruziana.*

VÍGNA. *Leguminosæ.* Vine-like herbs with 3-foliolate lvs., yellowish-white or purplish papilionaceous fls. usually in pairs at the ends of long peduncles, and long slender cylindrical pods.

Several species are grown for food, forage and as green-manure and cover-crops, *V. sinensis* being one of the staple crops of the South. Adapted only to mild climates, as southern United States and susceptible to frost. Grown as annuals from seed planted as soon as land is warm in spring.

Cátjang. Catjang. Pods short, 3–5 in. long, erect or spreading. Probably Asia.

lùtea: *V. marina.*

marìna (*V. lutea*). Pods 2 in. long, reflexed. Trop. seashores.

sesquipedàlis (*Dolichos sesquipedalis*). Asparagus Bean. Yard-long Bean. Pods 1–3 ft. long, hanging, flabby or somewhat inflated when green. Probably Asia.

sinénsis. Cowpea. Pods 8–12 in. long, hanging. Probably Asia.—Grown for forage, green-manure, the beans also for human food.

VILLÀDIA (*Altamiranoa*). *Crassulaceæ.* Per. herbs resembling Sedum but with petals united below into a tube; native in Mex., Cent. and S. Amer.

elongàta. Pubescent, branches becoming prostrate, rooting at joints: lvs. closely set, linear-ovate, ¼ in. long, acute: fls. white or pinkish, ⅓ in. long, in panicles. Mex.—Plants listed as *Lenophyllum elongatum* probably are to be referred here.

VILLARÈSIA. *Icacinaceæ.* Evergreen trees and shrubs native in the southern hemisphere, having alternate lvs., white fls. in small head-like cymes, and fr. a drupe; one species is cult. in Calif. Propagated by cuttings.

mucronàta. Tree to 40 ft. or more: lvs. ovate to oblong, to 3 in. long, entire, shining above, pale beneath: fls. yellowish-white, ¼ in. long, in cymes to 2 in. long: fr. about ½ in. long. Chile.

VILLARSIA: *Fauria.*

VILLOUS: provided with long and soft, not matted, hairs; soft-shaggy.

VÍNCA. Periwinkle. *Apocynaceæ.* Herbs erect or trailing, sometimes shrubby and evergreen, with opposite firm lvs., solitary axillary salverform fls., and fr. of 2 spreading follicles; native in the Old World, several planted for ornament and ground-cover; useful for vases and baskets.

The common periwinkle thrives in moist shady locations. It and *V. major* are propagated by division and cuttings. *V. rosea* is grown from seeds as an annual, or propagated by cuttings from carried-over plants.

alpìna: form of *V. minor;* rose or purplish, often double.

delicàta: a form of *V. rosea.*

Hárrisonii: a listed name for a plant of the *V. major* kind.

herbàcea. Trailing: lvs. elliptic or lanceolate: fls. purplish-blue, 1 in. across. E. Eu., Asia Minor.

madagascariénsis: listed name for *V. rosea.*

màjor. Trailing, evergreen: lvs. ovate, truncate or heart-shaped at base: fls. blue, 1–2 in. across. Eu. Var. **variegàta** has lvs. variegated.

mìnor. Common P. Running-Myrtle. Trailing, evergreen: lvs. oblong to ovate, narrowed at base: fls. lilac-blue, varying to white and purple as indicated by the names **álba, atropurpùrea, cærùlea, purpùrea, ròsea, rùbra,** to ¾ in. across. Eu.; run wild in E. U. S. There are variegated (var. **variegàta** and **aùreo-variegàta**) and double-fld. forms (vars. **múltiplex, plèna** in different colors.) Var. **Bówlesii** has darker blue fls. and said to be more floriferous.

ròsea (*Ammocallis* and *Lochnera rosea*). Madagascar P. Per. but commonly grown as an ann. in the N., to 2 ft., erect: lvs. oblong: fls. rosy-purple or white (var. **álba**), to 1½ in. across, showy, everblooming. Tropics.—Useful as a flower-garden ann. in the N.

VINCETÓXICUM. *Asclepiadaceæ.* Herbaceous American twining vines with opposite heart-shaped lvs., small wheel-shaped deeply-parted fls. in axillary clusters, the crown joined to corolla, and thick milkweed-like smooth or warty frs.; rarely transplanted from the wild. The plants referred to Vincetoxicum in the Old World are regarded as better treated under Cynanchum, which differs from the above in having a scale or ligule on the inside of each of the 5 parts of the crown.

acuminàtum: *Cynanchum acuminatifolium.*

fuscàtum: *Cynanchum fuscatum.*

hirsùtum. Hairy or downy: lvs. ovate-acuminate, to 7 in. long and 5 in. broad: fls. crimson-purple, about ½ in. long: fr. warty. Md. to Fla.

japónicum: *Cynanchum acuminatifolium.*

nìgrum: *Cynanchum nigrum.*

officinàle: *Cynanchum Vincetoxicum.*

suberòsum. Plant glabrous or pubescent: lvs. oval or ovate and acute or abruptly pointed, to 5 in. long and 3 in. wide: fls. brown-purple, ¼ in. long, May–July: fr. not warty. Va. to Fla.

VINE: *Vitis.*

VÌOLA. Violet. *Violaceæ.* Many attractive herbaceous perennials, rarely subshrubs, stemless or with leafy sts., a very few ann.: stipules persistent and often leafy: fls., in many species, of two kinds, those in early spring showy and non-fertile, those in summer cleistogamous, apetalous and producing numerous seeds; showy fls. nodding, the lower petal spurred while the other 4 are in two unlike pairs: caps. dehiscing into 3 boat-shaped and keeled valves: native in north and south temp. zones, many species suitable for the rock- and wild-garden and as edging plants in semi-shady positions in the border.

Nearly all violas thrive best in partial shade and fairly rich soil. They require plenty of moisture and a winter covering of leaves or evergreen boughs. The violets may be grown from seeds sown in autumn in boxes and exposed to freezing, germination then taking place in spring. A quicker method of propagation is by division or by runners when such are produced. The florists' violet is usually increased by offsets in late winter or early spring, rooting these in sand. Sometimes the old plants are divided when they are lifted in spring but care must be exercised not to save hard or weak material.

Pansy is a viola. In this country the pansy is usually propagated by seed which should be sown from the middle of July to the middle of August for the next spring bloom. The plants may be wintered over in coldframes or in milder sections they may be planted in permanent quarters if covered with a mulch preferably of leaves; the crowns should not be covered too thickly or the plants smother. If desired, the seed may be sown indoors in late winter. In the case of named varieties or special colors cuttings should be used or layers, as the seed is too hybrid in character. Pansies are normally perennial but some races are essentially annual as to horticultural treatment or at least biennial inasmuch as they are supposed to give their best bloom when relatively young; they are sometimes classed with biennials, although the plants may persist and with good care bloom for a number of years. It is well to have a new stock coming on each year from seed; and if one wants choice flowers careful attention must be given to the securing of well-bred strains and the seeds of such kinds are necessarily expensive. Pansies thrive in a cool rather moist soil, and although they may benefit by some protection from the noonday sun they should not be planted in shade. As the ground becomes warm a mulch of leafmold or other light material may be spread over the bed to retain moisture and exclude heat. Spring and fall give the best bloom, but with attention to these details and to watering and not allowing seeds to form or long weak growths to choke the bed, good pansies may be had all summer; by pruning and otherwise the plants should be kept stocky and compact; do not grow too thickly,—say 8 inches apart each way. Seeds sown in boxes in January or February make blooming plants by April, taking the place of those blooming earlier from over-wintered stock.

adúnca (*V. canina* var. *adunca*). Sts. to 4 in. long: lvs. round-ovate, slightly toothed: fls. violet turning red-purple. Alaska to Calif.

ætólica. To 8 in. or less, sts. numerous, elongate, decumbent: lvs. ovate-oblong, obtuse, broadly and obtusely crenate: fls. yellow, petals nearly twice as long and spur 1½ times as long as calyx. Greece.

affìnis. Lvs. cordate-ovate, wavy-toothed, long-petioled: fls. violet with white base. Vt. to Ga. and Ala.

álba (*V. violacea*). To 5 in.: lvs. cordate-acuminate to ovate, blade to 4 in. long, entire, ciliate, pubescent beneath, lying close to ground: fls. white with violet center and veins to violet, to 1 in. across, on erect peduncles. Cent. Eu. and Medit. region.

alpéstris: *V. saxatilis.*

alpìna. To 2 in.: lvs. round, wavy-toothed, long-petioled: fls. bright violet, rarely white. Eu.

altàica. Differs from *V. calcarata* in its smaller broader lvs. and much shorter spur. Asia Minor, Siberia.

amábile: hort. name of no botanical standing; listed as with lavender fls.

arenària. To 3 in.: lvs. ovate, small, puberulent on both sides: fls. pale violet or white. Que. to Mass. west to Alaska. Eu. Var. **ròsea** is listed.—Most European authors consider this a pubescent var. of *V. rupestris.*

Árkwrightii: hort. name of a form of *V. cornuta.*

atropurpùrea: an unidentified name for a purple-fld. violet.

Battandièri. Per. to 6 in.: fls. cream-white to lilac and blue-gray, to 1 in. across. N. Afr.—Perhaps only a variant of *V. Munbyana.*

Béckwithii. To 4 in.: lvs. palmately 3 times 3-parted into linear segms.: fls. with 2 upper petals purple and 3 lower pale violet. Ore. to Calif. and Nev.

bellidifòlia. Dwarf, matted: lvs. broad-ovate, obtuse, glabrous: fls. violet or purple. Mont. to Ida.

Bertolònii: *V. corsica.*

betonicifòlia. Stemless per. to 9 in.: lvs. ovate to oblong-lanceolate, to 2 in. long, with large stipules attached to petiole: fls. purple or violet with white tips, spur short, petals about ½ in. long, the lateral ones bearded within. Australia to Himalayas.

biflòra. Lvs. reniform, toothed, glabrous: fls. small, yellow, lip streaked with blackish-purple, spur very short. Eu., Siberia.

blánda. Sweet White V. Lvs. ovate, acute, somewhat hairy on the upper surface: fls. white with narrow strongly reflexed petals. Que. to Ga. and La.

bosnìaca: *V. elegantula.*

Brittonìàna. To 8 in.: lvs. reniform, each of the 3 lobes of 2–4 somewhat linear segms. remotely serrulate, middle lobe widest, glabrous beneath: fls. dark violet with white throat, large. Me. to Va.

Broòksii (*V. lobata* var. *integrifolia*). To 8 in., minutely pubescent, sts. usually naked at base and few-lvd. above: lvs. deltoid to rhombic-ovate, sometimes acuminate crenate-serrate, to 3 in. wide: fls. yellow, to ½ in. long. S. W. Ore. to Calif.

calcaràta. To 4 in., with creeping rootstocks: lvs. ovate to lanceolate, wavy-toothed: fls. violet, the spur as long as corolla. Eu.

canadénsis. To 1 ft. or more: lvs. broad-ovate, cordate, acute, toothed: fls. white inside with yellow base, outside often tinged violet. N. B. to Ala. and Ariz.

canìna. Dog V. Lvs. ovate-cordate, toothed: fls. bluish-purple with yellow spur. Eu.

cárnea: hort. name for pale lavender form.

cenísia. Lvs. ovate, entire: fls. violet. Alps of Eu.

chærophylloìdes: a confused name; perhaps a form of *V. pinnata.*

chinénsis: *V. Patrinii.*

chrysántha: *V. Douglasii.*

confederàta: *V. Priceana.*

conspérsa. To 6 in.: lower lvs. cordate-orbicular, toothed: fls. many, pale violet varying to white, spur short. Que. to Minn. and Ga. Var. **sylvéstris** is listed.

cordàta: name of uncertain application.

cornùta. Horned V. Per. more or less tufted: lvs. ovate, wavy-toothed, stipules large, triangular, coarsely toothed: fls. violet, spur slender, as long as calyx. Spain and Pyrenees.—The Tufted or Bedding pansies are probably an offshoot of this species, with shorter spurs. Garden vars. are **admirábilis,** possibly a hybrid form; **álba,** fls. white; **atropurpùrea,** dark purple with small yellow center; **aùrea,** fls. golden-yellow; **grandiflòra,** a garden form; **lùtea spléndens,** fls. golden-yellow; **Papílio,** fls. very large, violet with purple center; **Picárdii** is listed; **purpùrea,** fls. purple.

córsica (*V. Bertolonii*). Glabrous per., sts. leafy, ascending: basal lvs. ovate-orbicular, st.-lvs. oblong to lanceolate, entire or nearly so, stipules entire, the lower ones with 2 linear lateral lobes: fls. violet-blue, acute, spur twice as long as the lanceolate sepals. Corsica, Sardinia.

cucullàta. Lvs. broad-ovate, acute, wavy-toothed: fls. violet with darker throat, sometimes white. Que. to Ga. Var. **álba** has fls. white. Var. **bícolor** has white fls. with small violet center and veins. Var. **variegàta** is listed.

cuneàta. Sts. to 7 in. long: lvs. ovate, toothed: fls. with 2 upper petals purple, lower violet or whitish veined or spotted with purple, spur yellowish. Ore., Calif.

cuspidàta: listed name of no known botanical standing.

dactyloìdes. Lvs. palmately 5-lobed, segms. oblong-cuneate, somewhat serrate-incised, villous beneath: fls. violet, sepals oblong, obtuse, spur short. Siberia.

declinàta. Similar to *V. lutea*, differing in spur and petals twice as long as calyx. Balkans.

declìvis: listed name.

delphinifòlia: *V. pedatifida.*

Doúglasii (*V. chrysantha*), To 5 in.: lvs. bipinnate into linear or oblong segms.: fls. orange-yellow veined with purple, the 2 upper brownish-purple outside. Calif.

Dubyàna: listed name.

eizanénse is listed as with large white fragrant fls. and originating from Japan; the name is not known botanically.

elàtior. Strong erect per. to 20 in.: lvs. not in basal rosette, blade lanceolate to lanceolate-ovate, to 3 in. long, glabrous: fls. bright blue with darker veins. Cent. and E. Eu.

elegántula (*V. bosniaca*). Per. but better treated as bien., to 6 in., becoming straggling: lvs. ovate, wavy-toothed: fls. rose-purple with yellow striped spot at base of lower petal, long-spurred. S. W. Eu.

emarginàta. Plant glabrous, to 6 in.: lvs. ovate to triangular, to 4 in. long, petiole much longer than blade, glabrous, margins usually coarsely toothed along middle: fls. violet-blue, peduncles shorter than lvs., erect. N. Y. to Ga., west to Okla.

eriocárpa (*V. scabriuscula*). To 4 in.: basal lvs. ovate to reniform, st.-lvs. on upper part of st.: fls. yellow: caps. woolly. N. S. to Man., Ga. and Tex. Var. **leiocárpa** has glabrous caps.—The typical form with woolly frs. is more rare in the wild and in cult. than is the var. *leiocarpa.*

esculénta. Plant glabrous, with usually branched ascending rootstocks, to 6 in.: lvs. 3–5-lobed, to 6 in. long: fls. pale violet to white, on long peduncles. Wet land along coastal plain, S. C. to Fla.

filicaùlis. Sts. creeping, slender: lvs. ovate-orbicular, to ⅔ in. across, cordate, obtusely crenate, stipules broad and laciniate: fls. to ½ in. across, pedicels to 4 in. long, spur short. New Zeal

fimbriátula. To 4 in.: lvs. ovate to oblong-ovate, pubescent beneath, serrulate: fls. violet-purple. N. S. to Wis. south to N. Ga.

Fléttii. To 6 in., glabrous: lvs. reniform, toothed: fls. violet with yellow base. Mts., Wash.

florariénsis. Recorded as a hybrid with *V. rothomagensis* and *V. cornuta:* fls. purple, the lower petal yellow at base striped purple, short-spurred.

floridàna. To 4 in.: lvs. cordate, serrulate, ciliate, often puberulent above: fls. pale violet to nearly white, on peduncles longer than lvs. Fla.

glabélla. To 1 ft.: lvs. cordate: fls. bright yellow veined with purple, short-spurred. Alaska to Calif.

grácilis. To 1 ft., hairy: lvs. oblong to broad-ovate, somewhat toothed, stipules pinnately parted: fls. violet, spur longer than sepals. Macedonia to Asia Minor. Var. **álba,** fls. white. Var. **lùtea,** fls. yellow.

grandiflòra: a confused name used in the trade for hort. forms.

grypocèras: *V. sylvestris.*

Hállii. To 4 in.: lvs. palmately 2-parted into narrow segms.: fls. with 2 upper petals dark violet and 3 lower yellow or white. Ore., Calif.

hastàta. To 10 in.: lvs. halberd-shaped, toothed: fls. yellow tinged violet outside. Pa. to Fla.

hederàcea (*Erpetion reniforme*). Australian V. Tufted, creeping by stolons: lvs. reniform to spatulate, entire or toothed: fls. blue varying to white, scarcely spurred. Australia.

heterophýlla: name of uncertain application.

hirsùtula. Southern Wood V. To 3 in.: lvs. orbicular-reniform, to 2 in. across, usually flat on ground or nearly so, silvery-pubescent and purple-veined above, purplish-green and glabrous beneath: fls. reddish-purple, spur very blunt and about ⅛ in. long. S. N. Y. to Ala. and Ga.

hírta. Similar to *V. odorata*, hairy, 6 in.: lvs. narrower and more triangular: fls. inodorous or faintly scented, spur long and hooked. Eu.

Hòwellii. To 1 ft., erect or spreading: lvs. ovate-cordate or round-reniform, toothed and ciliate: fls. pale blue or violet, large, spur straight, about half length of sepals. Ore.

hýbrida. Botanically the name is a synonym of *V. uliginosa*, a plant not known to be in cult.; it is used in the trade for various hort. forms of uncertain lineage.

incógnita. White V. To 3 in.: lvs. orbicular- reniform, pubescent beneath and on petioles, glabrous above, apex very abruptly acuminate, margins serrulate: fls. white. Que. to Wis. south to Mass. and Tenn. Var. **Fórbesii** has lvs. pubescent above but glabrous beneath and on petioles; in cult. it is not usually distinguished from the typical form.

inominàta: listed name of unknown botanical standing.

Joòi. Per. to 3½ in., rootstock slender: lvs. ovate to oblong, to 1¼ in. wide, base subtruncate to cordate, crenulate, glabrous: fls. pinkish-violet, to ¾ in. across, lateral petals bearded below, sepals oblong-lanceolate. S. E. Eu.—Sometimes distributed as *V. missouriensis.*

Kitaibeliàna. Ann. to 8 in., glabrous: lvs. nearly orbicular to obovate, upper ones spatulate to linear-oblong, to 1 in. long, toothed: fls. cream-colored. Iberian Peninsula. Var. **Rafinésquii** (*V. Rafinesquii*) differ in its ciliate sepals, lvs. often entire or only slightly toothed, fls. lilac or lavender-tinged and larger. Probably S. Eu.; nat. N. Y. to Ga. and Tex.

labradórica. To 3 in., with few short slender ascending sts.: lvs. orbicular, to ¾ in. across, glabrous: fls. deep violet. Greenland and Lab. south to mts. of N. H., Me. and N. Y.

lanceolàta. To 4 in.: lvs. lanceolate, tapering into margined petioles, slightly toothed: fls. white. Moist soil, N. S. to Fla. and Tex.

Lángloisii. To 4 in.: lvs. cordate-ovate, glabrous: fls. violet, to 1 in. across, on peduncles longer than lvs. Moist shade, N. C. to Fla. and Tex.

Lángsdorffii. To 8 in.: lvs. ovate-cordate, wavy-toothed: fls. blue or violet varying to white, spur broad. N. W. Amer., Siberia.

latiúscula. To 6 in., lvs. reaching 1 ft. after flowering: lvs. triangular-cordate, immature blades tinged purple beneath, serrate: fls. deep violet, large. Vt. to N. J. and N. W. Pa.

linearifòlia: *Ionidium linearifolium.*

lobàta. To 1 ft.: lvs. palmately 3–7-parted into nearly entire lobes: fls. yellow veined at base, purple outside. Ore., Calif.

Lovelliàna. To 6 in.: lvs. ovate-cordate, blades to 2 in. long, remotely pubescent, often 3-lobed with lobes 2–3-cleft: fls. violet-purple, the 3 lower petals bearded and with darker lines. N. C. to Fla. west to Okla.

lùtea. To 10 in., with creeping underground sts.: lvs. ovate to lanceolate, wavy-toothed, stipules pinnatifid: fls. yellow, sometimes upper petals or fls. purple, spur as long as calyx. Eu. Vars. **grandiflòra** and **spléndens** are in the trade.

macedónica. To 10 in., sts. numerous and decumbent: lower lvs. ovate-subcordate, others oblong-lanceolate, acute, all crenulate: fls. bluish-violet, spur rounded, twice as long as calyx. Greece.

Maclóskeyi. To 6 in. or less: lvs. cordate to orbicular, remotely crenulate, in tufts at ends of leafy stolons: fls. white. Alta., B. C. to Calif.

macrocèras. To 6 in. or more, glabrous, sts. not leafy, rootstock stout: lvs. oblong-cordate, obtuse, crenate-serrate, petiole to 4 in. long: fls. violet, fragrant, throat bearded, spur incurved and about as long as petals or longer, stigma somewhat hooked, sepals ovate, obtuse. Russia.

mirábilis. To 1 ft.: lvs. oval, cordate, wavy-toothed: fls. pale blue, fragrant. Eu.

missouriénsis. Tufted, to 6 in.: lvs. ovate-cordate, toothed: fls. pale violet marked with purple, white center. Mo. to Tex.—See *V. Jooi.*

Munbyàna. To 1 ft.: lvs. cordate-ovate, toothed, glabrous, stipules pinnately cut: fls. large, 1–3 from the lower axils, violet or yellow, spur straight, about twice length of sepals. Algeria.

nàna: listed name.

nephrophýlla. Lvs. cordate-ovate or reniform, wavy-toothed: fls. deep violet, large. Cold bogs, N. N. Amer.

nìgra: advertised as having black velvety fls.

nippónica: *V. phalacrocarpoides.*

nummularifòlia. Tufted alpine: lvs. broad-ovate, entire: fls. blue with darker lines, short-spurred. S. Eu.

Núttallii. To 10 in.: lvs. lanceolate, tapering into margined petioles, entire or nearly so: fls. yellow. Man. to Ariz. Var. **præmórsa** (*V. præmorsa*) is brown-pubescent, lvs. orbicular to very broadly lanceolate, margins irregularly wavy-toothed. B. C. and Wash.

obtusoságitta. Stemless: lvs. sagittate to oblong-ovate, auriculate at base, to 2 in. long, glabrous, petiole to 3½ in. long: fls. pale violet, hairy within, spur saccate and almost as long as lanceolate sepals. Japan.

occidentàlis. To 6 in., glabrous, rootstock not creeping but producing long filiform runners: lvs. ovate to spatulate-oblong, obscurely crenate, longer than scapes: fls. white, the lower petals veined purple. Marshes, Ore. and Calif.

ocellàta. To 1 ft.: lvs. cordate-ovate, wavy-toothed: fls. with 2 upper petals white, violet on outside, the 3 lower white or yellow spotted or veined with purple. Ore., Calif.

odoràta. Sweet, Garden or Florists V. Tufted, stemless, making long runners: lvs. cordate-ovate to reniform, toothed: fls. deep violet, rarely rose or white, fragrant, spur short, nearly straight. Eu., Afr., Asia.—Many forms varying in stature, size and color of fls., also vars. with double fls. Named forms are **álba, nàna, rosìna, semperflòrens, spléndens, sulfùrea.**

orbiculàta. Stolons to 4 in. long: lvs. orbicular, wavy-toothed: fls. yellow. B. C. to Wash. and Ida.

pállens. Lvs. cordate-ovate or cordate-orbicular, glabrous, toothed: fls. white, slightly fragrant. Lab. to S. C. and west to N. D.

palmàta. Lvs. palmately 5–11-lobed or -parted, middle segms. largest, toothed or cut: fls. violet-purple. Mass. to Minn. and Fla.

palústris. Lvs. cordate-ovate or reniform, wavy-toothed: fls. pale lilac with darker veins, varying to nearly white, short-spurred. Moist soil, N. N. Amer., Eu., Asia.

Papílio: *V. cornuta* var.

papilionàcea. Robust, to 6 in.: lvs. deltoid-ovate to cordate-ovate, toothed: fls. normally deep violet with whitish or greenish-yellow center; cleistogamous fls. usually underground. Mass. to Ga. and Okla. Var. **álba** has white fls.

Patrínii (*V. chinensis*). Stemless and non-stoloniferous per. to 5 in.: lvs. triangular-ovate to linear, to 4 in. long, base hastate, heart-shaped to wedge-shaped, margins crenate or serrate: fls. lilac, to ½ in. across, stigma 3-lobed. Cent. Russia east to Japan.

parviflòra: confused name, material so listed may be referable to *V. tricolor.*

pedàta (*V. pedata* var. *bicolor*). Birds-foot V. Stemless: lvs. 3–5-divided, segms. 2–4-cleft or toothed near apex: fls. with 2 upper petals dark violet, 3 lower pale lilac. Mass. and Minn. to Fla. Var. **álba** has white fls. Var. **grandiflòra** is listed. Var. **linearíloba** has all petals lilac-purple.

pedatífida (*V. delphinifolia*). Lvs. palmately many-parted, the ultimate segms. linear: fls. violet, on scapes longer than lvs. Ohio to Ariz.

pedunculàta. Sts. ascending, often 2 ft. long: lvs. round-ovate, coarsely toothed: fls. orange-yellow veined purple on the inside. Calif.

phalacrocarpoìdes (*V. nipponica*). Stemless, rhizome short, thick and erect: lvs. ovate, ⅝–1½ in. wide, obtuse, crenate, glabrous, usually erect: fls. violet-purple, to ¾ in. across, on peduncles often exceeding lvs., lateral petals white-bearded, spur to ½ in. long: caps. glabrous. Japan.—Thought to be a hybrid between *V. japonica* and *V. phalacrocarpa.*

pinnàta. Stemless, to 3 in.: lvs. palmately many-parted: fls. violet, paler at base. Eu.

præmórsa: *V. Nuttallii* var.

Priceàna (*V. confederata*). Confederate V. Lvs. cordate-ovate, glabrous: fls. whitish heavily veined with violet-blue. Ky. to Ga. and Ark.—This plant has been considered by some authors as an albino form of *V. papil-*

ionacea, but no seedling reversions to forms resembling *V. papilionacea* are known.

primulifòlia. To 10 in.: lvs. oblong to ovate, somewhat toothed: fls. white with purplish veins. N. B. to Fla. and La.

pubéscens. To 1 ft., soft-pubescent: lvs. broad-ovate to reniform, toothed, stipules large: fls. bright yellow, spurs short. N. S. to Va. and Mo.

Rafinésquii: *V. Kitaibeliana* var.

renifòlia. To 4 in.: lvs. reniform, pubescent, remotely crenate-serrate, apex rarely acute: fls. white, lower 3 petals with brown veins, all glabrous. Swamps of Newf. south to Pa., Mich. and Minn., also in Rocky Mts. to Colo.

retùsa. To 4 in.: lvs. cordate-acuminate to ovate, glabrous, crenate-serrate: fls. violet. Kans. to Colo.

Riviniàna. To 6 in.: lvs. cordate-ovate, stipules lanceolate: fls. pale blue with short yellowish-white spur. Eu.

Róbertii. Hort. hybrid of which one parent is said to be *V. affinis.*

rostràta. To 8 in.: lvs. cordate-ovate or orbicular, toothed: fls. lilac with darker spots, spur to ½ in. long. Que. to Mich. and Ga.

rothomagénsis: a form of *V. tricolor.*

rotundifòlia. To 4 in.: lvs. oval, obtuse, thick and prostrate, round-toothed: fls. bright yellow, with brown lines on 3 lower petals. Mts., Me. to Ga.

ruguldsa. To 2 ft., with branching stolons: lvs. cordate-reniform, hairy below: fls. white inside with yellow base, often tinged violet. Alaska to Ia.

rupéstris. To 4 in.: lvs. cordate to orbicular, blade to 1½ in. long, pale green above and often purplish beneath, rather thick: fls. blue-violet. Eu.

sagittàta. Lvs. lanceolate or oblong-lanceolate, sagittately toothed at base: fls. violet-purple. Mass. to Ga. and La.

Sàræa: hort. name for pure white-fld. form.

sarmentòsa: *V. sempervirens.*

saxátilis (*V. alpestris*). Ann. to 6 in.; sts. slender, prostrate or sometimes creeping: lvs. ovate, crenate, stipules broad: fls. yellow, or the upper petals violet or the corolla entirely violet, about ¾ in. across. Cent. Eu.

scabriúscula: *V. eriocarpa.*

sempérvirens (*V. sarmentosa*). Sts. decumbent: lvs. round-cordate, toothed, dark-spotted: fls. yellow, short-spurred. B. C. to Calif.

septentrionàlis. To 5 in.: lvs. ovate to reniform, toothed and ciliate: fls. large, violet-purple, rarely white. Newf. to B. C.

Shéltonii. To 6 in.: lvs. palmately 3-parted into cut lobes: fls. pale yellow. Wash. to Calif.

Sièboldii. Similar to *V. Selkirkii*, from which it differs in its obtuse lvs., small white fls. and in the jointed rhizome. Japan.

silvática: *V. sylvestris.*

soròria. To 6 in.: lvs. ovate, orbicular or reniform, usually pubescent beneath and on petioles, crenate-serrate: fls. violet to lavender, rarely white, peduncles often pubescent. Que. to Minn. south to N. C. and Okla.—It is sometimes not possible to distinguish this from forms of *V. papilionacea.*

spléndida. Per. to 20 in., ascending: lvs. ovate, to 6 in. long, obtuse, crenate, petiole narrowly winged: fls. yellow, solitary, to 1½ in. across, spur long as petals or longer, ovary glabrous, sepals broadly lanceolate, subpilose, margins denticulate. Italy.

striàta. Tufted, to 2 ft.: lvs. ovate to orbicular, wavy-toothed: fls. white or cream. N. Y. to Ga. and Mo.

supérba: hort. name given to forms of several species.

sylvéstris (*V. silvatica. V. grypoceras*). Sts. reclining and ascending, to 8 in.: lvs. deeply cordate or nearly reniform, stipules narrow, fringed-toothed: fls. bluish-purple or lilac, spur short. Eu. Var. **ròsea** is listed.

trícolor var. **horténsis.** Pansy. Heartsease. Ann. or short-lived per., sts. becoming long and much branched: basal lvs. round-cordate, st.-lvs. ovate-oblong or lanceolate, toothed, large stipules pinnately parted near base: fls. large, usually in 3 colors, blue, whitish and yellow, spur short. The garden pansy is considered an offshoot of *V. tricolor*, probably with other species involved in its parentage; it varies greatly in size, shape and coloring of fls. See cult. at head of this article.

trinervàta. Lvs. dissected into thick lanceolate or ovate-lanceolate strongly 3-nerved segms.: fls. with upper petals dark blue and lower pale blue or white with yellow base. Wash.

vaginàta. Related to *V. cucullata* but differs in lf. petioles somewhat sheathing the more slender st., stipules whitish, and short-spurred paler fls. Japan.

vallícola. Plants stemmed: lvs. ovate to lanceolate, obtuse, nearly entire, basal ones narrowly ovate: fls. yellow, upper 2 petals tinged purple. Moist rich soil, Sask. to B. C. south to Colo. and Wash.

Varenària: catalogue name.

venòsa. To 5 in.: basal lvs. round, 5–7-lobed or toothed: fls. yellow. Mont. to Calif

viàrum. To 5 in.: lvs. simple or 3–7-lobed, glabrous, incised or serrate: fls. deep violet. Mo. to Kans.

villòsa. Lvs. ovate to orbicular, slightly toothed, long-petioled: fls. violet. Va. to Fla. and Tex.

Vilmoriniàna: hort. name.

violàcea: *V. alba.*

vittàta. To 1 ft.: lvs. glabrous, usually 6 in. high at time of flowering, becoming larger with age, blade lanceolate becoming linear, to ½ in. wide, villous beneath: fls. white. N. C. to Fla., west to Tex.

Wálteri. Lvs. orbicular or ovate, mottled with dark green: fls. violet-blue. S. C. to Fla. and Tex.

Wellsiàna: listed name.

Wóckei: hort. name of hort. or hybrid form.

VIOLÀCEÆ. Violet Family. Widely distributed temp. and trop. herbs or shrubs, and sometimes trees, of 15 genera, having simple or deeply cut lvs., mostly bisexual irregular or regular fls. with 5 sepals and petals, the lower petal often spurred or saccate, 5 stamens, superior 1-celled ovary, and fr. a caps. or berry. Known to cult. with us in the genera Hymenanthera, Ionidium, Melicytus and Viola.

VIOLET: *Viola.* **African-:** *Saintpaulia ionantha.* **Dames-:** *Hesperis matronalis.* **Dogs-tooth-:** *Erythronium dens-canis.* **Usambara-:** *Saintpaulia ionantha.*

VIORNA: *Clematis.*

VIRGÍLIA. *Leguminosæ.* S. African tree, intro. in S. Calif. **V. capénsis.** Lvs. with 6–10 pairs of linear-oblong leathery lfts. to 1 in. long, pale and tomentose beneath: fls. papilionaceous, rosy-purple, ½ in. long, in terminal racemes: pods linear, flattened, leathery. For *V. lutea* see *Cladrastis.*

VIRGINIA CREEPER: *Parthenocissus quinquefolia.*

VIRGINS-BOWER: *Clematis.*

VISCARIA: *Lychnis.*

VISCUM: see *Loranthaceæ.*

VITÀCEÆ. Grape or Vine Family. Mostly woody vines climbing by tendrils, of 10 or more widely distributed genera, having alternate simple or compound lvs., small bisexual or unisexual fls. with 4–5 sepals, petals and stamens, superior 2–6-celled ovary, and fr. a berry. Several genera are grown for ornament and screens and covering arbors and walls, as Ampelopsis, Cissus, Leea, Parthenocissus, Tetrastigma, Vitis; and Vitis is grown also for the edible fr. The plants are of easy cult., and many of them are hardy in the northern states.

VÌTEX. *Verbenaceæ.* Trees and shrubs with opposite digitately compound lvs. and white, blue, yellowish or red fls. in terminal spikes or panicles in late summer and autumn.

Vitex does well in any good soil. Propagated by seeds in spring, layers and greenwood cuttings under glass. *V. Negundo* is usually root-hardy in some of the northern parts of the country, but *V. Agnus-castus* is more tender; when the roots survive, the young shoots produce flowers.

Ágnus-cástus. Chaste-Tree. Hemp-Tree. Monks Pepper-Tree. To 10 ft.: lvs. of 5–7 lanceolate nearly entire lfts. to 4 in. long, grayish-tomentose beneath and very dark green above: fls. lilac or lavender (varying to whitish), ⅓ in. long, in rather dense spikes to 7 in. long. S. Eu. Var. **álba** has white fls. Var. **latifòlia** (*V. latifolia*) has shorter broader lvs. Var. **variegàta** has variegated foliage.

divaricàta. To 60 ft.: lvs. of 1 or 3 elliptic to ovate entire lfts. to 6 in. long: fls. violet or blue, to ¼ in. across, in panicles: fr. black, ⅓ in. long. W. Indies, Guiana.

incìsa: *V. Negundo* var.

laciniàta: *V. Negundo* var. *incisa.*

latifòlia: *V. Agnus-castus* var.

lùcens. To 60 ft.: lvs. of 3–5 obovate lfts. to 5 in. long, glabrous and shining: fls. dark red, 1 in. long, in panicles: fr. bright red, ¾ in. across. New Zeal.

macrocéphala: listed name of unknown botanical standing.

macrophýlla of hort. may be a broad-lvd. form of *V. Agnus-castus*, or *V. Negundo* var.

Negúndo. To 15 ft.: lvs. of 3–5 ovate to lanceolate toothed or entire lfts. to 4 in. long, grayish-tomentose beneath and dark green above: fls. lilac or lavender, ¼ in. long, on slender branches of loose panicles to 8 in. long. China, India. Var. **incìsa** (*V. laciniata*) has deeply toothed or cut lvs. Var. **macrophýlla** is a broad-lvd. form.

quinàta. Lvs. usually 5-foliolate, nearly glabrous, lfts. elliptic-oblong, acuminate, entire: fls. yellowish, to ¼ in. across, in densely-fld. cymes. S. China to Indo-China.

VÌTIS. THE VINE. GRAPE. *Vitaceæ.* Tendril-climbing woody deciduous vines of the northern hemisphere (sometimes nearly erect shrubs in arid regions), grown for the fr. and also for screen cover, trellises and ornament: fls. (often unisexual) with a disk separate from the ovary; petals 5, coherent at the apex and falling together: fr. a more or less globular berry with seeds contained in the soft pulp. Most of the cult. species are hardy in the middle or northern states; propagated readily by means of seeds, also by cuttings of ripe dormant wood, and rare kinds by soft cuttings in frames. See *Grape.*

ácida: *Cissus acida.*

æstivàlis. SUMMER G. Very tall vigorous climber: lvs. rusty-tomentose or cobwebby on under side of the large soft lobed lvs.: fr. ⅓ in. or less diam., glaucous-black. New England to Fla. and Kans.—Norton Virginia grape is supposed to be a derivative.

amurénsis. Strong vine with the look of *V. cordifolia* but lvs. more or less 3-lobed and the basal sinus very broad and shallow: fr. about ⅓ in. across, black. Manchuria.—Grown for ornament, the lvs. highly colored in autumn.

antárctica: *Cissus antarctica.*

argentifòlia (*V. bicolor* of many authors. *V. Leconteana*). BLUE G. Much like *V. æstivalis*, differing particularly in lvs. more or less glaucous underneath and glabrous and absence of rusty wool on young growths, and frs. not usually as large. New England to Ont. and Mich. and south.

arizónica. CANYON G. Low, scarcely climbing, the tendrils mostly perishing if not attached to support, the internodes short: lvs. rather small, broad-ovate with wide open sinus, usually only indistinctly lobed if at all, cobwebby when young: fr. about ⅓ in. across, black. W. Tex. to Calif. and Mex.

austrìna: *V. Simpsonii.*

Baileyàna. POSSUM G. Slender high climber, densely foliaged: lvs. broad-ovate and cordate, mostly 3-lobed near apex, dull, at maturity pubescent on veins underneath: fr. ¼ in. or less diam., shining black. W. Va. to Ga.

Baudiniàna is *Cissus antarctica.*

Berlandièri. SPANISH G. Stocky, moderately climbing: lvs. cordate, often as broad as long, angled or 3-lobed toward apex, shining above and at maturity pubescent on veins underneath: fr. ⅓ in. or less diam., purple. S. W. Tex. and Mex.

betulifòlia. BIRCH G. Good climber: lvs. mostly rather small, ovate, shallow-cordate to almost truncate at base, mostly not lobed or only angled, pubescent underneath: fr. small, blue-black. China.

bícolor: inapplicable name; see *V. argentifolia.*

bipinnàta: *Ampelopsis arborea.*

Bourquínia (*V. æstivalis* var. *Bourquiniana. V. Bourquiniana*). SOUTHERN SUMMER G. Young growth only moderately rusty as well as under surface of lvs., the covering mostly gray: fr. to ¾ in. across and in large clusters. Cultigen; Herbemont, Lenoir and other vineyard vars. belong here.

califórnica. Tall climber: lvs. roundish or reniform, cordate, pubescent or floccose underneath, some of them 3–5-lobed but commonly not so: fls. very fragrant: fr. about ⅓ in. diam., purple and very glaucous. Calif.

cándicans. MUSTANG G. High strong climber, the young parts white-tomentose and lvs. (which are broad-ovate and lobed only on verdurous shoots) remaining so underneath and dull above: fr. to ¾ in. across, purplish, pungent in flavor. Ark., Okla., Tex.

capénsis: *Cissus capensis.*

caribæa. Strong high vine: lvs. orbicular-ovate, cordate or truncate at base, apex short, not lobed, becoming dull above, rusty-tomentose underneath: fr. very small. Trop. Amer., doubtfully in U. S.

Chámpinii. Robust climber: lvs. reniform to very broad-ovate, cobwebby or pubescent when young but becoming dark glossy green above, lower surface pale and at first tomentose: fr. about ½ in. diam., black. Tex.

cinèrea. SWEET WINTER G. Very high climber: lvs. large, broad-ovate, more or less 3-angled or -lobed, dull and dark green above at maturity, under surface cobwebby-pubescent: fr. ⅓ in. or less diam., black or purple without appreciable bloom. N. Fla. to Tex., north to Ill. and Kans.

Ciotát: see *V. vinifera.*

Coignétiæ (*V. Kaempferi* of some). Very strong heavy-foliaged vine, brightly coloring in autumn: lvs. large (sometimes 1 ft. across), cordate-orbicular, sinus narrow, often shouldered or shallowly lobed, dull above and gray- or rusty-tomentose underneath: fr. about ⅓ in. diam., black with bloom. Japan.

cordifòlia: *V. vulpina.*

coriàcea: *V. Shuttleworthii.*

Dàvidii (*Spinovitis Davidii*). Vigorous prickly climber: lvs. large and rugose, broad-ovate, more or less angled or obscurely lobed toward apex, dull green above and glaucous underneath: fr. about ½ in. across, black. China.

Doaniàna. Vigorous climber: lvs. medium size, very broad-ovate and cordate, sometimes shouldered, floccose above but becoming glabrous, tomentose underneath: fr. ½ in. or more diam., black with bloom. Okla. to N. Mex.—Promising as parent of vineyard vars.; hardy in northern states.

flexuòsa. Slender graceful climber: lvs. rather small, broad-ovate with broad sinus or nearly truncate, shouldered or 3-lobed, shining above and pubescent on veins underneath: fr. about ⅓ in. across, black. Japan, China.—An Ampelopsis is sometimes grown under this name.

Girdiàna. High climber: differs from *V. californica* in having young parts densely white-tomentose, lvs. cordate-ovate and pointed and more tomentose or arachnoid underneath, large forked fl.-cluster, fr. smaller and scarcely, if at all, glaucous. S. Calif., often near the sea.

gongylòdes: *Cissus gongylodes.*

heterophýlla: *Ampelopsis brevipedunculata* var. *Maximowiczii.*

himalayàna: *Parthenocissus himalayana.*

humulifòlia: *Ampelopsis humulifolia.*

hypoglaùca: *Cissus hypoglauca.*

incìsa: *Cissus incisa.*

indivìsa: *Ampelopsis cordata.*

Kaémpferi: *V. Coignetiæ.*

Labrúsca. FOX G. Strong climber with intermittent tendrils: lvs. large and thick, broadly cordate-ovate and often obscurely 3-lobed toward apex, upper surface dull, under surface dull whitish or rusty-tomentose: frs. few in a cluster, ¾ in. or less diam., purple-black with strong foxy flavor. New England and N. Y. to Ga.; also in botanic gardens.

Labruscàna. LABRUSCAN GRAPES. Vineyard vars. (as Concord) showing strong Labrusca likeness and derivatives or hybrids from it: lvs. mostly thinner, less rusty-tomentose: frs. in heavy pointed or shouldered clusters, larger and ameliorated in flavor. Cultigen.

laciniòsa: *V. vinifera* var. *apiifolia.*

Leconteàna: *V. argentifolia.*

Líncecumii. POST-OAK G. Much like *V. æstivalis* but a more stocky grower, lvs. larger and densely tomentose underneath and frequently not rusty: fr. larger, sometimes 1 in. diam., black or dark purple and with thin bloom. S. W. Mo. to La. and Tex.—Promising as parent of vineyard grapes.

Lóngii (*V. Solonis*). BUSH G. Stocky, more or less bushy and erect, young parts floccose: lvs. broad-cordate to nearly orbicular, very coarsely dentate, becoming glossy above at maturity, under surface pale and pubescent on nerves: fr. ½ in. or less diam., black and glaucous. Okla., N. Tex. and N. Mex., S. Colo.

megalophýlla: *Ampelopsis megalophylla.*

mìcans: *Ampelopsis Bodinieri.*

montícola. SWEET MOUNTAIN G. Slender climber: lvs. rather small, nearly orbicular or reniform, the sinus open or shallow, sometimes somewhat 3-lobed, shining light green above and below: fr. ½ in. or less diam., black with little or no bloom. Tex.

Munsoniàna. BIRD G. A muscadine grape, differing from *V. rotundifolia* in being a more slender grower, continuously flowering or fruiting, lvs. less pointed, fr. smaller with thinner skin and tender pulp and lacking the strong flavor. S. Fla.; likely to be planted or utilized in its region.

nòvæ-ángliæ. Strong vine native Me. to Vt. and

Conn., probably not cult. outside botanical collections but which is to be distinguished from *V. riparia:* lvs. round or reniform-ovate, only obscurely or shallowly lobed, the teeth less prolonged, more pubescent underneath: fr. nearly ¾ in. or less diam., black-purple and glaucous.

oblónga: *Cissus oblonga.*

orientàlis: *Ampelopsis orientalis.*

Pagnúccii: *V. Piasezkii* var.

palmàta (*V. rubra*). Red or Catbird G. Tall glabrous climber, the branchlets and petiole red: lvs. rather small, ovate and long-pointed, 3-lobed: fr. about ⅓ in. across, black. Ill. to Tex.; hardy N.

pentagòna. Climber, with young branches tomentose: lvs. ovate, nearly or quite truncate at base, obscurely angled, gray- or reddish-tomentose underneath: fr. about ¼ in. diam., in a long cluster. China; hardy in S. New England.

Piasézkii. Climber with young sts. sometimes glandular: lvs. tomentose underneath, mostly deeply lobed or palmately compound with 3–5 narrow or lance-ovate lfts. with the lateral ones smaller: fr. about ⅓ in. diam., black with bloom. Var. **Pagnúccii** (*V. Pagnuccii*) has young branches and under surfaces of lvs. glabrous or nearly so. China; hardy in northern states.

pteróphora: *Cissus gongylodes.*

púlchra. Strong handsome climber with reddish somewhat floccose young growth: lvs. large, becoming bronzy and glabrous above and purplish tomentose underneath to green, scarcely if at all lobed. Origin unknown; perhaps a hybrid. Hardy in S. New England.

quadrangulàris: *Cissus quadrangularis.*

reticulàta: *V. Wilsoniæ.*

rhombifòlia: *Cissus rhombifolia.*

ripària (*V. vulpina* of some). Riverbank G. Vigorous climber, fragrant in bloom, glabrous except perhaps on veins on under surface of the broad-ovate rather thin large-toothed commonly 3-lobed pointed lvs.: fr. ½ in. or less diam., black and glaucous. N. S. to Man. and Tenn. and Tex.

Romanétii. Stout climber with shoots pubescent and glandular-hairy: lvs. large and thick, orbicular-ovate and indistinctly 3-lobed or shouldered, glabrous or nearly so above, tomentose underneath: fr. about ⅓ in. across, black. China; hardy in northern states.

rotundifòlia (*Muscadinia rotundifolia*). Muscadine. Bullace G. Very strong climber with bark not shredding and tendrils simple: lvs. nearly orbicular to very broad-ovate, short-pointed, shining above, glabrous or essentially so underneath: fr. in small clusters, early deciduous, 1 in. or less diam., dull purple, skin thick and pulp strong-flavored. Del. to Fla., Kans. and Mex.—There are a number of vineyard vars., the Scuppernong having amber-green fr.

rùbra: *V. palmata.*

rufotomentòsa. Redshank G. Allied to *V. æstivalis:* outline of representative mature lvs. very broad or even circular with triangular apex short, red-woolly or floccose underneath and on stout petioles, margins coarsely toothed or notched: fr. black, less than ¼ in. diam. Fla., probably Ga.

rupéstris. Sand G. Bushy, sometimes somewhat climbing, glabrous, tendrils often absent: lvs. rather small, nearly or quite reniform, conduplicate, only slightly, if at all, lobed: fr. ½ in. or less diam., purple-black and lightly glaucous. S. Pa. and Mo. to Tenn. and Tex., and hardy when planted farther N.

sempérvirens: see *Cissus striata.*

Shúttleworthii (*V. coriacea* Amer. auth.). Calloosa G. Vigorous vine with rusty young growth: lvs. nearly reniform to broad-ovate, stoutly stalked, coarsely toothed and perhaps shallowly lobed, upper surface shining and lower surface densely felted: fr. few, about ½ in. thick, pleasantly flavored. S. Fla.

Símpsonii (*V. cinerea* var. *floridana. V. austrina*). Currant G. Allied to *V. æstivalis* but lvs. gray-webby and pubescent rather than rusty, with only shoulder-points rather than lobes, teeth very small: fr. currant-like, in long loose clusters. Fla., Ga.

Smalliàna. Figleaf G. The grape commonly but erroneously known as *V. Simpsonii:* mature lvs. mostly deeply 3–5-lobed and with rounded sinuses: fr. large, usually more than ½ in. diam., in dense mostly broad clusters. Fla.

sòla. Curtiss G. The Fla. plant heretofore known as *V. caribæa:* lvs. cordate, margins sinuate with point terminating each vein: fr. black, about ⅓ in. diam.

Solònis: *V. Longii.*

Thómsonii: *Parthenocissus Thomsonii.*

titànea: recent name in U. S., perhaps an Ampelopsis.

Thúnbergii. Slender climber, young parts and under surface of lvs. rusty-tomentose: lvs. cordate-ovate, deeply 3–5-lobed mostly with rounded sinuses: fr. ⅓ in. or so diam., black and glaucous. China; hardy N.

vinífera. Wine G. The cult. grape of Eu. and of history and also of Calif., in many forms, moderately climbing: lvs. broadly cordate-ovate or nearly orbicular, rather thin, with deep narrow sinus, coarsely toothed, 3–5-lobed with narrow obtuse sinuses, glabrous both surfaces or sometimes tomentose underneath: fr. variable in size, form and color, the skin adhering to the pulp. Probably of the Caucasian region. Var. **apiifòlia** (*V. laciniosa*) is a cut-lvd. form.—*V. Ciotat* is a cut-lvd. or compound-lvd. sport of the vineyard variety Chasselas Doré (of *V. vinifera*), but it has been confused apparently with *Ampelopsis aconitifolia.*

Voinieriàna. Somewhat fleshy very strong vine with tree-like stock and young shoots and under leaf surfaces rusty and usually tomentose: lvs. digitate with 3 or 5 large toothed stalked lfts.: tendrils very long, simple: fls. in cymes: fr. large, acid. E. Asia.—Planted for ornament in S. Fla. and S. Calif.

vulpìna (*V. cordifolia*). Frost G. Very large high climber: lvs. broad-ovate, the cordate sinus narrow, mostly not lobed, shining above, paler underneath but becoming glabrous except perhaps on veins: fr. ⅓ in. or less diam., dull black. Pa. to Fla., Kans. and Tex.—See also *V. riparia.*

Wílsoniæ (*V. reticulata*). High climber with young parts tomentose: lvs. broad-ovate, at first reddish, not lobed, becoming glabrous above, cobwebby on veins underneath and reticulate: fr. about ⅓ in. across, glaucous. China.

VITTADÍNIA. *Compositæ.* Herbaceous perennials with thick rootstocks, alternate lvs., and heads in corymbs or solitary, of blue or white ray-fls. and yellow disk-fls.; pappus of bristles; distributed in Australia, New Zeal., S. Amer. and Hawaiian Isls. Closely related to Erigeron, differing in the slender-pointed rather than blunt or broad style-branches.

austràlis (*V. triloba*). Per. to 1 ft., woody at base, decumbent or nearly erect, not trailing, mostly pubescent: lvs. to ½ in. long or longer if very narrow, spatulate or linear, lobed or toothed at tip: heads solitary and terminal, with white rays. Australia, New Zeal.—Probably not in cult., the plant grown under this name being *Erigeron Karvinskianus.*

tríloba: *V. australis.*

VOLADOR: *Triplaris americana.*

VOLKAMERIA: *Clerodendrum.*

VOLUTARELLA: *Amberboa.*

VOLUTARIA: *Amberboa.*

VOUACAPOUA AMERICANA: *Andira inermis.*

VRIÈSIA. *Bromeliaceæ.* Mostly epiphytic herbs native in trop. Amer., having stiff lvs. in dense rosettes and yellow, green, white or rose fls. covered with conspicuous bracts and borne in flattened spikes; grown also for the foliage which is often barred or variegated. For cult. see *Bromeliaceæ.*

bromelioìdes: listed name of unknown botanical standing.

Cáppei. Hybrid of uncertain parentage.

Duchártrei. Hybrid, parentage unknown.

Duvaliàna (*Tillandsia Duvaliana*). To 1 ft.: lvs. tinged with red beneath: fls. yellow tipped with green, with scarlet and green bracts. Brazil.

erécta. Hybrid between *V. Poelmanii* and *V. Rex.*

fenestràlis. To 1½ ft.: lvs. to 2 ft. long, dark-veined and tipped with brown: fls. pale yellow, bracts spotted green. Brazil.

hieroglýphica. Lvs. banded and irregularly marked with dark green above and brown-purple beneath: fls. yellowish. Brazil.

Magnisiàna. Hybrid between *V. Barilletii* and *V. fenestralis,* having green lvs. with dark zigzag lines, to 16 in. long and 4 in. wide: fls. yellow, the bracts nerved with red, the infl. to 2½ ft. high.

nigréscens: perhaps the same as *Tillandsia nigrescens.*

pícta: *V. speciosa.*

Pòelmanii. Hybrid of uncertain origin.

Réx. Hybrid between *V. Morreni-Barilletii* and *V. cardinalis,* with carmine-red bracts.

Saùndersii (*Encholirion Saundersii*). To 1½ ft.: lvs. linear, grayish above dotted with white, spotted with red-brown beneath: fls. yellow. Brazil.

speciòsa (*V. splendens. V. zebrina. V. picta*). To 3 ft.: lvs. to 1 ft. long and 3 in. wide, banded transversely with dark brown: fls. yellowish-white, the bracts bright red. Guiana. Var. **màjor** is a robust form.

spléndens: *V. speciosa.*

zebrìna: *V. speciosa.*

W

WACHENDÓRFIA. *Hæmodoraceæ.* S. African herbs with tuberous roots, plicate lvs., and funnel-shaped usually bright yellow fls. in panicles; related to Lachnanthes.

thyrsiflòra. To 2 ft.: lvs. to 3 ft. long and 3 in. wide: fls. ¾ in. long, in dense cylindrical panicles 1 ft. long.

WAHLENBÉRGIA. *Campanulaceæ.* Many ann. and per. herbs, largely in Eu. and Afr., differing from Edraianthus (which see) in the loculicidal caps. as well as in more open upright habit and solitary rather than aggregate fls., although some of them, as *W. hederacea*, are slender trailers: lvs. simple, cauline or in basal rosettes, linear to oblanceolate or spatulate, often crenate, or in trailing species much broader: fls. bell-shaped or tubular, often nodding, violet or blue. The small per. species are useful in the rock-garden; propagated by seeds; cult. as for Campanula. The species are much confused. Many species have been described in recent time from Afr.

álbo-marginàta. Low per. 3–8 in. high making a clump of basal rosulate lvs. above which are slender sts. each bearing an erect bell-shaped blue or white fl. 1 in. more or less across: lvs. lanceolate to elliptic and spatulate, nearly or quite obtuse, to 1 in. long, often marginate. New Zeal.

annulàris. Per. with fleshy roots, a few in. high: lvs. mostly basal and crowded, linear-lanceolate, denticulate, pubescent, st.-lvs. bract-like: fl.-sts. often forked: fls. pale blue, bell-shaped, about 1½ in. across. S. W. Afr.—Has been grown as *W. robusta.*

Berteròi: the plant so listed is a Campanula.

bosnìaca: probably an Edraianthus.

capénsis. Ann., 1–2 ft.: lvs. ovate-lanceolate, sessile, 1 in. long more or less, dentate: peduncles long and naked, single-fld.: fls. short and nearly rotate, large, dark blue. S. Afr.

caudàta: *Edraianthus dalmaticus.*

congésta. Per. with creeping sts.: lvs. orbicular or oblong, to 1 in. long, toothed: fls. pale blue, ⅓ in. across. New Zeal.

dalmática: *Edraianthus dalmaticus.*

dinárica: *Edraianthus dinaricus.*

grácilis. Ann., 10–18 in., very leafy on lower half, glabrous above: lvs. sessile, linear-lanceolate to lanceolate, to 1½ in. long, with scattered hairs, margins undulate and thickened: fls. 2–4 in a raceme, corolla very small and little exceeding calyx, color not recorded. Australia, New Zeal., New Caledonia.—Apparently not in cult., probably all the material under this name being *W. vincæflora*, a per. species.

graminifòlia: *Edraianthus graminifolius.*

grandiflòra: *Platycodon grandiflorum.*

Grúmphii: listed name.

hederàcea. Creeping very slender glabrous ann. with much the look of *Cymbalaria muralis:* lvs. round-cordate, angled and shallowly lobed, thin: fls. small, pale lilac, narrowly bell-shaped, about ⅓ in. long. Eu.

Kitaibèlii: *Edraianthus Kitaibelii.*

lobelioìdes: *W. pendula.*

paniculàta. Variable ann., 3–12 in. high, branched at base: lvs. linear-lanceolate or lance-acuminate, margins thickened, entire or nearly so: fls. funnelform, violet or blue, corolla twice longer than calyx. S. Afr.

péndula (*W. lobelioides*). Ann.: lvs. obovate to linear-lanceolate, toothed: fls. rosy-blue, small, scarcely exceeding the calyx, solitary on long stalks. Madeira, Canary Isls.

Pumílio: *Edraianthus Pumilio.*

robústa: see under *W. annularis.*

saxícola. Small per., 1–4 in. high: lvs. all basal, lanceolate to oblanceolate or narrow-obovate, 1 in. or less long and ¼ in. or less broad, nearly entire to slightly toothed: peduncle single in each separate rosette: fls. bell-shaped, less than ½ in. broad, bright light blue. Tasmania.

serpyllifòlia: *Edraianthus serpyllifolius.*

tasmánica: perhaps *W. saxicola.*

tenuifòlia: *Edraianthus tenuifolius.*

vincæflòra. Per. to 1½ ft., leafy on lower half: lvs. reaching 2½ in. long but mostly less, linear to oblong or spatulate, glabrous, often undulate: fls. bell-shaped, 1 in. or more across, blue or white. Australia, New Zeal.—See *W. gracilis.*

WAHOO: *Euonymus atropurpureus.*

WALDSTEÌNIA. *Rosaceæ.* Per. strawberry-like creeping herbs of north temp. zone with mostly basal long-stalked 3–5-lobed or -divided lvs. and yellow fls. in corymbs borne on bracted scapes; sometimes planted in the rock-garden and of easy cult.

fragarioìdes. BARREN-STRAWBERRY. Lvs. of 3 wedge-shaped lfts. to 2 in. long, coarsely toothed at tips: fls. about ⅕ in. wide. Woods, N. B. to Ga. and Minn.

sibírica (*W. trifoliata*). Lvs. with 3 entire lfts.: scapes axillary, 3–5-fld., white. Siberia.

trifoliàta: *W. sibirica.*

WALLFLOWER: *Cheiranthus Cheiri*, which see for cult. **Beach:** *Erysimum suffrutescens.* **Coast:** *Erysimum capitatum.*

WALLÍCHIA. *Palmaceæ.* Feather-palms, mostly soboliferous, unarmed, monœcious or polygamous, the pinnæ short and cuneate and variously toothed at the oblique or irregular apex; species about 4 in the Indo-Malayan region; they thrive in protected situations in S. Fla.: stemless or with short trunk; spadices among the lvs., much branched; stamens 6, borne on the corolla tube: fr. ovoid-oblong, 1–3-seeded, ½–1 in. long, red or purple. Monocarpic (dying after fruiting). See *Palm.*

caryotoìdes. Clustered palm, with sts. short or not evident: lvs. to 8 or 9 ft., curved or arching; pinnæ a dozen or more, oblong or narrow-oblong, white underneath, irregularly cut and toothed; petiole long and nearly cylindrical: fr. about 1 in. long. Bengal, Burma.

dísticha. Trunk solitary or very few, 10–15 ft., coarsely ringed, the lvs. distichous (on two opposite sides) and 8–10 ft. long; pinnæ 1–2 ft. long and 2–3 in. broad, stiff and ribbed, somewhat glaucous underneath, narrow at base and truncate, obtuse or irregular at apex and toothed, with a jagged tooth or little lobe on either side about the middle; petiole short, obscurely angled: fr. oblong. Himalayas.

WALNUT (species of Juglans). The native black walnut of the eastern United States and Canada is *J. nigra*, often gathered from fields and roadsides for home use and market and to some extent planted for the nuts, as is also the butternut, *J. cinerea.*

Nearly one hundred horticultural varieties of black walnut have been selected from the wild and named and some of these have been propagated for the nursery trade. Among these the Thomas is of outstanding merit. The Snyder, Wiard, Tasterite and Kettler are superior cracking varieties of northern origin. The Stambaugh, Ohio, Stabler and Rohwer are adapted to the latitude of Pennsylvania and southward.

Farther west and in California are other native species of Juglans. Good edible nuts are produced by East Asian species. The walnut of history (the English or Persian walnut) is *Juglans regia*, in several marked forms, and this species is under discussion in the remainder of this article.

Various races of cultivated walnut thrive over a wide territory in North America. They have been grown somewhat in western New York but in most localities have been severely damaged or killed outright by occasional cold winters with temperatures ranging down to –20° to –30° F. A recently introduced strain from the Carpathian Mountains has withstood temperatures as low as –40° F. and is promising for trial in the eastern United States. The commercial acreage, however, is in southern California, where adaptable varieties have been produced. Commercial production is also found in parts of Oregon and Washington.

Fertile, deep and well-drained loams are desired, with dependable irrigation water. Trees may be set as close as 40 by 50 feet, but this is too near together for trees at maturity, 60 or 65 feet being preferable. Clean tillage is given from the first, with good cover-crop for winter or following fruiting; this crop is plowed under in spring. The trees are strong free growers on good land. The young tree may be pruned to the desired height for a trunk, but thereafter little regular pruning is undertaken except to thin out the poor, weak and crowding branches.

The crop may run as high as one ton of nuts to the acre, but much less than this quantity is the usual yield. The nuts are shaken off by means of long poles with hooks, but many of them fall naturally. They are washed, dried and sacked, and then taken to the central packing house to be bleached and graded for market. They are now marketed in small cartons for retail trade, under label or trade-mark, and each nut may also be stamped.

Formerly trees were grown directly from seed, but with the coming of improved named varieties grafting must be employed. The desired variety may be worked on common seedling stocks, or on seedlings of the wild California walnut or of the black walnut. The year-old seedling is grafted at the crown in the nursery in spring, the whip-graft method being usual, the parts being covered with wax. At one year from the graft the tree should be 6 feet or more tall, if the soil is good and it has been staked to prevent injury. This one-year-old tree (two-year root) is set in the orchard or grove. The tree is cut back to 5 or 6 feet, to form the head; or if it is not strong or shapely enough it may be headed back to within a foot or two of the ground and a new sprout (which should be staked) is developed for the future bole. The walnut tree is long lived.

Insects and diseases are usually not particularly damaging; but the grower should be informed by the latest bulletins and reports.

WALTHÈRIA. *Sterculiaceæ.* Herbs, shrubs or trees native mostly in trop. Amer., with alternate toothed lvs. and small fls. in axillary clusters or cymes; one species sometimes grown in Fla.

americàna. To 4 ft.: lvs. ovate to oblong, to 2 in. long: fls. yellow, about ¼ in. long, in dense clusters. Fla., W. Indies, S. Amer.

WAMPI: *Clausena punctata.*

WANDERING JEW: *Tradescantia fluminensis, Zebrina pendula.*

WAND-FLOWER: *Sparaxis.*

WARATAH: *Telopea speciosissima.*

WARNERIA AUGUSTA: *Gardenia jasminoides.*

WARSCEWICZÉLLA. *Orchidaceæ.* Epiphytes of trop. Amer. without pseudobulbs, clustered distichous lvs. and large solitary fls.; sepals and petals similar; lip 2- or more-lobed, movably joined to the column-foot. Grown in a warm greenhouse; see *Orchids.*

aromática. Fls. fragrant, 3–4 in. across, white with an azure lip. Panama, Costa Rica.

díscolor. Lvs. to 17 in. long: scapes much shorter than lvs.; fls. about 2 in. across; sepals and petals white, greenish or yellowish, the latter sometimes tinged with purple; lip purple shading to white on margins, with a yellow or whitish plicate crest at base. Feb.–July, Sept.–Oct. Cent. Amer., Cuba.

Wéndlandii. Lvs. to 13½ in. long: peduncles to 4 in. long; fls. large, to over 4 in. across; sepals and petals white to yellow-green; lip violet through the center with white margins. July–Sept. Costa Rica.

WARSZEWÍCZIA. *Rubiaceæ.* Trop. American trees or shrubs with large opposite lvs. and small fls. in cymes borne in terminal panicles; one species intro. in S. Calif.

coccínea. To 20 ft.: lvs. obovate, to 2 ft. or more long and 1 ft. across: fls. yellow or orange, ¼ in. long, the infl. 1 ft. and more long. Trinidad, Cent. Amer. to Brazil.

WASHINGTÒNIA (*Neowashingtonia*). *Palmaceæ.* Two species of massive hermaphrodite fan-palms, native in Sonora and Lower Calif., Mex., and in the interior of S. Calif., and in S. W. Ariz., unarmed except for the spiny margins of petioles, the chaffy fls. solitary and nearly sessile on the branchlets of long and slender axillary spadices that exceed the foliage, the clusters of sprays looking not unlike corn-tassels: lvs. large and heavy: stamens 6, with narrow filaments: fr. a little 1-seeded thin-fleshed ellipsoid or globose drupe about ⅓ in. long. The Washingtonias are extensively planted in Cent. and S. Calif., and are common along the Gulf Coast, in Fla., as well as in other parts of the world. They are still sometimes listed as Brahea, a practice that should now be discontinued. For cult. see *Palm.*

filamentòsa: *W. filifera.*

filífera (*Brahea filifera* and *filamentosa. W. filamentosa*). Ponderous tree to more than 80 ft. with gray-green foliage, blade lacking a tawny patch underneath about the hastula; trunk clothed in nature with a dense evenly thatched "petticoat" or shag of hanging old lvs. that usually tapers inward somewhat at the base when the lower trunk is bare and does not show any outstanding old fl.-stalks; lower lvs. hanging prone, displaying the long flat mostly green (except at base) spined petioles: lvs. very long-stalked and standing well separated so that the crown is open and very broad, the long limp narrowly-attenuate segms. of the very filiferous blades gracefully hanging. Native about streams and springs on borders of Colorado Desert, Calif. and in S. W. Ariz.—Not so well adapted as the next species for planting near the coast.

grácilis: *W. robusta.*

robústa (*W. gracilis. W. Sonoræ*). A taller and more slender tree than *W. filifera*, or more rapid-growing, with brilliant green foliage and a large tawny patch about hastula on under side of blade, clothed in nature with a long cylindrical uneven or ragged shag, and the old fl.-stalks standing out squarely through it, the rich brown and heavily spined petioles not prominent: crown relatively narrow: lvs. stiffer and mostly less deeply cut and less slender-pointed, bearing few or no fibers except on very young trees; segms. very variable as to their drooping habit and the number of filaments. Mex.—The shag or thatch sometimes falls from the upper part of the trunk of tall trees, leaving the st. bare.

Sonòræ: *W. robusta.*

WASHINGTON PLANT: *Cabomba caroliniana.*

WATER-FEATHER: *Myriophyllum proserpinacoides.* **-Hawthorn:** *Aponogeton distachyus.* **-Hemlock:** *Cicuta.* **-Hyacinth:** *Eichhornia crassipes.* **-Leaf:** *Hydrophyllum.* **-Lily:** *Nymphæa, Victoria.* **-Lettuce:** *Pistia Stratiotes.* **-Milfoil:** *Myriophyllum.* **-Plantain:** *Alisma.* **-Poppy:** *Hydrocleys nymphoides.* **-Shield:** *Brasenia, Cabomba.* **-Snowflake:** *Nymphoides indicum.* **-Soldier:** *Stratiotes.* **-Weed:** *Anacharis canadensis.* **-Weed, Yellow:** *Jussiæa californica.* **-Willow:** *Decodon verticillatus.*

WATERMELON (*Citrullus vulgaris*). The watermelon is of simple requirements, yet good commercial results are obtained only on quickly fertile land that has not raised the crop for three or four years or more. In the home gardens long rotation cannot often be practiced, but extra attention to fertility and to combatting of pests may overcome the deficiency. Good early varieties of excellent quality are available for home planting, and they should be more largely grown even in the northern states; these varieties are commonly less long-running than the commercial field varieties, and 8 feet apart each way is sufficient space to allow.

For general field culture the vine should have a running space of 10 feet between the hills. The crop requires a long warm season. Drainage should be good. Land is often plowed in autumn, to expose it to the comminuting action of frost. Well-rotted manure may be worked into the hill and soft earth placed on top in which the seeds are planted. Two or three plants may be left to the hill or stand. Horse cultivation should cease when the plants begin to run, so that the vines will not be disturbed. About twelve tons of merchantable melons to the acre is a good crop. Watermelon wilt is one of the troublesome diseases, for which rotation and care not to use contaminated manure, and planting resistant varieties are preventives.

When a watermelon is ripe it gives a flat dead sound when thumped; the white under side turns yellowish and becomes rather hard and rough or pimply; the fruit has a yielding or "givey" feeling when pressed by the palm of the hand as it lies on the ground, but this test is likely to injure the melon for shipping.

The hard white-fleshed citron-melon, used for preserving, is grown the same as other forms of watermelon. See *Citrullus*.

WATERMELON, CHINESE: *Benincasa hispida.*

WATSÒNIA (*Meriana*). *Iridaceæ.* Summer-blooming bulbs from S. Afr., the sts. bearing sword-shaped lvs. and red or white fls. in terminal or lateral racemes, with curved perianth-tube and equal segms. Cult. as for *Gladiolus*, to which they are related but differ, among other things, in the character of the style. Popular in Calif. for summer bloom.

álba: *W. iridifolia* var. *O'Brienii.*

angústa. To 4 ft.: fls. scarlet, the segms. to 1 in. long and acuminate.

Árdernei: *W. iridifolia* var. *O'Brienii.*

Beátricis. St. to 3 ft.: lvs. few, linear: fls. rich apricot-red, corolla 2 in. or more long, limb wide open.

brevifòlia. To 1½ ft.: fls. bright rose-red, the curved tube 1 in. long and segms. ½ in. long.

bulbillífera. Similar to *W. Meriana* but taller and more robust, lvs. broader, infl. looser, and upper lvs. and bracts bearing bulbels.

coccínea. To 1 ft.: fls. scarlet, the tube to 2 in. long and exceeding the spreading segms.

densiflòra. To 3 ft.: fls. bright rose-red, the curved tube 1½ in. long, twice length of segms., in dense spikes 1 ft. long.

iridifòlia. To 4 ft.: fls. pink, to 3 in. long, the tube much longer than segms. Var. **O'Brìenii** (*W. Ardernei*, *W. O'Brienii*, *W. alba*) has pure white fls.

longifòlia. To 5 ft. or more: fls. from white or pale pink to deep rose, the curved tube to 2 in. long, twice length of segms., densely distichous, in many-fld. spikes.

marginàta. To 5 ft.: fls. rose-red, fragrant, differing from *W. rosea* in the funnel-shaped upper part of the tube being very small.

Meriàna. To 4 ft.: fls. bright rose, the curved tube to 2 in. long, segms. ¾ in. long, in 12–20-fld. spikes.

O'Brìenii: *W. iridifolia* var.

Pîllansii. To 6 ft.: fls. brick-red, the tube 2 in. long, segms. 1 in. long, in dense simple spikes to 1 ft. long.

ròsea. To 6 ft.: fls. rose-red, the tube broadened under segms. and of same length.

Vérsfeldii. Similar to *W. rosea* but with much larger fls. having longer, narrower segms.

Wîlmaniæ. To 5 ft.: basal lvs. narrowly sword-shaped, to 20 in. long, midrib green, margins pale yellow: fls. purplish-rose, to 1½ in. long, horizontal, tube sharply curved, segms. oblong.

Wordsworthiàna. To 5 ft.: basal lvs. glaucous, to 2 ft. long: fls. purplish-lilac, about 3¼ in. long, ascending, segms. half as long as tube, obovate, spreading.

WATTLE: see *Acacia.*

WAXBERRY: *Symphoricarpos albus, Gaultheria hispida.*

WAX-PLANT: *Hoya carnosa.* **-Tree:** *Rhus succedanea.* **-Weed:** *Cuphea petiolata.*

WAXWORK: *Celastrus scandens.*

WAYFARING-TREE: *Viburnum alnifolium* and *Lantana.*

WEATHER-GLASS, GOLDEN: *Hypoxis hygrometrica.*

WEBEROCÈREUS. *Cactaceæ.* A small genus of Cent. American epiphytic cacti allied to Selenicereus, having slender trailing sts., nocturnal fls., ovary warty, and bristly and scaly on upper half, the fr. spineless but somewhat pubescent on the areoles.

Biólleyi (*Cereus Biolleyi*). Sts. long, to ½ in. diam., irregularly 3–5-angled or cylindrical, areoles 1–3-spined or spineless: fls. pale pink within, darker outside, to 2 in. long. Costa Rica.

panaménsis. Sts. 3-angled or flat, margins acute, areoles 1–3-spined or spineless: fls. white within, yellowish-green outside, to 3 in. long. Panama.

WEDÈLIA. *Compositæ.* Ann. and per. herbs in the warm parts of the world, erect to creeping, sometimes more or less woody: lvs. opposite, entire to lobed: heads mostly yellow-rayed and solitary or few together; pappus a crown.

trilobàta (*Stemmodontia trilobata*). Trailing and rooting: lvs. elliptic, 2–4 in. long, more or less notched and shallowly lobed: heads yellow, erect on solitary pedicels. S. Fla. and trop. Amer.—Sometimes employed as ground-cover.

WEED: a plant not wanted and therefore to be destroyed. A plant desired under one circumstance, as horse-radish or vegetable-garden dandelion, may be a weed under other circumstances. Datura back of the barn is jimson-weed; in the drug-garden it is stramonium. Some plants are naturally weedy, by which it is meant that they invade habitable and cultivated grounds and make trouble: they are not wanted. Plants that do not make trouble excite no opposition and are not weeds even though they may have no "uses" in cookery, commerce, ornament or medicine.

The primary remedy for weeds is to grow the plants that one wants: the better they are grown the less will be the opportunity for invaders; and if naturally weedy places are kept clean, most of the breeding grounds will be eliminated; and clean seed may be sown. Aside from this, special practices may be necessary to circumvent and control some kinds of weeds under given conditions. The gardener and farmer will find these means by consulting current books and bulletins and by inquiring of well-informed persons.

WEIGÈLA. *Caprifoliaceæ.* Popular brilliantly-flowered upright shrubs, in white, pink and red in spring and early summer, the plants not stoloniferous or colonizing: lvs. opposite: fls. about 1½ in. long, borne on short leafy shoots of the season often in more or less compound clusters: fr. long and narrow, woody, dehiscing by 2 valves from the top. Species about 10, in E. Asia. Formerly included in the American genus Diervilla, but really distinct. The kinds are much confused by variation, probably by hybridization, so that some of the hort. names cannot be referred exactly to botanical species.

The weigelas are hardy bushes adapted to any good garden land if it is not droughty, although they profit by winter protection of the ground. They require no special attention. The bloom arises from twigs of preceding year and therefore should not be trimmed before flowering. Propagated by greenwood cuttings in frames in summer.

amábilis: *W. florida,* sometimes *W. coræensis.*

arbòrea: sometimes means *W. coræensis,* and sometimes a form of *W. florida.*

argénteo-marginàta: hort. name.

bifórmis: *W. florida* associate.

cándida: white-fld. *W. florida* (as var. *alba*).

candidíssima: hort. name.

coræénsis. Large stout shrub to 15 ft., distinguished by its glabrous branches and lvs. except that latter may be somewhat pubescent on veins underneath, broad lvs., narrow calyx-lobes separate to base, pale rose to carmine corolla (whitish in var. **álba**) that is suddenly narrowed below the middle. Japan.

decòra. Related to *W. japonica* but lvs. somewhat villous underneath and fls. very short-stalked, changeable in color. Japan.

Désboisii: hort. name, supposed to be hybrid between *W. hortensis* and *W. floribunda.*

floribúnda. To 10 ft.: known by the narrowly funnelform dark crimson fls. crowded on short lateral branchlets and the projecting style and sometimes short-exserted anthers; corolla pubescent outside; calyx-lobes narrow, separate to base: lvs. somewhat pubescent above, more so underneath. Japan. Var. **grandiflòra,** fls. large, brownish.

flórida (*W. rosea*). Diffuse nearly glabrous shrub to 8 and 10 ft., with elliptic or obovate short-petioled acuminate lvs. to 4 in. long that are pubescent on veins underneath: fls broadly funnelform, rose-colored (a white var., **álba**), with blunt spreading lobes; calyx-lobes broad and united at or toward base. N. China, Korea. Var. **variegàta,** lvs. margined with yellowish-white.—The commonest weigela in old yards and in many forms of which some depart considerably from the type; some of the named kinds more or less associated with *W. florida* are Biformis, Intermedia, Glorieux, Gustave Mallet, Madame Tellier, Vanhouttei, Venosa, Verschaffeltii, and some of the plants known as Versicolor.

grandiflòra: *W. floribunda* var. or *W. coræensis.*

gratíssima: hort. name, perhaps hybrid between *W. hortensis* and *W. florida.*

Groenewégenii: *W. florida* or hybrid from it.

Héndersonii: hort. name, thought to be hybrid between *W. floribunda* and *W. florida.*

horténsis (*W. japonica* var. *hortensis*). To 10 ft.: young branches hairy and under surface of ovate or oblong acuminate lvs. densely tomentose, upper surface pubescent when young, length 3–4 in.: fls. 3 together on slender peduncle, narrow bell-shaped, carmine (varying to white in var. **nívea**), style sometimes slightly exserted; calyx-lobes narrow and separate to bottom. Japan.

hýbrida: indefinite name for hort. vars. of uncertain origin.

japónica. To 10 ft., branchlets glabrous or nearly so: lvs. elliptic to long-obovate, to 4 in. long, acuminate, densely pubescent underneath particularly on veins: fls. mostly in 3's on short shoots, rather narrowly bell-shaped, whitish changing to carmine; calyx-lobes very narrow and distinct. Japan. Var. **sínica** from China has lvs. soft-pubescent underneath, pale rose-colored corolla abruptly narrowed toward base.

Kosteriàna variegàta: hort. name.

lùtea: hort. name.

nàna variegàta: hort. name.

præcox. To 6 ft.: of the *W. florida* relationship, separated as the earliest flowering: lvs. soft-pubescent underneath: fls. on very short lateral branchlets, calyx-lobes broad and joined below, corolla narrowly bell-shaped and much narrowed below the middle, pubescent outside, rose-colored or pink with yellow in throat. Korea.—Vars. of this species, or to be associated with it, are Avalanche, Bouquet Rose, Conquérant, Daubenton, Espérance, Floreal, Girondin, Gracieux, LePrintemps, Seduction, Vestale.

purpuràta, purpurèa: trade names.

ròsea: *W. florida.*

sessilifòlia: probably *Diervilla sessilifolia.*

Sièboldii: hort. name.

Stéltzneri: probably hybrid between *W. hortensis* and *W. florida.*

styrìaca: probably hybrid between *W. floribunda* and *W. coræensis.*

Vanhoùttei: probably hybrid between *W. hortensis* and *W. florida.*

Vanicèkii: hort. name.

venòsa: supposed to be hybrid between *W. coræensis* and *W. florida.*

venústa (*W. florida* var. *venusta*). Handsome, hardy and graceful species, to 5 or 6 ft., with glabrous branchlets and nearly or quite glabrous rather small lvs., distinguished particularly from *W. florida* by its rich rose-purple corolla which is gradually contracted into a slender tube and has short lobes, calyx small and 2-lipped. Korea.

Verschafféltii: see *W. florida.*

versícolor: probably *W. floribunda;* sometimes applied to an associate of *W. florida.*

WEINMÁNNIA. *Cunoniaceæ.* Shrubs or trees mostly of the southern hemisphere, two intro. into Calif.: lvs. opposite, simple or pinnate: fls. in terminal or axillary racemes: fr. a leathery caps.

racemòsa. Tree to 80 ft.: lvs. oblong-lanceolate to ovate, to 4 in. long, pinnately 3–5-parted when young, very leathery, coarsely toothed: fls. white or pink, small, in racemes to 4 in. long. New Zeal.

sylvícola. To 50 ft.: lvs. of 3 lfts. or pinnate in young trees, lfts. oblong to lanceolate, to 2 in. long, leathery, coarsely toothed: fls. white or pink, small, in racemes to 4 in. long. New Zeal.

WELLINGTONIA: *Sequoiadendron giganteum.*

WÉRCKLEA. *Malvaceæ.* One tree native in Costa Rica and planted in S. Calif. **W. insígnis.** To 30 ft.: lvs. alternate, orbicular or kidney-shaped, to 16 in. across, bright green, palmately veined: fls. rose-lilac with yellow base, 5 in. across, solitary, on stalks to 6 in. long: fr. a bristly caps. 2 in. long.

WESTRÍNGIA. *Labiatæ.* Australian shrubs with entire lvs. in whorls and 2-lipped fls. axillary or in terminal leafy heads; one species sometimes grown in S. Calif.

rosmariniifórmis. To 3 ft. or more: lvs. oblong-lanceolate to linear, to 1 in. long, shining above, silvery-pubescent beneath: fls. white, ½ in. or less long, axillary.

WHEAT: *Triticum æstivum.* **-India:** *Fagopyrum tataricum.*

WHIN: *Ulex.*

WHÍPPLEA. *Saxifragaceæ.* Deciduous shrub from Calif., of little ornamental value but adapted to rock-gardens. **W. modésta.** Branches trailing or arching, 1½ ft. long: lvs. opposite, ovate or elliptic, to 1½ in. long: fls. white, small, in dense cymes ¾ in. across: fr. a leathery caps. 1 in. across. Related to Jamesia and Carpenteria.

WHISPERING BELLS: *Emmenanthe penduliflora.*

WHITE-CUP: *Nierembergia rivularis.*

WHITEWEED: *Chrysanthemum Leucanthemum.*

WHITEWOOD: see *Liriodendron Tulipifera.*

WHITFIÈLDIA. *Acanthaceæ.* Trop. African shrubs differing from Strobilanthes in the brightly colored broadly lanceolate calyx-segms. and campanulate corolla, all subtended by rather large greenish bracts. Grown in greenhouses or out-of-doors in extreme S.; propagated by cuttings or seed.

laterítia. Low shrub: lvs. oblong-ovate, to 2½ in. long, opposite, entire, persistent: fls. orange- to brick-red, to 1½ in long, 2-lipped, in terminal racemes.

WHITLAVIA: *Phacelia Whitlavia.*

WHITLOW-GRASS: *Draba verna.*

WHITLOW-WORT: *Paronychia.*

WHORL: three or more leaves or flowers at one node, in a circle. **-Flower:** *Morina longifolia.*

WHORTLEBERRY: *Vaccinium.*

WIDDRINGTÒNIA. *Cupressaceæ.* Evergreen trees with scale-like or linear lvs. and cones composed of 4 scales; native in Afr. and Madagascar, suitable for warm countries. Allied to Callitris with which some authorities unite it. For cult. see *Conifers.*

cupressoìdes. Shrub or small tree to 12 ft.: lvs. scale-like, imbricated: cones ¾ in. or less across, about 3 together. S. Afr.

juniperoìdes (*Callitris arborea*). Tree to 60 ft.: lvs. scale-like, imbricated: cones ¾ in. across, solitary or several together. S. Afr.

Schwárzii. Similar to *W. juniperoides* but with smaller thicker lvs. and smaller cones. S. Afr.

Whỳtei (*Callitris Whytei*). Tree to 140 ft.: lvs. imbricated, scale-like, on young plants linear: cones ¾ in. across, 4–6 together. E. Afr.

WIGÁNDIA. *Hydrophyllaceæ.* Large stout per. herbs, subshrubs or tree-like, with large simple toothed lvs. covered with glistening stinging hairs, and bell-shaped fls. in terminal scorpioid cymes; several species in trop. Amer.

Wigandias are grown as foliage plants in subtropical bedding. Propagated by seeds sown under glass in winter or by cuttings of the roots in spring.

caracasàna. To 10 ft. or more, sometimes making a large very woody shrub or small tree: lvs. to 1½ ft. long, heart-shaped at base: fls. blue or violet with white tube; filaments hairy below. S. Mex. to Venezuela and Colombia. Var. **macrophýlla** has larger lvs.—Cult in S. Calif. in several forms.

imperiàlis: a robust form, probably a var. of *W. caracasana.*

macrophýlla: *W. caracasana* var.

ùrens. To 12 ft.: lvs. to 1 ft. long, heart-shaped at base: fls. violet. Peru.

Vigièri: of silvery appearance, perhaps a var. of *W. caracasana.*

WILCÓXIA. *Cactaceæ.* Low spiny cacti with dahlia-like roots, 5 species in Tex. and Mex.: branched, often as slender as a lead-pencil, ribs few and low: fls. diurnal, short-tubed, 1 from an areole. See *Cacti.*

austràlis: listed name.

Posélgeri (*Cereus* and *Echinocereus Poselgeri* and *tuberosus*). Sts. to 2 ft. high and less than ½ in. thick; ribs 8–10 and inconspicuous and almost hidden by appressed spines; radials 9–12; central 1: fls. purple or pink, 2 in. long. S. Tex., Mex.

Schmóllii (*W. senilis*). Tubers to 10 in. long and ¾ in. diam.; sts. cylindrical, to 3 in. tall and ⅝ in. diam. with 9–12 low tubercled ribs; spines about 35, soft and hair-like, blackish: fls. rose-purple, to 1⅜ in. long. Mex.

senìlis: *W. Schmollii.*

striàta (*Cereus striatus*). Prostrate, to 3 ft. long and about ⅓ in. diam., blue-green when young; ribs 8–9, very low, straight; spines 9–10, short, black to brown: fls. purplish-red, to 4 in. long. Lower Calif.

tamaulipénsis. Much branched, joints cylindrical, 4–10 in. long; ribs about 10, low; radial spines usually 15–20, spreading, to ⅕ in. long, whitish, straight; central 1, shorter: fls. pale rose, to 2 in. long, tube short, segms. linear-lanceolate. Mex.

viperìna. Sts. branching, velvety-pubescent, less than ½ in. diam., becoming spineless; ribs about 8 and inconspicuous; spines 8 and short: fls. red, 1 in. long. Mex.

WILLEMETIA: *Noltea africana.*

WILLOW: *Salix.* **Desert-:** *Chilopsis linearis.* **Flowering-:** *Chilopsis linearis.* **-Herb:** *Epilobium.* **Primrose-:** *Jussiæa.* **Virginia-:** *Itea virginica.* **Water-:** *Decodon verticillatus.*

WILMÁTTEA. *Cactaceæ.* A climbing monotypic genus of Honduras and Guatemala, differing from Hylocereus in much smaller fls. whose perianth-tube is scarcely discernible and st.-axils woolly and bristly. **W. minutiflòra.** Slender high-climbing vine with dark green acutely 3-angled joints; areoles about 1½ in. apart; spines 1–3, brownish: fls. white within, to 1½ in. long.—Young plants often have st.-angles with thin wings to ½ in. wide or terminal shoots may be subterete.

WINDFLOWER: *Anemone.*

WINDOW-GARDENING: see *House Plants.*

WINEBERRY: *Rubus phœnicolasius.* **New Zealand:** *Aristotelia racemosa.*

WINE-PLANT: *Rheum Rhaponticum.*

WING: a thin, dry or membranaceous expansion or flat extension or appendage of an organ; also the lateral petals of a papilionaceous flower. **-Nut:** *Pterocarya.*

WINTERBERRY: *Ilex glabra, lævigata, verticillata.*

WINTER FAT: *Eurotia lanata.* **-Savory:** *Satureja montana.* **-Sweet:** *Acokanthera spectabilis.*

WINTERGREEN: *Gaultheria, Pyrola.* **Flowering:** *Polygala paucifolia.*

WIRE-PLANTS: *Muehlenbeckia.* **-Vine:** *Muehlenbeckia complexa.*

WISTÈRIA (*Kraunhia*). *Leguminosæ.* Woody twining vines with pinnate lvs., showy papilionaceous fls. in drooping terminal racemes in spring, and elongated pods contracted at intervals; popular ornamental subjects. *W. floribunda* and *W. sinensis* are the commonly planted species and are hardy N.

Wisterias thrive in deep rich soil. They do not transplant readily. Propagated by seeds, division, layering, cuttings of ripened wood under glass, root-cuttings over bottom heat, and horticultural forms by grafting.

brachýbotrys: *W. floribunda.*

chinénsis: *W. sinensis.*

floribúnda (*Glycine floribunda. W. brachybotrys*). JAPANESE W. Lfts. 15–19, ovate-elliptic: fls. violet or violet-blue, to ¾ in. long, in racemes to 1½ ft. long: pods velvety. Japan. Vars. are: **álba,** fls. white; **cárnea,** fls. flesh-colored; **longíssima,** racemes to 4 ft. long, may not be distinct from var. *macrobotrys;* **macróbotrys** (*W. macrobotrys, W. multijuga*), racemes to 3 ft. long; **prǽcox,** early-fld.; **ròsea,** rose-colored or pale pink fls.; **rùbra,** deep pink to reddish fls.; **variegàta,** lvs. variegated; **violàceo-plèna,** double fls.

frutéscens (*W. speciosa*). Lfts. 9–15, ovate to ovate-lanceolate: fls. lilac-purple, ½ in. long, in racemes to 4 in. long: pods glabrous. Va. to Fla. and Tex.; hardy N. Var. **nívea** (var. *alba*), fls. white. Var. **magnífica** is *W. macrostachya.*

japónica (*Millettia japonica*). Lfts. 9–13, ovate-lanceolate: fls. white, ½ in. long, in racemes to 1 ft. long: pods glabrous. Japan, Korea; not reliable N.

macróbotrys: *W. floribunda* var.

macrostàchya (*W. frutescens* var. *magnifica*). Lfts. usually 9, ovate: fls. lilac-purple or light blue, in racemes to 12 in. long: pods glabrous. Swamps, Ill. to Ark.; nearly or quite hardy N.

magnífica: *W. macrostachya.*

megaspérma (*Millettia megasperma*). EVERGREEN W. Lfts. 7–13, obovate, evergreen: fls. purple, in racemes to 6 in. long: pods velvety. Australia; to be grown in Calif.

multíjuga: *W. floribunda* var. *macrobotrys.*

reticulàta: *Millettia reticulata.*

sinénsis (*W. chinensis. Glycine sinensis*). CHINESE W. Lfts. usually 11, ovate to ovate-lanceolate: fls. bluish-violet, 1 in. long, in racemes to 1 ft. long: pods velvety. China. Var. **álba** has white fls. Var. **cærùlea** is listed. Var. **purpùrea** is said to have purplish-violet fls.

speciòsa: *W. frutescens.*

venústa. SILKY W. Lfts. 9–13, oblong-lanceolate or broader, velvety-pubescent on both sides: fls. white, 1 in. long, in racemes to 6 in. long: pods velvety. China; hardy N. Var. **álba** is listed, but may not differ from type.

WITCH-HAZEL: *Hamamelis.*

WITCHS-TEETH: *Lotus formosissimus.*

WITHANIA ORIGANIFOLIA: see *Salpichroa rhomboidea.*

WITHE-ROD: *Viburnum cassinoides* and *nudum.*

WITLOOF: see *Chicory.*

WOAD: *Isatis.*

WOLFBERRY: *Symphoricarpos occidentalis.*

WOLFSBANE: *Aconitum lycoctonum.*

WOMANS-TONGUE-TREE: *Albizzia Lebbek.*

WONDERBERRY: *Solanum nigrum.*

WONGA-WONGA VINE: *Pandorea pandorana.*

WOODBINE: *Lonicera Periclymenum, Parthenocissus quinquefolia.*

WOOD-GOSSIP: *Cæsalpinia Crista.* **-Oil-Tree:** *Aleurites.*

WOODLAND STAR: *Lithofragma affinis.*

WOODRUFF: *Asperula.*

WOÓDSIA. *Polypodiaceæ.* Small rock-loving ferns with tufted rootstocks and pinnately divided fronds; sori on veins beneath the indusia, splitting into star-like lobes; native in temp. and cold countries. They are sometimes planted in rock-gardens and similar places. See *Ferns.*

alpìna. Fronds to 5 in. long, narrowly oblong-lanceolate, smooth above, sparingly hirsute beneath; pinnæ ovate, obtuse, pinnately lobed. Eu., Asia, N. N. Amer.

Cathcartiàna. Fronds to 1 ft. long and 2 in. wide, lanceolate, bipinnatifid; pinnæ oblong, with the segms. separated by wide sinuses, oblong and denticulate. W. N. Y. and N. Mich. to N. Minn.

glabélla. Fronds to 6 in. long, pinnate into triangular or ovate crenately lobed pinnæ, the straw-colored stipes articulate near base. N. N. Amer., Eu.

ilvénsis. Rusty W. Fronds to 10 in. long and 1½ in. wide, 2-pinnatifid into oblong wavy-toothed pinnæ clothed underneath with rusty chaff. Eu., Asia, N. N. Amer.

mexicàna. Fronds to 1 ft. long, glandular-pubescent, 2-pinnatifid into finely toothed segms. with semi-transparent tips. Tex. to Mex.

obtùsa. Blunt-lobed W. Common W. Fronds to 15 in. long and 4 in. wide, 2-pinnate into toothed or cut segms. N. Amer.

oregàna. Fronds narrowly lance-oblong, to 8 in. long and 1 in. wide, bright green, glabrous, bipinnatifid; pinnæ oblong-ovate, crenate-serrulate. Que. to B. C., south to N. Mex. and Lower Calif.

scopulìna. Rocky Mt. W. Fronds to 10 in. long and 2 in. wide, 1–2-pinnate into toothed segms., under surface covered with fine white hairs. Mts. of N. Amer.

WOODWÁRDIA. Chain-Fern. *Polypodiaceæ.* Large ferns with pinnately divided fronds and sori in rows parallel to the midrib; native Eu., Asia, N. Amer. Strong plants for outdoor cult. requiring mostly moist places, and a few of them under glass. They present no particular difficulties. See *Ferns.*

angustifòlia: *W. areolata.*

areolàta (*W. angustifolia. Lorinseria areolata*). Fronds of two forms, to 15 in. long, 1-pinnate, sterile pinnæ lanceolate and toothed, fertile linear and entire. Me. to Fla. and La.

Chamissòi (*W. radicans* var. *americana*). Fronds to 9 ft. long and 1½ ft. wide, 2-pinnate into toothed or lobed segms. B. C. to Calif.

radìcans. Differs from the American species in having large buds on the main rachis which root to form new plants. Eu., Asia.

spinulòsa. Differs from *W. Chamissoi* in the lower surface having fibrillose scales and the glands stalked. Mex., Guatemala.

virgínica (*Anchistea virginica*). Rootstock long and creeping: fronds to 2 ft. long and 9 in. wide, 2-pinnatifid into oblong or ovate fine-toothed segms. N. S. to Fla. and La., Bermuda.

WOOLLY: provided with long, soft and more or less matted hairs; like wool; lanate.

WOOLLYBUTT: *Eucalyptus longifolia.*

WORMS: *Scorpiurus.*

WORMSEED, AMERICAN: *Chenopodium ambrosioides.*

WORMWOOD: *Artemisia.* **Roman:** *Corydalis sempervirens.*

WOUNDWORT: *Anthyllis Vulneraria, Stachys.*

WULFÈNIA. *Scrophulariaceæ.* Hardy low herbaceous perennials suitable for the rock-garden or the border, with mostly basal toothed lvs. and raceme-like clusters of blue tubular 4-lobed fls.; native Eu. and Asia. Wulfenias need rich moist soil but protection from excessive moisture in winter, as they easily decay. Propagated by seeds or division.

carinthìaca. Lvs. oblong, to 8 in. long: fls. about ⅓ in. long, in dense racemes on scapes to 2 ft. high. Mts. of Carinthiaca.

WYÈTHIA. *Compositæ.* Per. herbs of W. N. Amer. with alternate mostly entire and elongated lvs. and solitary or few heads of yellow ray- and disk-fls.; pappus a crown. Sometimes transferred to the garden.

amplexicaùlis. To 2 ft., glabrous: lvs. oblong to lanceolate, to 1 ft. long, glossy, the upper sessile or clasping: heads bright yellow, the rays 1½ in. long. B. C. to Colo.

angustifòlia. To 2 ft., hairy: lvs. lanceolate to oblong-ovate, to 1 ft. or more long, the upper sessile or short-petioled: rays to 2 in. long. Calif.

X

XANTHÍSMA. *Compositæ.* Ann. or bien. herbs native in Tex., with alternate entire lvs. and solitary heads of yellow ray-fls. blooming in summer; pappus of bristles. Of easy cult. in the border.

texànum (*Centauridium Drummondii*). To 4 ft.: lvs. lanceolate to linear, to 2½ in. long, the lower toothed: heads 2 in. across.

XANTHÓCERAS. *Sapindaceæ.* Deciduous shrub from China, planted for ornament. **X. sorbifòlia.** To 15 ft.: lvs. of 9–17 narrow sharply toothed lfts. to 2 in. long, dark green above and paler beneath: fls. polygamous, white with yellow or red blotch at base of petals, nearly 1 in. across, in racemes in May: fr. green, hard and thick-walled, to 2½ in. long, something like a horse-chestnut.—It thrives in any good soil and is hardy N. Propagated by seeds stratified and sown in spring or by root-cuttings over heat.

XANTHORHÌZA (*Zanthorhiza*). *Ranunculaceæ.* One deciduous shrub to 2 ft. with bitter yellow roots, native in E. N. Amer. **X. simplicíssima** (*Z. apiifolia*). Shrub Yellow-Root. Lvs. 1–2-pinnate, with usually 5 toothed or lobed lfts.: fls. brownish-purple, polygamous, about ⅕ in. across, in drooping racemes to 4 in. long, with 5 petal-like sepals and 5 small petals. The name *simplicissima* was bestowed by Marshall, 1785, because the sts. are "generally simple or without branches." The generic name Xanthorhiza originated with Marshall, who spelled it as here printed; the spelling Zanthorhiza and the name *apiifolia* date from L'Héritier 1788.—It thrives in shady damp positions, and is a little bush of much interest. Propagated by division of roots and by seeds.

XANTHORRHŒA. *Liliaceæ.* Australian perennials with thick woody often palm-like sts., linear lvs. in a tuft at top of trunk, and fls. in dense spikes at end of terminal scape, the perianth-segms. distinct; suited to dry climates; propagated by offsets.

Preìssii. To 15 ft.: lvs. to 4 ft. long and ⅙ in. wide, stiff: spikes 1 in. diam., on scapes to 6 ft. long; stamens to ½ in. long.

XANTHOSÒMA. Malanga. Tanier. Yautia. *Araceæ.* Large herbs of trop. Amer., with thick often tuberous rhizomes, thick arrow-shaped lvs. or sometimes pedately parted, with long petioles, and unisexual fls. borne on densely-fld. spadices which are shorter than the spathes. Grown in the tropics for the edible roots and sometimes also as greenhouse foliage plants.

atróvirens. Lvs. to 3 ft. long and 2 ft. wide, dark green above and gray-green below, glaucous, the petioles to 2 ft. long: spathes about 1 ft. long. S. Amer.

bataviénse: a name of no botanical standing, applied to a plant with purple sts. and dark green lvs.

Líndenii (*Phyllotænium Lindenii*). Lvs. to 1 ft. long, bright green with white veins and midrib, the petioles to 1 ft. long: spathes white, about 5½ in. long. Colombia. Var. **magníficum** is an improved form.

Márshallii is a trade name for a form with green lvs. and dark petioles but is not known botanically.

sagittæfòlium. St. to 3 ft. and more high: lvs. to 3 ft. long and nearly as wide, green, the petioles to 3 ft. long: spathes to 9 in. long, greenish-white. W. Indies, S. Amer.

trílobum: hort. name.

violàceum. Lvs. to 2 ft. long and 1½ ft. wide, green with usually purplish nerves, paler beneath, glaucous, the purplish petioles to 2½ ft. long: spathes to 1 ft. long, yellowish-white. W. Indies, S. Amer.

XANTHOXALIS: *Oxalis.*

XANTHOXYLUM: variant but not original spelling of *Zanthoxylum.*

XERÁNTHEMUM. *Compositæ.* Annuals of the Medit. region, with entire lvs. and solitary long-stalked heads of disk-fls., the involucral bracts papery and petal-like, in lilac, rose and purple. One of the oldest and most satisfactory of the immortelles or "everlastings." Propagated by seeds.

ánnuum. Common Immortelle. To 3 ft., white-tomentose: lvs. oblong or oblong-lanceolate, to 2 in. long: heads to 1½ in. across, white, purple, violet, rose. Var. **ligulòsum** (*X. imperiale*) is double or semi-double. Var. **perligulòsum** (*X. superbissimum*) is very double.

cylindràceum. Gray-pubescent: heads oblong-cylindrical, 10–15-fld.

imperiàle: *X. annuum* var. *ligulosum.*

superbíssimum: *X. annuum* var. *perligulosum.*

XEROPHÝLLUM. Turkey-Beard. *Liliaceæ.* Per. with woody rootstocks, linear mostly basal lvs. and white fls. in dense terminal racemes, the perianth-segms. distinct; sometimes transplanted to the wild-garden.

asphodeloìdes. To 5 ft.: lvs. to 1½ ft. long and 1/12 in. wide: racemes to 6 in. long. N. J. to Fla. and Tenn.

tènax. To 5 ft.: lvs. to 2 ft. long and ⅙ in. wide: racemes to 2 ft. long. B. C. to Calif.

XIMENESIA: *Verbesina encelioides.*

XIMÈNIA. *Olacaceæ.* A few species of unarmed shrubs and trees of the western hemisphere and Afr.: lvs. alternate or fascicled, simple and entire: fls. small, white or yellowish, hermaphrodite, mostly in short-peduncled axillary cymes but less frequently solitary, sepals and petals 4 or 5, corolla bearded inside; stamens 8–10; ovary 4-celled at base but fr. a small 1-celled drupe with a single seed.

americàna. Tallow-Wood. Tree to 30 ft. but sometimes only a shrub on sterile lands: lvs. oblong or elliptic, 2–3 in. long and about 1 in. broad, obtuse, shining above: fr. ovoid to nearly globose, ½–¾ in. long, yellow. Fla. and tropics.—Sometimes planted in Fla. for the edible fr.

XOLISMA: *Lyonia.*

XYLÒBIUM. *Orchidaceæ.* Epiphytic orchids native in trop. Amer., having 1–2-lvd. pseudobulbs, plicate lvs., and fls. in lateral racemes; sepals and petals nearly similar; lip commonly 3-lobed. For cult. see *Orchids.*

Cólleyi (*Maxillaria Colleyi*). Pseudobulbs ovoid, to 1½ in. long, commonly 2-lvd.: lvs. elliptic-lanceolate, to 28 in. long and 6 in. wide, leathery, strongly 3-nerved: infl. a short 3–5-fld. raceme; sepals and petals reddish-brown covered with small purplish spots; lip fleshy, dark purple, paler on margin. W. Indies, British Guiana.

hyacínthinum (*Maxillaria hyacinthina*). Pseudobulbs oblong-cylindric, 2-lvd.: lvs. oblong: raceme to 20-fld.; fls. white to yellow with a rosy lip, with odor of hyacinths. Venezuela.

leontoglóssum. Pseudobulbs with 1 lf. to about 1 ft. long and 3 in. wide: fls. yellow spotted with red, in many-fld. racemes to 1 ft. high. Mar.–Apr. Peru, Colombia, Ecuador.

squàlens. Pseudobulbs ovoid or ovoid-oblong, to nearly 3 in. tall, 2-lvd.: lvs. elliptic-lanceolate, to 26 in. long: infl. to 8 in. high, densely many-fld.; sepals and petals about ¾ in. long, yellowish-white suffused with flesh color; lip with dark brownish-purple in front. May–June, Sept.–Dec. Costa Rica, Venezuela, Brazil, Peru.

XYLOCOCCUS: *Arctostaphylos bicolor.*

XYLOPHACOS: *Astragalus.*

XYLOPHÝLLA. *Euphorbiaceæ.* Trop. American shrubs with flattened leaf-like branches, the monœcious apetalous fls. borne in clusters on the edges of the branches, and capsular frs. Often grown as specimen plants under glass for the odd appearance. Propagated by greenwood cuttings.

angustifòlia (*Phyllanthus angustifolius*). Shrub to 10 ft.: branches or phyllodia to 4 in. long and ½ in. wide: fls. reddish. Jamaica.

speciòsa (*Phyllanthus speciosus. P. latifolius*). Shrub or tree to 20 ft.: branches or phyllodia to 3 in. long and 1 in. wide: fls. whitish. Jamaica.

XYLÓSMA. *Flacourtiaceæ.* Evergreen trees or shrubs of trop. and semitrop. regions of the world, except Afr., having alternate simple lvs., small apetalous usually unisexual fls. in axillary racemes, the 4–5 sepals mostly fused at base and the many stamens surrounded by a disk. The name Xylosma has been conserved by botanists over the older name Myroxylon, the latter being the legitimate name of a small genus of leguminous plants.

senticòsa (*Myroxylon senticosum*). Low shrub, twigs brown-tomentose, axillary spines slender and sharp: lvs. ovate, to ¾ in. long, acute, revolute and obtusely glandular-serrate: fls. unisexual, in racemes of 5–7, sepals ciliate. S. E. China.

XYLOSTEON: *Lonicera cærulea* and *utahensis*.

XYRIDÀCEÆ. Rush-like or grass-like herbs of 2 genera and perhaps 50 species in the western hemisphere and Australia, of which only Xyris is listed. They have inconspicuous fls. in close terminal heads. Of small hort. interest except in wild-gardening.

XỲRIS. Yellow-eyed-Grass. *Xyridaceæ.* Tufted herbs with narrow basal lvs. and yellow fls. borne in axils of leathery imbricated scales, forming heads at tips of leafless scapes.

Cóngdonii. To 2½ ft., without bulbous base: lvs. to 15 in. long, concave: heads ovate, to ¾ in. long, not plumose. Mass. to N. J.—Of less ornamental value than the following species.

flexuòsa. To 1½ ft., with bulbous base: lvs. to 6 in. long: heads globose, ¼ in. high, fls. ¼ in. across, July–Sept. Me. to Ga. and Tex.

Y

YAM: *Dioscorea;* less correctly, forms of sweet potato. **Cockscomb:** *Rajania pleioneura.*

YAMPEE: *Dioscorea trifida.*

YANGTAO: *Actinidia chinensis.*

YARROW: *Achillea.* **Golden:** *Eriophyllum confertiflorum.*

YATE, FLAT-TOPPED: *Eucalyptus occidentalis.* **-Tree:** *Eucalyptus cornuta.*

YAUPON: *Ilex vomitoria.*

YAUTIA: *Xanthosoma.*

YELLOW-BELLS: *Emmenanthe penduliflora, Stenolobium stans.* **-Root, Shrub:** *Xanthorhiza simplicissima.* **-Tuft:** *Alyssum argenteum.* **-Wood:** *Cladrastis.*

YERBA BUENA: *Micromeria Chamissonis.* **Mansa:** *Anemopsis californica.* **Santa:** *Eriodictyon californicum.*

YEW: *Taxus.* **Plum-:** *Cephalotaxus.*

YLANG-YLANG: *Cananga odorata.* **Climbing:** *Artabotrys odoratissimus.*

YOUTH-AND-OLD-AGE: *Zinnia elegans.*

YÚCCA. *Liliaceæ.* Bold plants of the western hemisphere, stemless (caudex not above ground) or with woody trunks, having stiff sword-shaped lvs. and white or violet cup- or saucer-shaped drooping fls. borne in mostly erect panicles, opening and fragrant at night, the perianth-segms. distinct or slightly united.

Yuccas are suitable for bold effects in the garden, or the tender kinds under glass in the North; sometimes grown as tub specimens and massed for summer effects. Yuccas require good drainage and prefer sandy loam soil and open exposure. Propagated by seeds, offsets, stem- or root-cuttings. *Y. filamentosa* is the species commonly planted North; *Y. glauca* is also very hardy.

agrifòlia: listed name.

aloifòlia. Spanish Bayonet. To 25 ft., trunk simple or branched: lvs. to 2½ ft. long and 2½ in. wide, very sharp-pointed: fls. white, often tinged with purple, to 4 in. across, in panicles to 2 ft. long. S. U. S., W. Indies, Mex.—A form with lvs. yellow or white in center is known as **trícolor** and lvs. yellow margined as **marginàta.** Var. **dracònis** has trunk branched above, lvs. to 2 in. across which are more flexible, recurved and not rigid. Var. **quadrícolor** is probably not distinct from var. *tricolor* and var. **variegàta** is listed.

angustifòlia: *Y. glauca.*

angustíssima. To 6 ft., stemless: lvs. to 16 in. long and ⅕ in. wide, margined with white and with many threads. Utah, Nev., Ariz.

arboréscens: *Y. brevifolia.*

arkansàna. Similar to *Y. tenuistyla* but with racemose rather than paniculate infl. Ark. to Tex.

austràlis. Large tree: lvs to 18 in. long and 2 in. across, thick and stiff, spreading rigidly, sharp-pointed, coarsely filiferous: fls. creamy-white, small, style constricted and short, infl. a narrow pendent panicle: fr. indehiscent, pendent, light colored. Mex.

baccàta. To 3 ft., nearly stemless: lvs. 2 ft. long and 2 in. wide, with coarse threads on margins: fls. to 3 in. long. Colo. to Tex.

brevifòlia (*Y. arborescens*). Joshua-Tree. To 30 ft., with trunk to 15 ft.: lvs. to 9 in. long, toothed: fls. greenish-white, to 2 in. long, in heavy panicles 1 ft. or more long. Calif. to Utah.—A striking grotesque tree in many shapes.

Colòma: *Y. neomexicana.*

concàva: *Y. filamentosa* var.

constrícta. To 6 ft., st. to 18 in. crowned with rosette of lvs. to 15 in. long and ½ in. wide: scape many-fld., fls. white, long-peduncled: caps. to 2½ in. long, constricted in middle. W. Tex.

dracònis: *Y. aloifolia* var.

elàta (*Y. radiosa*). To 20 ft., with simple or branched trunk: lvs. to ½ in. wide, white-margined: fls. white. W. Tex., Ariz., Mex.

elephántipes (*Y. guatemalensis. Y. gigantea*). To 30 ft., branched above: lvs. to 4 ft. long and 3 in. wide, rough on margins: fls. white or creamy-white. Mex.

filamentòsa. Adams-Needle. To 12 ft., nearly stemless: lvs. to 2½ ft. long and 1 in. wide, with long curly threads on margins: fls. nearly white, to 2 in. long. N. C. to Fla. and Miss. Var. **bractèola** (var. *maxima*), very large with leafy bracts on scape. Var. **concàva,** lvs. not recurved, very broadly spatulate, to 4 in. wide. Md. to S. C. Var. **ròsea,** fls. tinged pink outside. Var. **variegàta** has variegated lvs.

fláccida. Often grown as *Y. filamentosa* but differing in the less rigid habit and the marginal threads being straight. N. C. to Ala.

gigantèa: *Y. elephantipes.*

glaùca (*Y. angustifolia*). To 6 ft., the short trunk prostrate: lvs. to 3 ft. long and ½ in. wide, margined with white and with fine threads: fls. greenish-white, 2 in. long. S. D. to New Mex. Var. **ròsea,** fls. tinted rose outside.

gloriòsa. Spanish Dagger. To 8 ft., with short trunk: lvs. to 2½ ft. long and 2 in. across, with stiff point: fls. greenish-white to reddish, 4 in. across. N. C. to Fla.

grandiflòra: listed name, probably of hort. form.

guatemalénsis: *Y. elephantipes.*

Hárrimaniæ. To 2 ft., stemless: lvs. linear to spatulate, to 1½ in. wide, with narrow brown margins and white fibers: fls. greenish. Utah to New Mex.

hýstrix: *Agave stricta.*

latifòlia: listed name.

louisianénsis. Stemless or nearly so: lvs. to 1½ ft. long, rarely more, and to ¾ in. wide, flexuous and grass-like, white-margined: fls. greenish-white, style green and swollen, in a paniculate infl.: fr. dehiscent, erect. La. to Tex. and Okla.

macrocárpa. To 20 ft.: lvs. stiff, rough, yellowish-green with white inside, threads grayish: fr. to 4 in. long. W. Tex. to Ariz.

neomexicàna (*Y. Coloma*). To 3 ft., stemless, cespitose: lvs. to 1 ft. long and about ⅓ in. wide, with white threads on margins: fls. white, 1½ in. long. New Mex.

nóbilis: a glaucous form of *Y. gloriosa.*

péndula: *Y. recurvifolia.*

periculòsa. To 20 ft., with few branches: lvs. to 1½ ft. long and 1½ in. wide, with many brown threads: fls. creamy-white, in tomentose panicles 3 ft. long. Mex.

radiòsa: *Y. elata.*

recurvifòlia (*Y. pendula*). To 6 ft., the trunk branching: lvs. 2 in. wide, recurving. Ga. to Miss. Var. **variegàta** has a central yellow band down lvs.

rupícola. Stemless: lvs. to 1½ ft. long and 1¼ in. wide, glaucous, with yellow or brown margin: fls. white or greenish. Tex.

tenuistỳla. To 3 ft., stemless: lvs. to 20 in. long and ½ in. wide, with white margin, mostly recurved. Tex.

Treculeàna. To 25 ft., the trunk simple or branched: lvs. to 3 ft. long and 2 in. wide, concave, brown margined: fls. white, to 2½ in. long. S. Tex., Mex.

Whípplei: *Hesperoyucca Whipplei.*

YUCCA, DATE: *Samuela.*

Z

ZALUZIÁNSKYA (*Nycterinia*). *Scrophulariaceæ*. Ann. or per. herbs or subshrubs in S. Afr., with the lower lvs. opposite and the upper alternate: fls. long-tubular, the limb 5-lobed, in terminal spikes, especially fragrant toward evening.

Zaluzianskyas are grown for ornament and fragrance, usually from seed sown indoors in early spring or in the autumn and the plants wintered in a coldframe. Those in cultivation are known as flower-garden annuals.

capénsis. Night-Phlox. Ann. to 1½ ft.: lvs. linear, to 2 in. long: fls. white inside, purple-black outside and pubescent, to 1¾ in. long.

selaginoìdes: *Z. villosa.*

villòsa (*Z. selaginoides*). Ann. to 1 ft., pubescent: lvs. obovate, to 1 in. long: fls. white or lilac inside, purple outside and nearly glabrous, to 1 in. long.

ZAMAN: *Samanea Saman.*

ZÀMIA. *Cycadaceæ.* Somewhat palm-like mostly low plants with short or underground tuber-like trunks, pinnate evergreen lvs. and fls. borne in cones and heads, about 40 species in trop. and subtrop. Amer., sometimes planted in the open in warm countries. The width and size of pinnæ (which are without midrib) varies with age and growing conditions, and specific lines are not well understood. For cult. see *Cycas.*

Áltensteinii: *Encephalartos Altensteinii.*

floridàna. Coontie. Trunk low or underground, tuber-like: lfts. revolute at edges, to 6 in. long and ¼ in. wide. S. Fla.

glaùca: *Encephalartos Lehmannii.*

integrifòlia. Trunk to 1½ ft. high: lfts. entire or only slightly toothed toward tip. W. Indies.

Lèhmannii: *Encephalartos Lehmannii.*

Lóddigesii (*Z. terrestris*). Lfts. finely spiny-toothed from middle to tip. Mex., Guatemala.

pùmila: see *Z. umbrosa.*

Skínneri: *Encephalartos Lehmannii.*

terréstris: *Z. Loddigesii.*

umbròsa. Similar to *Z. floridana* but lfts. to 4 in. long and ½ in. broad. Fla.—The plant cult. as *Z. pumila* belongs here.

villòsa: *Encephalartos villosus.*

ZANTEDÉSCHIA (*Calla* of gardeners. *Richardia*). Calla. *Araceæ.* S. African herbs with thick rhizomes, simple basal lvs. with long petioles, and unisexual fls. borne on spadices which are shorter than the white, yellow or pink showy spathes; popular greenhouse plants and also grown out-of-doors in warm regions. The true calla is a small herb of northern regions (*Calla palustris*) sometimes grown in the wild-garden.

For indoor growing, callas do best if they are rested throughout the summer. Bulbs should be planted in rich fibrous soil in 6-inch pots and kept fairly cool until the roots have formed. They may then be given heat, light and plenty of water. After the flowers appear applications of liquid manure may be beneficial. Propagated by offsets from the bulbs. The golden calla may also be propagated by seeds.

æthiòpica (*Richardia æthiopica* and *africana*). Common C. To 2½ ft.: lvs. heart- or arrow-shaped, to 1½ ft. long and 10 in. wide, shining green: spathes to 10 in. long, white, the limb flaring outward. Var. **devoniénsis** is a dwarf form. Var. **Godefreyàna** is listed as being smaller and a more profuse bloomer than the type. Var. **mìnor** grows to 1½ ft. tall and has spathes to 4 in. long.

álbo-maculàta. Spotted C. Lvs. arrow-shaped, to 1½ ft. long, spotted with white: spathes to 5 in. long, creamy-white, purplish in throat, trumpet-shaped.

devoniénsis: *Z. æthiopica* var.

Elliottiàna. Golden C. Lvs. ovate-cordate, to 10 in. long and 6 in. wide, bright green with white or translucent spots: spathes to 6 in. long, rich yellow.

melanoleùca. Black-throated C. Lvs. triangular or arrow-shaped, to 1 ft. long and 6 in. across, spotted with white: spathes to 3 in. long, pale or greenish-yellow with black-purple spot at base inside, the limb flaring. Natal.

Réhmannii. Red or Pink C. Dwarf: lvs. long-lanceolate, to 1 ft. long and 1¼ in. wide, bright green with white or translucent spots: spathes to 5 in. long, rose or red or sometimes nearly white with a rose margin.—For another plant sometimes known as red calla, see *Sauromatum.*

ZANTHORHIZA: *Xanthorhiza.*

ZANTHÓXYLUM (*Xanthoxylum*). *Rutaceæ.* Prickly shrubs or trees, often aromatic, with alternate pinnate lvs., small diœcious or polygamous fls. in cymes or panicles, and fr. of 1–5 carpels; sometimes planted for ornament, some of them bearing the small fls. in advance of the lvs.

The first species (*Z. americanum*) is very hardy and most of the others should thrive in the middle latitudes. Several species have medicinal properties. Propagated by seeds, suckers, and root-cuttings.

americànum. Prickly-Ash. Prickly shrub or tree to 25 ft.: lvs. of 5–11 ovate lfts. to 2½ in. long: fls. greenish, in axillary cymes, before the lvs. Que. to Va. and Neb.

Búngei: *Z. simulans.*

Clàva-Hérculis (*Fagara Clava-Herculis*). Hercules-Club. Toothache-Tree. Tree to 30 or even 50 ft., with prickly trunk and branches, sometimes bush-like: lfts. 3–9 pairs, closely serrate, petiole and rachis often prickly: fls. in terminal panicles; seeds black and shining. S. Va. to S. Fla., to Tex.

oxyphýllum. Shrub: lvs. of 7–21 ovate-lanceolate or oblong lfts. to 4 in. long: fls. ⅛ in. across, in many-fld. cymes. Himalayas; to be grown far S.

Piasézkii. Shrub to 10 ft.: lvs. of 7–15 ovate or oblong lfts. to 1 in. long: fls. in small cymes. China.

piperìtum. Shrub or tree to 20 ft.: lvs. of 7–11 ovate lfts. to 2 in. long: fls. in cymes 2 in. across. China.

schinifòlium (*Fagara schinifolia*). Shrub or small tree: lvs. of 13–21 lanceolate lfts. to 1½ in. long: fls. greenish, in cymes 4 in. across. Japan, Korea.

símulans (*Z. Bungei*). Prickly shrub or tree to 25 ft.: lvs. shining, of 7–11 ovate lfts. to 2 in. long: fls. in cymes 2½ in. across. China.

stenophýllum (*Fagara stenophylla*). Shrub climbing to 10 ft.: lvs. of 7–13 ovate to lanceolate lfts. to 3 in. long: fls. in cymes 3½ in. across. China.

ZAUSCHNÈRIA. *Onagraceæ.* Per. herbs with alternate lvs. or the lower lvs. opposite, scarlet fuchsia-like fls. in racemes, and capsular frs.; useful as a wall cover, in rockeries or the flower-garden. Propagated by division, cuttings or seeds.

arizónica. To 2 ft., villous, sts. decumbent, branching from the base: lvs. mostly ovate-oblong, sessile, to 1¼ in. long, shallowly and coarsely dentate: fls. scarlet, to 1½ in. long, style and stamens long-exserted. Ariz.

califórnica. California Fuchsia. Decumbent or nearly erect, to 2½ ft.: lvs. lanceolate to oblong, to 1¼ in. long, hairy, glandular: fls. to 2 in. long. Calif. Var. **microphýlla** is *Z. cana.*

càna (*Z. californica* var. *microphylla. Z. microphylla*). Differs from *Z. californica* in its much fascicled linear lvs. which are less glandular and tomentose-canescent. Calif.

latifòlia. To 2 ft.: lvs. elliptical to ovate-lanceolate, to 1¾ in. long, villous, denticulate, lateral veins more conspicuous than in *Z. californica:* fls. to 2 in. long. Calif. Var. **Étteri**, foliage silvery-white.

macrophýlla: listed name, perhaps intended for *Z. microphylla.*

microphýlla: *Z. cana.*

ZÈA. *Gramineæ.* One large ann. grass comprising many races or strains, supposedly trop. American but of undetermined origin, widely grown for forage, grain and human food. See *Corn.* **Z. Màys.** Maize. Indian Corn. To 12 ft. or more, suckering at base: lvs. to 3 ft. long and 4 in. wide, curving: staminate spikelets in terminal panicles; pistillate in several rows on a thick rachis or cob, inclosed in large leafy bracts or husks, with long styles or "silk": grains flattened, white, yellow or black. Var. **Curágua** is a robust green-lvd. form grown for ornament. Var. **evérta,** Pop Corn, has small ears with mostly pointed grains that explode when heated. Var. **gracíllima** is dwarf with narrow lvs. Var. **indentàta,** Dent Corn, is tall with yellow or white grains indented at top. Var. **induràta,** Flint or Yankee Corn, is of medium size with brown-yellow hard smooth grains. Var. **japónica** has foliage longitudinally striped with yellow, white or pink and planted for ornament. Var. **quadrícolor** is a form of *japonica.* Var. **rugòsa** (var. *saccharata*), Sweet or Sugar Corn, is rather small with wrinkled sweet grains. Var. **tunicàta,** Pod Corn, has each kernel inclosed in a husk. Var. **variegàta** is a form of *japonica.*

ZEBRA PLANT: *Calathea zebrina.*

ZEBRÌNA. *Commelinaceæ.* Small genus of trailing plants differing from Tradescantia in technical characters. **Z. péndula** (*Tradescantia zebrina*). Wandering Jew. Decumbent per. rooting at joints: lvs. ovate-oblong, striped with white above, purple beneath: fls. red-purple, in clusters between 2 boat-shaped bracts of unequal size. Mex. Var. **quadrícolor** (*Tradescantia quadricolor* and *multicolor*) has metallic-green lvs. striped with green, red and white. *Z. Purpusii* is a trade name, without adequate description.—Propagated by cuttings of the st. It creeps and propagates itself and is useful under benches and as a basket plant.

ZEHNTNERÉLLA. *Cactaceæ.* A monotypic Brazilian genus similar to Cleistocactus from which it differs in its very short perianth-tube and stamens not exserted. **Z. squamulòsa.** Shrub or tree-like to 25 ft. tall, branches usually arising at or near the base, about 2½ in. diam., spine-covered; ribs 17–20, compact and low; spines 10–15, to 1¼ in. long, brown, needle-like: fls. white, to 1¼ in. long: fr. about ¾ in. diam.

ZELKÒVA. *Ulmaceæ.* Deciduous elm-like trees or shrubs in Asia, with alternate toothed lvs., unisexual or bisexual fls., and fr. an oblique drupe. Hardy as far north as New England and of easy cult. Propagated by seeds, layers and grafting on the elms.

acuminàta: *Z. serrata.*

califórnica: material under this name appears to be *Z. carpinifolia.*

carpinifòlia (*Z.* and *Planera crenata. Z. ulmoides. Planera Richardii*). To 80 ft.: lvs. elliptic to oblong, to 2 in. long, acute, wavy-toothed, pubescent on veins beneath. Caucasus.

crenàta: *Z. carpinifolia.*

cuspidàta: *Z. serrata.*

Dàvidii: *Hemiptelea Davidii.*

Kèakii: *Z. serrata.*

serràta (*Z. acuminata. Z. cuspidata. Z. Keakii. Planera japonica*). To 100 ft.: lvs. ovate or oblong-ovate, 2–5 in. long, acuminate, sharply toothed, glabrous beneath. Japan.

sínica. To 60 ft.: lvs. ovate-oblong, to 2 in long, wavy-toothed. China.

ulmoìdes: *Z. carpinifolia.*

ZENÒBIA. *Ericaceæ.* Deciduous or semi-evergreen shrub to 6 ft., native from N. C. to Fla. **Z. pulverulénta** (*Z. speciosa. Andromeda pulverulenta* and *A. speciosa*). Lvs. alternate, oval to oblong, to 3 in. long, covered with glaucous bloom: fls. white, bell-shaped, to ½ in. across, in clusters forming terminal racemes, May–June; fr. a caps. ¼ in. across. Var. **nùda** (*Z.* and *Andromeda cassinifolia*) has lvs. without bloom and smaller fls.—It does best in sandy or peaty soil and is also adapted for forcing in the greenhouse. Propagated by seeds, by layers, by cuttings of half-ripened wood or of green wood from forced plants.

ZEPHYRÁNTHES (*Atamosco*). Zephyr-Lily. *Amaryllidaceæ.* Small bulbous herbs with grass-like basal lvs. and funnelform white, yellow, pink or red fls. solitary at end of hollow scape, the perianth-segms. united into short or long tube; stigma in ours mostly 3-branched. Fairly hardy out-of-doors with winter protection, but in regions of heavy frosts the bulbs should be stored in winter.

Àjax. Hort. hybrid: lvs. linear, to 8 in. long: scape 6–8 in.; fls. 1½ in. diam., light yellow.

álba: uncertain name, possibly *Z. candida.*

Ándersonii: *Habranthus Andersonii.*

Atamásco (*Amaryllis Atamasco*). Atamasco-Lily. To 1 ft.: lvs. narrowly linear, to 1 ft. long: fls. white sometimes tinged with purple, to 3 in. long, in spring. S. E. Va. to Fla. and Ala.

aùrea: *Pyrolirion aureum.*

bifòlia. Lvs. linear, broader than in most species: scape 6–8 in.; fls. large, declinate, cardinal. Haiti, Santo Domingo.

cándida. Lvs. linear, thick with obtuse edges, stiff, to 1 ft. long: fls. white sometimes tinged with rose outside, 2 in. long, in summer and autumn; stigmas not markedly cleft. La Plata region, S. Amer.—Sometimes planted as Atamasco.

carinàta: *Z. grandiflora.*

citrìna. To 10 in.: lvs. to 1 ft. long and ⅙ in. wide, channelled: fls. bright yellow, 2 in. long, the tube very short or wanting. S. Amer.

grandiflòra (*Z. carinata*). Lvs. linear, to 1 ft. long, flat: fls. rose or pink, to 4 in. diam., in spring and summer. S. Mex. to Guatemala.—Widely known in cult.

insulàrum. Lvs. linear, suberect to 10 in.: scapes 8–10 in.; fls. white faintly pink tinted outside, sepals and petals unequal, early summer. Described from cult. plants in Fla. and Cuba.

longifòlia. To 6 in.: lvs. narrowly linear, to 9 in. long: fls. bright yellow, coppery outside, to 1 in. long, tube short. W. Tex. to Mex.

mesochlòa. Lvs. linear, to 10 in. long: scapes 6–8 in.; fls. erect, 1¾ in., not opening widely, white above, green in lower portion, red tinted. Argentina.

pulchélla. Lvs. linear, at first erect, twisted, later declinate, to 10 in. long: fls. 1 in. diam., buttercup-yellow. S. E. Tex.

robústa: *Habranthus robustus.*

ròsea. Lvs. flat, spreading, very obtuse at apex: fls. rose-red, about 1 in. long, in autumn. Cuba.—Plants grown under this name are likely to be *Z. grandiflora.*

Símpsonii. Differs from *Z. Atamasco* in narrower perianth-tube with erect or ascending rather than spreading lobes. Fla.

texàna: *Habranthus texanus.*

Trèatiæ. Distinguished from *Z. Atamasco* by lvs. nearly cylindrical with rounded margins and mostly obtuse. Fla., S. E. Ga.

tubispàtha. Lvs. narrow-linear, exceeding slender scapes: fls. white, 2 in. or less long, spring and summer, the spathe sheathing. W. Indies.

verecúnda. To 8 in.: lvs. narrow-linear, to 1 ft. long, becoming recurved-spreading: fls. white tinged pink outside, 2–3 in. long, the tube to ¾ in. long. Mex.

ZEXMÈNIA. *Compositæ.* Per. herbs with mostly opposite lvs. and solitary yellow heads of ray- and disk-fls.; pappus of awns or scales; allied to Verbesina.

híspida. To 2 ft., rough-hairy: lvs. lanceolate, irregularly toothed, sometimes lobed near base: rays orange-yellow, ½ in. long. Tex.

ZIGÁDENUS (*Zygadenus* is a later spelling). *Liliaceæ*. Per. herbs with or without bulbs, having linear lvs. and greenish-white fls. in terminal panicles or racemes, the perianth-segms. often united at base. Occasionally grown in the wild-garden. Propagated by division or seeds.

angustifòlius (*Amianthium angustifolium. Tracyanthus angustifolius*). To 3 ft.: lvs. to 1½ ft. long: racemes to 4 in. long. N. C. to Fla.

bracteàtus: *Z. elegans.*

chloránthus: *Z. glaucus.*

élegans (*Z. bracteatus. Anticlea elegans*). To 3 ft.: lvs. to 1 ft. long, glaucous, sharp-pointed: fls. white to straw-colored, bracts of infl. scarious, infl. a raceme to 1 ft. long: caps. twice as long as perianth. Alaska to N. Mex. east to Minn. and Mo.

Frèmontii. To 3 ft.: lvs. to 1½ ft. long and ¾ in. across: racemes simple or compound, to 1 ft. long. Calif. Var. **minor** is smaller with few-fld. raceme.

glabérrimus. To 4 ft., sts. from creeping rootstocks: lvs. linear-acuminate: fls. greenish-white, sepals ovate with short claw: caps. shorter than perianth. Va. to Ala.

glaùcus (*Z. chloranthus. Anticlea chlorantha*). To 3 ft.: lvs. to 1 ft. long, usually blunt: fls. greenish, suffused on back with purple, bracts of infl. herbaceous, infl. a panicle to 1 ft. long: caps. as long as perianth. Minn. to Ind. east to N. B. and N. Y.

gramíneus (*Toxicoscordion gramineum*). To 14 in.: lvs. to 8 in. long: fls. in short racemes. Sask. to Colo.

intermèdius: listed name of unknown botanical standing.

leimanthoìdes (*Oceanorus leimanthoides*). To 4 ft.: lvs. to 1 ft. long: panicles to 1 ft. long. N. Y. to Ga. and Tenn.

muscætóxicus: *Amianthium muscætoxicum.*

Núttallii (*Toxicoscordion Nuttallii*). To 2 ft.: lvs. to 1½ ft. long and ½ in. across: fls. ½ in. across, in simple or branched racemes. Tenn. to Tex.

paniculàtus (*Toxicoscordion paniculatum*). To 2 ft.: lvs. to 16 in. long and ⅓ in. across, striate: fls. yellow, in panicles. Mont. to New Mex. and Calif.

venenòsus (*Toxicoscordion venenosum*). To 2 ft.: lvs. to 1 ft. long and ¼ in. across, striate: racemes simple, to 10 in. long. Mont. to Calif.

ZÍNGIBER. GINGER. *Zingiberaceæ*. Trop. herbs bearing tuberous aromatic rootstocks which are the source of commercial ginger, leafy sts. and fls. borne under bracts in terminal or lateral spikes, having 1 petal-like staminode or lip.

Ginger should have fertile soil and partial shade and requires tropical temperatures. Of easy cultivation in the greenhouse but should be rested in winter. Propagated by division of the roots in spring. See *Zingiberaceæ*.

Dárceyi. To 3 ft.: lvs. to 8 in. long and 2½ in. wide, bright green with creamy-white or pink margins and oblique stripes: fls. deep red. Of hort. origin.

officinàle. COMMON G. To 3 ft.: lvs. to 1 ft. long and ¾ in. wide: fls. yellow-green, the lip purple spotted with yellow, in dense spikes to 3 in. long. Pacific Isls.

Zerúmbet. To 1½ ft.: lvs. to 6 in. long and 3 in. wide: fls. white, the lip pale yellow tinted with orange, in dense spikes to 3½ in. long. India, Malaya.

ZINGIBERÀCEÆ. GINGER FAMILY. Trop. per. rhizomatous herbs of about 40 genera, characterized by erect cane-like sts. in clumps with elongated entire lvs. and commonly sheathing petioles, irregular bisexual fls. borne under bracts in spikes, heads or panicles, with tubular 3-lobed calyx and corolla, 1 fertile stamen and 1 or more petal-like staminodia, inferior 1-celled ovary, and capsular fr. Species of several genera are grown for the ornamental foliage and others furnish dyes, perfumes, spices, condiments, and medicinal products. Those herein treated are Alpinia, Amomum, Costus, Curcuma, Elettaria, Hedychium, Roscoea, Zingiber.

The culture is simple in the open in tropical and semi-tropical regions; they commonly thrive on lowish ground. Under glass they are mostly planted in the ground or grown in tubs or very large pots. Propagation is by division of the thick rootstocks or subterranean tubers.

ZÍNNIA (*Crassina*). *Compositæ*. Herbs or sub-shrubs with opposite and usually sessile lvs. and showy solitary terminal heads, the rays bright colored, the disk in cult. forms nearly or wholly lacking; native in N. and S. Amer., chiefly Mex. *Z. elegans* is a common large garden annual.

Zinnias are popular in the flower-garden and as cut-flowers. The usual garden soil is satisfactory and full sun or even a semi-shady situation. Propagated by seed sown indoors or outdoors in the spring when the ground is warm enough.

angustifòlia (*Z. mexicana*). Differs from *Z. elegans* in the smaller stature, oblong to ovate-lanceolate sessile lvs. and orange heads 1½ in. across. Mex.

élegans. YOUTH-AND-OLD-AGE. Ann., erect, to 3 ft., hairy: lvs. ovate or oval, clasping: heads to 4½ in. across, rays broad and showy, originally purple or lilac but now of nearly every color except blue and green; disk yellow or orange when present. Mex.

gracíllima: hort. name.

grandiflòra. Per. to 8 in., hairy: lvs. linear, 1 in. long: heads with yellow rays turning white and brick-red disks. Colo. to Tex. and Ariz.—The *grandiflora* of hort. may be only a form of *Z. elegans.*

Haageàna: a broad-lvd. form of *Z. angustifolia.*

lineàris. Ann. to 1 ft., branching: lvs. linear-lanceolate: heads clear golden-yellow, to 2 in. across, each ray-fl. margined with bright orange. Mex.

mexicàna: *Z. angustifolia.*

multiflòra (*Z. tenuiflora*). Ann., erect: lvs. ovate or ovate-oblong: heads 1 in. across, rays red or purple, linear. Mex., S. Amer.

pauciflòra. Ann., erect: lvs. lanceolate or oblong-ovate: heads 1 in. across, yellow, sometimes with purple or yellow rays in cult. Mex., S. Amer.

pùmila: hort. name for a dwarf form of *Z. elegans.*

tenuiflòra: *Z. multiflora.*

verticillàta. Robust form of *Z. multiflora* with verticillate lvs. and double series of rays.

ZIT-KWA: *Benincasa hispida.*

ZIZÀNIA. WILD RICE. *Gramineæ*. Tall ann. and per. grasses inhabiting marshes in N. Amer. and Asia, monœcious, the pistillate spikelets borne in upper part of panicle, the staminate in lower; one species planted along borders of ponds and in pools. See *Grasses.*

aquática. Ann. to 10 ft.: lvs. to 1 ft. or more long and 2 in. wide: panicles to 2 ft. long, awns to 3 in. long; pistillate lemmas thin and papery. Me. to Fla. and La. Var. **angustifòlia** (*Z. palustris*) has lvs. to ½ in. across and tough pistillate lemmas. N. B. to N. Y. and Ind.

palústris: *Z. aquatica* var. *angustifolia.*

ZÍZIA. *Umbelliferæ*. Per. herbs with ternate lvs. and small yellow fls. in compound umbels; sometimes transplanted into gardens.

aùrea. To 2½ ft.: lvs. ternate, lower ones 2–3-compound into ovate or ovate-lanceolate toothed segms. to 2 in. long: fls. Apr.–June. N. B. to Fla. and Tex.

ZÍZYPHUS. *Rhamnaceæ*. Shrubs and trees, deciduous or evergreen, mostly with stipular spines, alternate simple lvs. strongly mostly 3-nerved from the base, some 40 species in warm and trop. regions of eastern and western hemispheres, a few of them in the Tex.-Mex.-Calif. region: fls. small, greenish, whitish or yellow, in axillary clusters: fr. a fleshy drupe, sometimes edible.

The species are known in horticulture mostly from the fleshy fruits of the jujube, which are preserved, dried, sweet-pickled, stewed, and employed in confections, represented in *Z. Jujuba* and *Z. mauritiana*. The former (as now defined) is a deciduous small tree or large bush with small green serrate leaves, standing as far north as western New York in protected places, and the principal source of jujubes; the latter, from India, is a small tree with nearly or quite entire broad thick more or less persistent leaves that are white- or rusty-felted underneath, hardy only in Florida, southern California and similar climates. There is unfortunate confusion in the names of these two species. The former was known to Linnæus (1753) as *Rhamnus Zizyphus*. Philip Miller in 1768 established the genus, spelling it *Ziziphus*, and named the plant *Z. Jujuba*. In 1789 Lamarck applied the name *Z. Jujuba* to the other or tomentose evergreen species, the one for which the name *Z. mauritiana* is now held, calling the green-leaved Millerian species *Z. vulgaris;* it is the *Jujuba* plant of Lamarck that has become current in literature, but the *Jujuba* of Miller (representing the Chinese jujube) is an older designation and must stand although it has been generally recognized only recently.

The cultivation of these plants applies primarily to the green-leaved or common Chinese jujube. This tree thrives in hot and dry regions and in lands strong in alkali. It blooms late and thereby usually escapes late spring frosts. It promises well as a fruit-tree in the southwestern United States. Irrigation contributes to the production of abundant large fruits. In orchard plantations trees may be set 20 to 25 feet apart either way. Thus far the jujube is very free in this country from diseases and insects. Propagation is simple by means of cleaned and stratified seeds, but the seedlings are utilized only as stocks if the best fruit is desired. The jujube may also be propagated by means of root-cuttings. Improved varieties are whip-grafted on seedlings, dormant cions being usually employed.

Jùjuba (*Z. vulgaris. Z. sativa*). Common or Chinese Jujube. Deciduous tree to 40 ft., sometimes a large bush: lvs. green both sides, ovate to oblong-oval or nearly lanceolate, 1–2 in. long, obtusely serrate; spines usually 2, slender, one of them mostly recurved: fr. oblong to ovoid to subglobose, 1¼ in. or less long. S. E. Eu. to China.—There are many pomological vars., particularly in the Orient.

mauritiàna (*Z. Jujuba* of Lamarck). Indian or Cottony Jujube. Shrub or small tree, commonly evergreen: lvs. broad-oval, rounded, to 2½ in. long, the under surface and twigs white- or rusty-tomentose; spines stout: fr. globose or short-oblong, 1 in. or less diam., acid. India; now widely spread in warm countries.—Less developed pomologically than the preceding.

Místol. To 30 ft., spiny: lvs. oval, 1 in. long, minutely toothed: fr. black, ⅓ in. across. Argentina.

obtusifòlia. Much branched spiny stiff shrub: lvs. ovate or rarely oblong, to 1¼ in. long, entire or slightly toothed, glabrous: fr. black, ⅓ in. long. Tex. to Ariz.

satìva: *Z. Jujuba.*

vulgàris: *Z. Jujuba.*

ZÓMBIA. Zombi Palm. *Palmaceæ.* One soboliferous or cespitose fan-palm in Haiti, somewhat intro. into S. Fla., unarmed except that fibers of the cylindrical lf.-sheath are produced into long stiff spreading or reflexed prongs: fls. hermaphrodite, in short axillary spadices: fr. drupe-like.

antillàrum (*Chamærops antillarum. Coccothrinax anomala*). Trunks 8–10 ft. tall from a clump of bamboo-like shoots: lvs. soon shedding and the trunks breaking over as the basal shoots grow, silvery underneath, cut nearly to base into narrow segms.: fr. white, about ¾ in. diam.

ZOÝSIA (*Osterdamia*). *Gramineæ.* Per. creeping grasses with fine close foliage useful for lawns and golf-courses in the S.: lvs. subulate: spikelets borne in spikes. See *Grasses.*

japónica. Korean Lawn-Grass. Differs from *Z. Matrella* in being coarser and lvs. ⅛ in. wide. Japan, China.

Matrélla (*Z. pungens*). Manila-Grass. Flowering sts. to 1½ ft. high: lvs. to 3 in. long and 1/12 in. wide, sharp-pointed: spikes to 2 in. long. S. Asia, E. Indies.

púngens: *Z. Matrella.*

tenuifòlia. Mascarene-Grass. Similar to *Z. Matrella* but with finer thread-like lvs. Mascarene Isls.

ZYGADENUS: *Zigadenus.*

ZYGIA: *Ebenopsis flexicaulis.*

ZYGOCÁCTUS. *Cactaceæ.* One epiphytic species in S. Brazil, much cult. as a window and conservatory plant under the name *Epiphyllum truncatum*, known by its regularly forking growth and irregular fls. For other binomials see *Epiphyllum* and *Nopalxochia.*

truncàtus. Crab and Christmas Cactus. Bushy, much branched, often hanging, glossy joints about 1–2 in. long, flat and sharp-serrate and 2 teeth at apex: fls. horizontal from ends of joints, red.—Much grown under various names and in many colors and forms, most of which are hybrids with other cacti. Among the trade names which belong here as varieties or hybrids are **bícolor, delicàtus, Hárrisonii, magníficus, ròseus, salmòneus, spectábilis** and **violàceus.** They propagate readily from cuttings and bloom freely in winter. Standards and bizarre forms are produced by grafting on species of Acanthocereus, Pereskia, Harrisia, Hylocereus, Selenicereus and on *Opuntia Ficus-indica.*

ZÝGOCÒLAX. *Orchidaceæ.* Bigeneric hybrids between Zygopetalum and Colax, intermediate between the two in habit and floral characters. Cult. as for *Zygopetalum.*

Chárlesworthii (*Z. Perrenoudii* × *C. jugosus*).

ZYGOPÉTALUM. *Orchidaceæ.* Epiphytes of trop. Amer. with 2–3-lvd. pseudobulbs or without pseudobulbs, and rather large fls. which are solitary or in lax racemes; sepals and petals similar; lip simple or 3-lobed with broad spreading mid-lobe. Grown in a warm greenhouse; for cult. see *Orchids.*

Búrkei. Pseudobulbs with 2–3 lvs. to 1 ft. long: infl. to 16 in. high, racemose, about 3–5-fld.; fls. 2½ in. across; sepals and petals green with chocolate stripes; lip white with a callus of violet radiating stripes. Sept.–Jan. British Guiana, Venezuela.

Búrtii: *Huntleya Burtii.*

cœléste (*Bollea cælestis*). Without pseudobulbs: lvs. to 21½ in. long and 2 in. wide: fls. solitary, to 4 in. across, blue-violet with large yellow semicircular callus on lip. May–July. Colombia.

crinìtum: *Z. Mackayi* var.

Garriànum. Without pseudobulbs: fls. solitary, large; sepals and petals deep violet shading to blackish-purple above; lip purplish-mauve bearing a 15–17-ridged callus which is sometimes orange with purple ridges. Ecuador.

Gautièri: *Z. maxillare* var.

intermèdium. Pseudobulbs with 3–5 lvs. to 20 in. long: infl. to 5–fld., racemes longer than lvs.; fls. to 2¾ in. across; sepals and petals green spotted with reddish or purplish; lip white covered with radiating purple lines. Brazil.

Lalíndei (*Bollea Lalindei*). Without pseudobulbs: lvs. to about 12 in. long and 1½ in. wide: fls. solitary, to 3 in. across; sepals and petals rose, darker above; lip and ridged callus yellow to orange. Aug. Colombia.

Máckayi. Pseudobulbs with 2–3 lvs. to 20 in. long: infl. to 30 in. long, loose, to 7–fld.; fls. to about 3 in. across; sepals and petals yellow-green spotted with brown-purple; lip white striped with rays of purple, large, spreading. Nov.–June. Brazil. Var. **crinìtum** (*Z. crinitum*) differs in having petals equally long with the dorsal sepal and the lip densely velvety or long-hairy. Var. **màjus** is listed.

maxillàre. Pseudobulbs with 2–3 lvs. to 16 in. long: scapes to 1 ft. long, loose, to 8–fld.; fls. to almost 2 in. across; sepals and petals green barred with brown; lip violet-blue with paler margins and purple crest. Brazil. Var. **Gautièri** (*Z. Gautieri*) is more robust with larger fls.

ZYGOPHYLLÀCEÆ. Caltrop Family. Over 20 genera of trees, shrubs and herbs, with mostly pinnate lvs., bisexual fls. with 4–5 sepals and petals, 8–10 stamens, 2–5-celled ovary and united style, and fr. a caps., often winged. Of little hort. importance in this country, but Guaiacum furnishes the lignum-vitæ of commerce and the trees are interesting and ornamental, and Larrea and Tribulus may be planted.

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